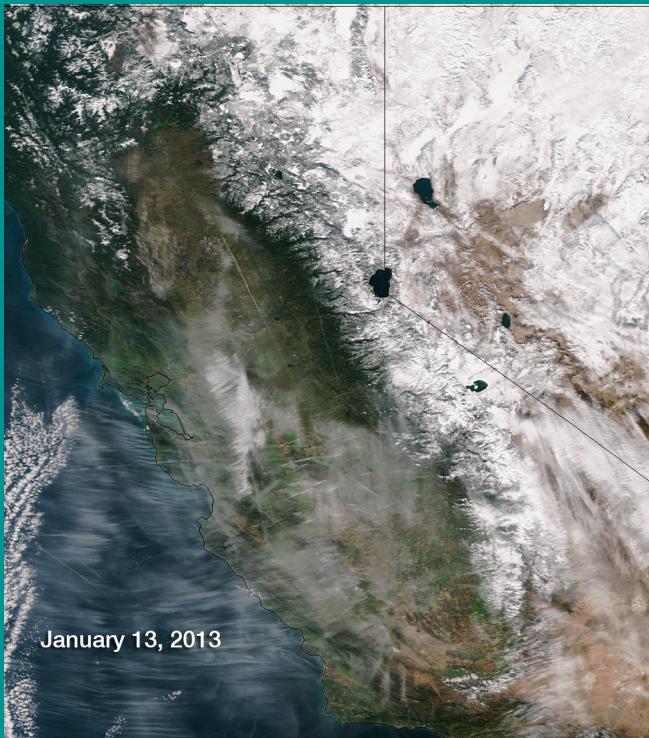


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The Drought and The Presidency



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**FEATURING:
Today's
Brownshirts**

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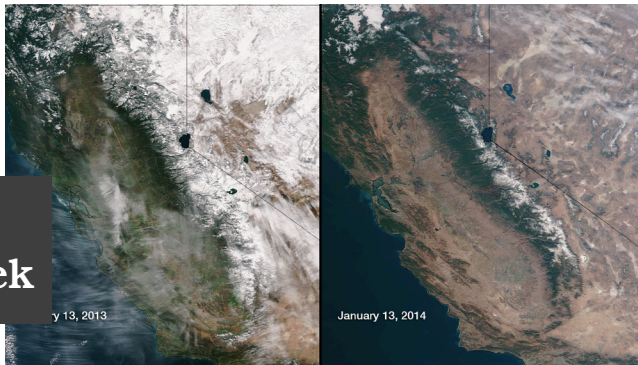
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The Drought and The Presidency

Guest Editor: Benjamin Deniston of the
LaRouchePAC "Basement" Scientific Team

Cover This Week

Snow cover in California's Sierra Nevada mountain range



NASA/NOAA

I. DROUGHT, THE PRESIDENCY, AND TODAY'S BROWNSHIRTS

4 LaRouchePAC Webcast

Basing himself on the path-breaking scientific discovery of the Solar System itself by Johannes Kepler, Guest Editor Benjamin Deniston has just discovered an original breakthrough of his own—one which will revolutionize man's ability to solve such problems as the crippling drought which has struck the Southwestern states of the U.S.

As to its profound implications for the Presidency: first of all, former Gov. Martin O'Malley is the only prospective nominee who has exhibited any relevant qualifications.

But the Presidency is not a single individual, however qualified. It is an institution comprising a closely coordinated team of experts who are also creative thinkers, under the President, as exemplified by Lyndon LaRouche's vital participation in the Presidency, since the 1970s. That team must begin functioning now.

The major question before the Presidency, so defined, today, is whether the Western states of the United States must be shut down, and their populations killed off or exiled because of lack of water as California's degenerate Gov. Jerry Brown demands. What question could be more important? But without consideration of what Deniston raises here, it is a question without an answer.

4 The Brown Squirts Will Kill You Faster than the Drought

Deniston's discovery in hand, we headed up to California's State Capitol at Sacramento, to provide what we thought would be a welcome alternative to Gov. Jerry Brown's diktat that 99% of the state's inhabitants should die out or emigrate, because there is not enough water to provide for them or for their food-supply. But what we found instead, was a large, well-entrenched network of actual Nazis.

The still-open question before us is this: What is the ratio, what is the proportion of Americans who will fight to the end against these Nazis to preserve their lives and those of their families, as against those many, many others who will "negotiate" with the Nazis as the Germans did, pleading that "we must be practical, after all." They may find their efforts rewarded when the executioners come for their neighbors, before finally coming for them. Or, not.

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-

I. Drought, The Presidency, And Today's Brownshirts



The Brown Squirts Will Kill You Faster Than the Drought

by Michael Steger

Sacramento, Calif., April 12—The dust bowls of the thirties will be no comparison. Farmers in the Central Valley are targeted as criminals, threatened with terrorism against their farms. The forgotten urban and suburban populations, as well as the poor farm communities throughout the state, face food shortages and skyrocketing food prices. There are now public showers to save water, which itself is eerily reminiscent of fascism,—but what will happen when those showers have no water? What will happen when those poor towns can no longer afford the water rates? When Wall Street firms, represented by the Bush family, or T. Boone Pickens, or

Brown Squirts—Continued on page 5

LaRouchePAC Webcast

Benjamin Deniston of the LaRouchePAC Science Team gave this presentation on the weekly Friday webcast on April 10. The full webcast can be viewed at <https://www.youtube.com/watch?v=PEVQXcWjZW0>.

As we discussed last week, as we presented on the LaRouchePAC site, the LaRouche Political Action Committee, under Mr. LaRouche's direction, has launched a campaign addressing this water crisis in California and the West, the southwestern United States more generally. The reality is, which we're going to get into here: The water exists. The water needed by California, by the other states of the Southwest, exists. The water needed in other parts of the world exists. There's not a shortage of water on this planet. Mankind needs to move into new levels of managing the global water system as a whole—which is something Mr. LaRouche has been referring to earlier today. That's where we have to move to.

There's nothing stopping mankind from going to that level, other than the degeneration represented by Jerry Brown, for example, the current governor of California, and people like him. We have the solutions; they need to be developed. We need to create a new Presidency that can develop these solutions. But to do that, we have to take out the trash, and, I think, that starts with Jerry Brown.

Now I think that this is a very interesting case-study in everything that's gone wrong in the United States—how our nation has been brought to this point where California is now drying and dying, while the Governor sits there and does nothing. Take Jerry Brown. This is a case you could call "Profiles in Degeneration." It expresses what's happened to this country, when you look at the fact that Jerry Brown's father, Pat Brown, as Governor in the '60s, built some of the largest water proj-

Webcast—Continued on page 6

Brown Squirts

Continued from page 4

Jerry Brown make water a private commodity,—who will die first?

There are Nazis in Sacramento, and it's not only Arnie or Jerry,—it could be you.

The swastikas were not hanging on the door, nor in the room. He was seated at his desk surrounded by books of past legislation, diligently working on what we assumed was water crisis legislation. Yet there was something unusual about his expression. We said we had a solution to the water crisis. That we had an immediate political approach, as well as a scientific program that could solve the water crisis in California. He was intrigued, and so we sat down, although we were still uncertain about his unusual expression, as it was framed by the shaggy hair that flopped over his collar.

We had stopped by the office of the State Senate Committee for Natural Resources and Water earlier in the day, and were told to return later when Mr. O'Connor, the Principal Consultant, was available. The rest of the day was filled with typical discussions with staff and legislators in Sacramento. Most were clueless. The few offices from the Central Valley with whom we spoke were either over-confident of their meek proposals, such as a new dam in 2025, or were unwilling to address what they all knew to be true: that indeed there are Nazis in Sacramento! Not merely Nazis, but the most vile ones.

So, we returned to the committee's office at the very end of our day, and found Mr. O'Connor at his desk.

A Solution Posed

He asked us to proceed with our two-part solution. "First, Governor Brown's proposal is a failure, and he, personally, is a fraud," I began. "He played the dominant role in destroying his own father's development of the water-resources of California, beginning in 1975 with his first term as Governor, and is now only finishing the job. He has no commitment to the people of California, nor has he ever, and until this is made clear, no solution to the water crisis will be possible."

Mr. O'Connor twinged, said he disagreed, but grunted something indicating we should proceed with our second point.

"Second," we said, "the water crisis will not be solved by reducing carbon emissions. Shutting down coal plants will not make it rain," I remarked. "There

have been droughts in California for millions of years, so this drought cannot be blamed on man-made global warming."

We had hoped to proceed with a proposal for viable measures, such as nuclear desalination and atmospheric ionization, which would actually increase the water supply available to the farms and people of California, when we were suddenly taken aback.

A Sudden Change

What had seemed to be the calm, yet peevish Dennis O'Connor was now transformed, in front of our eyes, into a wild ape-like creature. He sprang up from a cowering posture, as if attacked from behind by a female gorilla, and motioned with wild gestures that demanded our immediate removal from his office. Although stunned, we remained seated at first, hoping that our conversation could somehow resume, even after this beast-like outburst.

"Mr. O'Connor! Mr. O'Connor,"—but it was clear that he was barely able to hear what we were saying. His mind had been taken over by some demonic-like force, "Are you suggesting there were no droughts ten million years ago? Mr. O'Connor, please, calm down. Were there no droughts before mankind existed? We must solve the drought, Mr. O'Connor."

"This is harassment!" he finally blurted out with a strange growling undertone, his hands and arms still flailing in wild gestures as if he were being swarmed by flies, "This is harassment, and you must leave or I will call the police." What police he was referring to we were unsure, but clearly Mr. O'Connor was not well, and his expression, something about his eyes, was highly disconcerting.

Fearing that Mr. O'Connor might not survive this episode, whatever it was, we packed up and left the committee's office. As we walked down the narrow hallway to the exit door, the secretary's face seemed horror-stricken. Had she ever seen this side of Mr. O'Connor before?

The Eyes of Truth

Yet on the wall, in the glass pane of a picture frame, there was a reflection of Mr. O'Connor, breathing very heavily, his face red with anger, and his back now so slumped-over that his knuckles nearly dragged along the floor. And yet still there was some uncanny expression in his eyes, but it was too hard to make out in his reflection.

“Mr. O’Connor,” we tried once more, “You cannot possibly deny that there have been droughts over the last ten million years. This drought is not man-made, and we must create a solution.”

“Call the police!” he ordered the secretary, but which police we were still unsure.

“Mr. O’Connor, you are responsible for the effects of your policies! Millions will die. We must create more water, and we know how. You are responsible Mr. O’Connor,”—but as I turned around, wanting to make this point directly to Mr. O’Connor’s face, I now saw what had been there from the very beginning, but only now was clear.

His eyes, which had had a peculiar spin to them, had now, in this fit of rage, finally settled down,—and as I looked him in the eye, hoping to find what remained of Dennis O’Connor the bookish consultant, I could see that he was there no longer.

His eyes, without a shred of possible error on my part, were now no longer black pupils and brown irises, but in this fit of ape-like terror, in this uncontrollable demonic episode,—they had become a perfect image of two slowly-turning Nazi *Hakenkreuze*, literally swastikas,—pure evil glaring back at me in total horror and fear.

Mr. O’Connor shrunk back, as my own face expressed my reaction.

For poor old Mr. O’Connor had exposed to us, in what seemed at first to be one of those run-of-the-mill discussions that are habitually ignored every day in the offices of the State Capitol, what may have been his best-kept secret. And now, in just this one small encounter, he had exposed, as others may in the halls of Sacramento, that he is a member of an elite Nazi brigade.

Call it the Brown Squirts.

It is fair to say that until they are removed, California and the nation will not be safe. However, this drought may be their last, as we, who have sat in fear of these ape-like Nazis for far too long, may now recall the nation to its proper place of scientific and technological development. The likes of Franklin Roosevelt, John Kennedy, and Pat Brown would have done no less.

Perhaps there is no future for Mr. O’Connor, less even for poor Mr. Brown. But, for California, free of these Nazis, we have a remarkable future, as does our nation as a member of a community of nations dedicated to mankind’s long development.

###

LaRouchePAC Webcast

Continued from page 4

ects in the state. His California State Water Project created the means to support 23 million people, to support new agriculture, to support new industry. Much of the growth of California, and the prosperity of California, the people, the families, the farms, the industries, were created by his actions, by his forcing through these water projects, in the tradition of Franklin Roosevelt, John F. Kennedy, of that generation of development. That created a whole potential in California which now exists, because of the actions of Pat Brown and people like him. People like Kennedy, people like Franklin Roosevelt.

These are the actions that created our nation, that created the livelihood of entire families, of entire cities, of entire agricultural regions. And then you have Jerry Brown, who typifies the degeneration which has occurred over the past two generations, the past 50 years. California is facing the death of large sections of the state. And Jerry Brown, the son of the person who created the potential for much of this state to exist, sits there, and says: “Well, get used to it. It’s how it is.”

Discussing the situation in California, he says, “Well, the natural carrying capacity of the state is really more like 300 or 400,000 people—now we have 38 million people.” So, is that his policy? To lower California’s population by 90%? That’s his response?

He’s done nothing to talk about bringing new water to the state. He’s done nothing to talk about actually addressing the crisis. He’s only imposing mandatory cuts, and telling people, “Get used to it. It’s not going to be there. You’re going to suffer and die, and deal with it.”

Although he’s only telling that to the general population. The people who are doing fracking, they’re not getting cuts. They’re not subject to the mandatory restrictions. So, obviously, he’s talking to certain people, when he says “Get used to it.” The people doing the fracking, pumping water in the ground to release gas and oil, he’s not talking to them. They don’t have to “get used to it.” He’ll take care of them, apparently. But when it comes to the families and the farms of the state: “Get used to it. This is how it’s going to be.”

Utter Degeneracy

This typifies the degeneration, the destruction, of our nation. And it’s utter idiocy. It’s not even close to competence. It’s somewhat amazing to see the statements coming out of the Governor of the largest state in



The change in the level of California's Folsom Lake between 2011 and 2014 shows the devastating effects of the drought on California's water supply.

NASA

the nation in terms of economic activity and population. This guy is standing up there, as the Governor, representing the state, California, in the midst of an utter crisis—major drought ravaging the state—and he says, “It’s a new world. We’re living in a new world now.” Did he not know California is a desert? Did he not know the majority of people in California live in a desert? Did he not get the memo? Has he not done his homework on what state he’s governing?

This is not a surprise. This is not a “new world.” This is something that people have been talking about for decades. LaRouche has been talking about this for decades. “You want California to exist? You want the West to

exist? You’ve got to bring in more water.” He’s been saying that since the ’70s and ’80s, and campaigning on it. We’ve been campaigning on it.

So the idea that this is some “new world,” some surprise, that California is getting drier, is beyond ridiculous. This is why NAWAPA was designed in the ’50s and ’60s—the North American Water and Power Alliance—this grand vision to better distribute the unequal distribution of precipitation in the state. You have immense excess precipitation in the North—Alaska, northern Canada, in the Western region—and little precipitation in the Southwest. It was already known in the ’50s and ’60s, even after Roosevelt’s projects, even after the great water projects developing the Colorado River, and beginning to develop the San Joaquin and the Sacramento River, to develop these Western river basins. It was still known that that was not going to be enough water to support California or this whole region. So, they designed NAWAPA, because they knew the survival and the growth of this region depended upon a stable, regular, abundant supply of water [Figure 1].

So, the idea that this is a “new world,” a surprise, something unexpected, is utterly ridiculous. It’s incompetence which is somewhat amazing to hear uttered from a governor, the governor of the largest economic state, the largest populated state in the entire

nation. The incompetence and degeneration coming out of the governorship in California, is criminal at this point. And, LaRouche has said, in no uncertain terms, “This guy’s just got to go.” We can’t tolerate this. You’re talking about people’s lives. You’re talking about the lives of the people in California. You’re talking about the agricultural section of California, which much of the nation depends upon. That’s one of our most productive agricultural regions of the entire country.

So, for this guy to just sit back and say, “Let this state die off,” and then, when pressed, say, “Oh, well, you know, this state only is supposed to have half a million people anyway, so, we’re overpopulated”—this is

FIGURE 1
NAWAPA XXI



LPAC

This schematic of the proposed NAWAPA XXI system shows the main routes of water transfer from the Northwest of the continent down to the arid Southwest. The arrows indicate runoff from the major river systems.

criminal degeneration, and this guy's got to go, he's got to get out of there.

Take a Long View

Quite frankly, what we're learning now, is that the situation is actually even worse than what was recognized at the time when NAWAPA was designed, in the '50s and '60s. What we're learning now, is that the climate in California is actually, historically, significantly drier than we've even experienced in the recent period. By recent studies of the historical records of climate in California, in the West and the Southwest, we're now realizing that the amount of water, the amount of precipitation, the amount of river flow, snowpack, etc., in California, over the past 150 years or so, has actually

been somewhat above average.

If you look at a longer scale, of say, a couple thousand years, maybe 7,000 years, as some studies have looked at, the more recent period has actually been, on average, wetter and more stable. We've known it's a desert region, but we're now learning that it actually fluctuates a lot more, by natural conditions, and it tends to be on the average drier. People have to let this reality sink in. In one sense, it might not even be really accurate to call this a drought. This might be more of an exit from a temporary wet period, back to something that's more normal, relative to the natural conditions, before mankind moves in and improves them.

So, these are the realities we're talking about. With these realities on the table, for someone like Brown to come in and say, "This is just how it's going to be, and get used to it"—this is criminal. And, he takes it further. He then has the gall to come up and say, "This is evidence of man-made climate change." You're saying that a drought in the desert is evidence

of man-made climate change? We're now getting records showing that the past century has been wetter than the average, and you're seeing a reversal of that process, and you're attributing this to man's activity? I mean, this is ridiculous! This is utter insanity!

So, when this guy says, "We're in a new world," I don't know what world he was living in, when he was saying, "We've entered a new world," but it wasn't reality. It wasn't the facts and the reality of the situation that we've known and been talking about on the LaRouchePAC site, that LaRouche has been talking about, that other qualified experts have been talking about. The people that designed NAWAPA, that's what they were talking about. This is not a "new world." This is Jerry Brown's—whatever domain he has been living

in—this is that being rattled, perhaps. Maybe that’s what he’s referring to.

But, this is not a surprise, this is not unexpected, and this is not something that has no solutions. *We can deliver the water for California, for the West*: It’s going to take some work, some serious work. It’s going to take a real mission. As Mr. LaRouche is emphasizing, it’s going to take a new Presidential administration, centered around the necessary competence and capability to address this.

Meeting those requirements, the solutions do exist. We have the potential to begin to address these things, but the first step is getting rid of Brown, getting rid of Obama. Obama, too. Last year, the President of the United States comes to California and says, “Oh, this is evidence of man-made climate change.” And then does nothing to help the state. Even the *New York Times*, which is itself on record as a major supporter of this crazy idea that mankind is causing some catastrophic destruction of the planet by driving our cars, even the *New York Times*, which supports this general thesis, which itself is ridiculous on this point, because there’s been no warming for more than 18 years, even the *New York Times*, which supports this whole “man-made climate change catastrophe” narrative, even *they* had to come out and say, “Well, actually, a lot of the models show that if there was actually warming, California would get wetter, not drier.” And that was their direct response to Obama last year.

So, even in the crazy world of the “climate change catastrophe” community, even they had to come out and call out the President of the United States for making such an incompetent, baseless, statement. So, you’ve got Obama saying that last year. Brown is saying that this year.

Now, the state’s even in a worse condition than it was last year. What is Obama’s response? Now, he’s getting back on the climate change issue, saying it’s going to cause more asthma. California is drying out and dying, and this nut-job is talking about some fantastical global warming, that’s not even happening, hasn’t been happening for over 18 years, and he’s talking about the hypothetical increase of asthma rates. Well, California is dying! Jerry Brown, Obama, *these people have to go*, if California is going to survive, if the West is going to survive, at this point.

So, that’s Step 1: Take out the trash. Get rid of these guys. And, if we have a sane administration, a *human administration*, that’s willing to do what we used to do,



California Department of Water Resources

California Governor Jerry Brown announces mandatory water restrictions at an April 1, 2015 press conference.

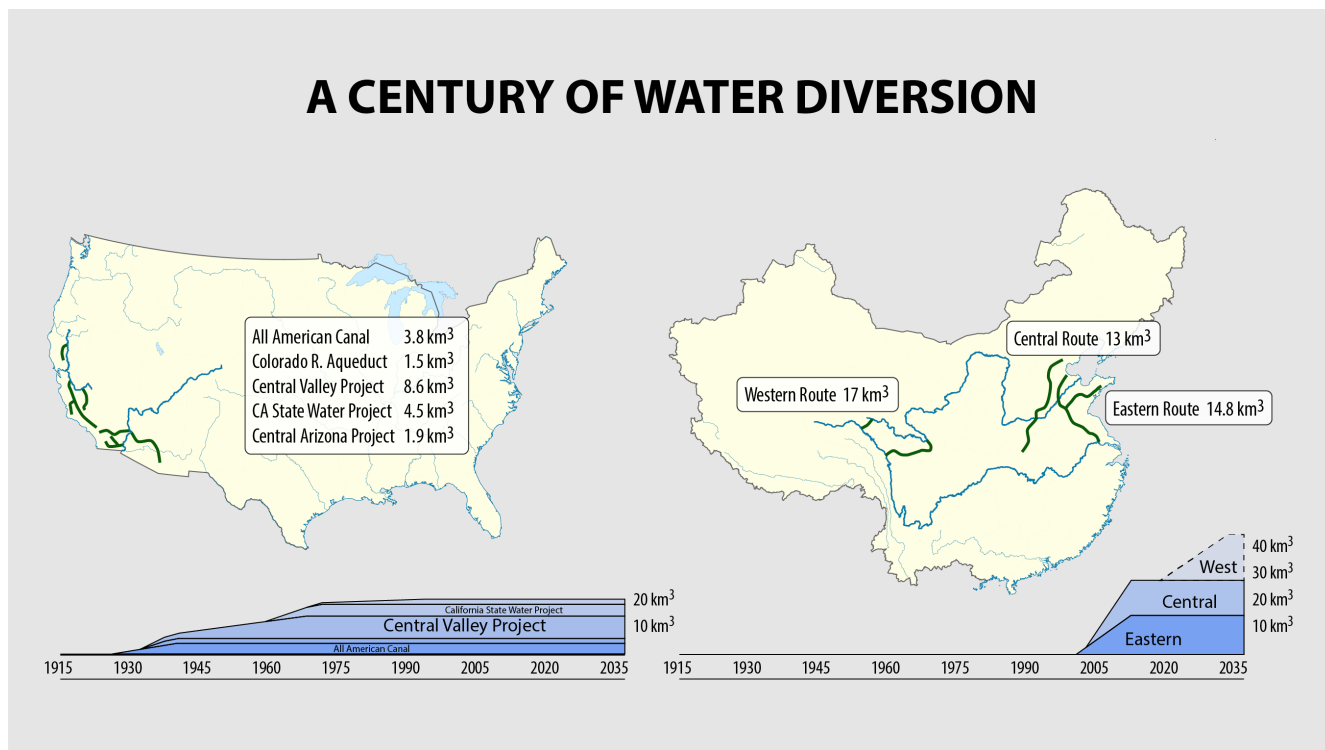
to do what Pat Brown did before the degeneration of his son, to do what John F. Kennedy did and tried to do, to do what Franklin Roosevelt did—to actually create real economic growth, to invest in developing the future; if we have that idea again, what’s being represented by the BRICS, what China is doing right now [Figure 2], what the alliance between China and the other BRICS nations is actually doing right now: creating a new platform for their nations, developing their territory, developing their population, improving their conditions of life.

We’re sitting here—the West is drying out, California is dying. In just a little more than a decade, China has created two of the largest water transfer projects that mankind has ever built. In 10, 15 years, these things have been constructed. They’re actually larger in scale than the accumulation of everything that was done in the Southwest from the time of Franklin Roosevelt to the time of John F. Kennedy, that 30-, 40-year span, the early ’30s up to the late ’60s, in that whole time period when we had a growth orientation. Everything that was built over that period, in terms of water transfer, the development of the Colorado, Sacramento, San Joaquin, and related river systems in the West, everything that was done there has been surpassed in less than half the time by China’s South-to-North Water Diversion Project. They’ve created man-made rivers nearly the size of the Colorado River, bringing water up to the North.

So mankind can do these things. We can pursue these projects, we can solve these water issues. There’s nothing holding us back other than this degeneration, this Brown degeneration. So we have the potential options, we have the conceptions, the framework, which we can begin to utilize to solve the situation in the West and the Southwest.

But it requires that we be human again, that we have

FIGURE 2



LPAC/Benjamin Deniston

A comparison of major water diversion projects in the U.S. and China. In the first 15 years of the 21st Century, China has surpassed what it took the United States three or four decades to achieve in the first half of the 20th Century. China stands to nearly double that over the next decade.

a commitment again to creating a better future for the next generation, for real growth, real development. That cultural decay of that commitment going away has to be reversed. And that can create the potential in which we can pursue the options.

And the options are going to be difficult, they are now going to be major challenges, because of the past two generations of decay. We're in a far worse situation than we should have been in. Because Lyndon LaRouche was not listened to, because NAWAPA was not built, the West is now in a more difficult situation, and is going to require a larger investment, a greater action, a greater leap in terms of our management of water.

And this takes us to the Pacific Ocean as a whole. This is something that we were talking with Mr. LaRouche about earlier today. And we can see this in the graphic [Figure 3]. The solution to the Western water crisis, is a better understanding of the water system of the West as a whole. We have to begin to think about managing the relationship between the Pacific Ocean and North America. We have to think about a new con-

ception of mankind's relationship to this water system as a whole. This means an array of options developing the water potentials being provided by the Pacific to improve the entire territory of the Western regions of the continent, even stretching farther inland.

But this is what mankind does. This is what makes mankind human. You could even map mankind's developments by his historical improvement of his management of water systems. You could take the history of mankind and look at the improvement of larger-scale systems, of river systems, streams, and canals, irrigation systems, moving to larger and larger scales. The history of mankind has always been characterized by our continual improvement of larger and larger water systems, and right now the challenge is to go to a qualitatively higher level.

Tapping into the Water Cycles

So let's look at what we're talking about, when we're talking about water and the West. The water is not just some store of water we're using up somewhere. I mean,

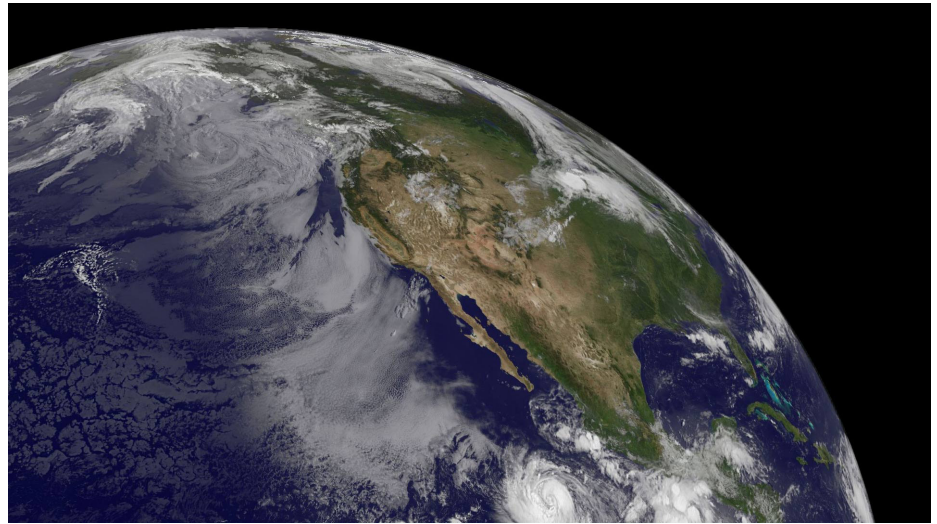
some people literally talk about it like that—it's insane. There's not some finite amount of water somewhere that we're just pulling out and going to use up, and so we need to slow down our use, restrict our use for these insane reasons. The entire world is characterized by a water cycle, a cyclical system of the motion of water between different systems. What mankind can do uniquely, is improve those cycles. We can manage them, we can make them more productive. We can ensure that more productive activity, more growth, is produced by this water system.

And if we're talking about the West, the source is the Pacific Ocean. You have the evaporation of an immense amount of freshwater off the Pacific Ocean. In global terms, the global average is that ten times more water evaporates up off the oceans, than all of the water flowing out of every single river on every single continent on the planet. If you take every single river flowing out into the ocean on every single continent, and add it up, it's less than a tenth of the amount of water constantly flowing up into the atmosphere; freshwater being produced by the evaporative activity of the Sun, the Sun evaporating ocean water, removing the salt and leaving it behind, producing nice freshwater—that's the source of all water we have on land, as far as we currently understand.

Now, the vast majority of that evaporation never even makes it to land; it just falls into the ocean, precipitates into the ocean. On average globally, around 90% of the water evaporated by solar activity from the ocean just falls back into the ocean again without ever making it to land. If we're talking about this region of Western North America, this water vapor, this evaporated water coming up off the ocean, has the characteristic of flowing from the West to the East, supplying the freshwater component of the entire Western region of the continent.

Now it just so happens that that natural cycle is rather inefficient, it's rather unproductive. Under the natural conditions of this Pacific-North American interaction, the vast majority of that water gets deposited in the Northwest. And much of that gets deposited on the coastal line, the coastal region of the Northwest, and

FIGURE 3



NASA

This satellite image shows water vapor rising from Pacific Ocean up into the northwest.

flows back into the ocean rather quickly. Something on the range of ten times more water is deposited into the Northwest versus into the Southwest. So you have this huge discrepancy. And the water that's in the Northwest, much of it flows back out into the ocean rather quickly.

So this was the basis of the NAWAPA design: Why not take a small fraction of that cycle? It's not stealing water that's some finite supply you're taking away. Why not divert a small percentage—5, 10, 15%—of the river runoff, running off into the ocean from this Northwestern region, and divert it down into the Southwest, and put it to work? Water is more productive in the Southwest. The amount of life supported per unit amount of water in the Southwest is much higher. The amount of human economic activity, the amount of photosynthetic activity, the amount of productive activity of the water cycle, is actually significantly higher in the Southwest than the Northwest. It's obviously a lot colder in the Northwest, it's less populated, and other conditions, but also a lot of this water just flows very quickly back into the ocean again. So why not divert some of that water down into the Southwest, increase the productivity of that, increase the time it spends on land, and then let it run back into the ocean again, after it does productive work, after it supports more life, more plant life, more forests, more crops, more human economic activity?

And then let it return to the ocean again; it's a cycle. Manage the cycle, increase the productivity of the North

American water cycle as a whole; that's what NAWAPA was talking about. And if people were really supportive of "Green," they would have gone with this policy: The Colorado River could be flowing into the ocean again, the way it used to. The Rio Grande could be flowing back into the ocean again, the way it used to. Owens Valley in California could become an agricultural region again. We could have developed this whole region.

So that's characteristic of this particular system we're dealing with in the West. And we have had the designs to increase the productivity of that cycle, that system as a whole, with this NAWAPA conception, because you're dealing with these particular characteristics. And this is what mankind can do, to actually increase the value, the usefulness of water in this entire Western region.

But again, this wasn't done, and we need to look to larger solutions, high-order solutions, as part of our approach to the crisis now, because of the situation that's built up, because of the failure to develop NAWAPA, the failure to manage and improve the water cycle the way we should have and could have over the past two generations.

And what is required, which is what we've been working on in the Basement [Science Team] under Mr. LaRouche's direction, is to upgrade our conception of how mankind relates to this water cycle. If you're talking about managing the Colorado River, or NAWAPA, or managing a local river, that's all still kind of the same category of relationship to the water cycle as a whole. You're talking about a two-dimensional, planar interaction with the cycle. You're saying, we're going to look for where the water precipitates, where it falls onto land; and then we're going to utilize that to the best of our ability, move it around, transfer it, make sure it does a lot of work while it's here, before it returns back into the ocean and closes its cycle. You can do that on smaller scales or larger scales; NAWAPA's a larger-scale. That's what California has depended upon, for the better part of this past century, with their water-management projects.

But now, we're learning that these natural climate systems are not actually stable and fixed. We can't necessarily just rely on the precipitation patterns that exist. And apparently this is a surprise to Jerry Brown, Obama, and other people, that the climate apparently changes—I guess they didn't know this; I guess this is news to them. And the only thing they can think of, apparently, is "Oh, it must be mankind," because anything

that changes we have to attribute to mankind, and must be bad somehow.

The Water Is There

So we're limiting our potential by remaining in this two-dimensional relationship to the water cycle, just relying on the surface water, the precipitation patterns that exist. We need to go to higher levels. The cycle is not just the water that falls on land. It comes from the ocean. It fills the atmosphere. There are incredible amounts of water in the ocean. You can picture Jerry Brown standing there, on a California beach, with his back to the ocean, addressing the state, and saying, "We're out of water, there's nothing we can do." Meanwhile, you can't even see the end of the Pacific; it curves around the entire planet.

The water is there, it's how we choose to manage it and develop it. Why not go with large-scale desalination? We have the technology to purify ocean water, turn it into freshwater, and bring it inland. It's being done. It's being attempted to be done in California, on very small scales. It's done on slightly larger scales in other places around the world, but still, on a relatively small scale, overall. There's no reason why we can't—especially with a fusion-driver program increasing the energy-flux density of the economy as a whole, and increasing the power available per capita and per square kilometer of the economic territory as a unity—have much larger-scale desalination.

We can effectively be creating our own water cycles, superseding the role of the Sun. We're not going to just be dependent upon what water gets evaporated by the Sun, and dependent upon where it lands: We're saying, we'll just cut that out; we'll go right to the source, we'll produce it ourselves, and we'll create an entirely new cycle. And we'll support life with it, we'll support growth with it, we'll develop with it. With a nuclear-driver program, with a fusion-driver program, we can do that.

Sixty-five percent of the population in California exists in just three of the major greater metropolitan areas: the Bay Area, the greater San Diego area, and the Los Angeles area. Those are all major coastal regions, that's well over half of the population of the entire state. Why not provide all their water with desalination? That would be a much more significant contribution to increasing water availability than this crazy cut that Jerry Brown is talking about.

So these types of solutions exist. They can be developed: We can create a crash program for mass-scale de-

salination. And again, this is changing how mankind interacts with the water cycle. We're saying that we're not just dependent upon where the rain falls; we'll utilize that where it exists, but we'll supersede the role of the Sun and create our own cycles, create our own freshwater systems, under man's control, man's direction. That's one aspect; that's an immediate aspect that absolutely needs to be pursued to secure the livelihood of California and other Western regions, especially other coastal regions.



San Diego County Water Authority 2014

Reaching to the Galaxy

But we can go further, and this is another thing that we are in the process of studying and pursuing. There's no reason why mankind can't begin to tap the moisture systems in the atmosphere itself. And this is something that's already being done. There are already operations ongoing that have demonstrated multiple times, in different locations, under different conditions, even with different technologies, that by ionization systems we can actually begin to stimulate the condensation of atmospheric moisture, and increase precipitation, increase rainfall; potentially, even create new drafts of moisture from over the ocean, pulling it inland, increasing the amount of evaporated water over the ocean that makes it over land, and precipitates over land.

These are systems that have been demonstrated in Mexico, in Israel; they've been demonstrated in Australia, on the Arabian Peninsula, in Oman and in the United Arab Emirates. These are technologies that were developed in Russia, a couple of decades ago, and have been utilized there. The potential exists that we can actually begin to tap into certain ionization and electrical conditions in the atmosphere, and manage those to actually begin to manage weather patterns to some degree.

How far we can pursue this? We need to figure that out. There should be a crash program on developing these ionization-based weather-modification systems. And we can be increasing the draft of moist air from over the oceans that comes over land. And, again, what are the scales we're talking about? Ten times more—90% of the water that evaporates from the oceans, never even makes it over land. Ten times more water is available, flowing up into the atmosphere than what flows out of every major river: This is a huge resource.

The Carlsbad Desalination Plant, shown under construction in March 2014, on the Pacific coast in southern California, will be the largest in the Western Hemisphere, but is non-nuclear powered and will provide only seven percent of San Diego's water needs.

There's no reason why we shouldn't have a crash program to develop these ionization technologies, and pursue related technologies, which can begin to give us some kind of handle, some kind of control, over these flows of atmospheric moisture, to control when it condenses, when it precipitates, when it comes over land as rainfall or snow, or other forms of precipitation. These are technologies that exist, that should be pursued, rapidly.

And this takes us to an interesting perspective, which is a greater realization of how the water cycle even functions, what the water cycle even is. Because what we're now just beginning to understand, and to get greater insights into, is that these type of ionization conditions and electrical and related effects on the atmosphere, are actually the product of nothing on Earth, nothing even in the Solar System, but the activity of the galaxy. The major source of this ionization effect, which has a relationship to how water behaves in the atmosphere, and affects climate and cloud formation, and affects precipitation and rainfall, the major input into this ionization quality of the atmosphere is galactic activity. There are records of the climate on Earth, varying and changing in correspondence with the changing relationship of our Solar System with the galactic system. Also, changes in solar activity: As the Sun changes and fluctuates, we see corresponding effects in the climate, the precipitation, the weather patterns here on Earth.

So now what are we talking about? This is a completely new perspective. We have to realize that this water cycle, this precipitation, the climate system that

we live in, that we depend upon, is not even an Earth-based system; it's not even a Solar System-based system; it's not even the activity of the Sun, which contributes to defining the characteristics of this global water cycle that we depend upon, and that our future depends upon increasing our management of. We're actually living, in effect, in a cosmic environment, in a galactic environment.

Talk about environmentalists, right? Real environmentalists will recognize that their environment is part of the galactic system: That's your environment! If you're concerned about your environment, start talking about the galaxy. These are the conditions that we live in, these are the effects that control and influence the water cycle, the flows of atmospheric moisture, the development of climate and weather patterns, etc.

Now, this gives us a completely new perspective on what we're dealing with, and we have to understand it from this standpoint. We have to understand the global climate system, the water cycle, the water system, as a product of these cosmic effects. That insight can give us what's needed to begin to pursue even greater control over these atmospheric systems. This is already being done on small scales, with definite success, but not necessarily the size of success we'll need with these ionization systems; it's being done in a number of nations around the world. We've demonstrated we can tap into and modulate the types of effects that are similar to and related to these cosmic effects, but we have to make a breakthrough in understanding this whole process, to see how far we can take this, to allow us to begin to manage the atmospheric moisture systems; and improve them, and utilize them, and bring new water cycles onto land; to ensure that the current precipitation patterns are steady, are regular. When the climate begins to change, as the climate naturally does (to the surprise of Jerry Brown and other fools), we can ensure that mankind has some input to make sure it doesn't actually change, that we get a regular, steady flow of the water where we need it. Where there's not enough in the natural cycle, we can induce more.

These are the levels that we *have* to go to, to solve the current crisis: We have to come to a higher understanding of what the water cycle even is, how the climate system even works. And utilize that understanding to change our relationship to the system, to allow us to improve our ability to manage and control and utilize that system, to ensure that it's more productive, more useful, and that more useful work gets done.

Start with the Pacific North American Coast

This is an array of approaches that we need to pursue as a unified effect. And this is what Mr. LaRouche was saying earlier today in some discussions with him: He said, start with Pacific-North American relationship. That characterizes what you're dealing with. That's the source of water for the West, for much of the entire Western region of the continent. So we have to manage that as a whole system.

You have the natural variation, the natural tendency to have much more of the water precipitate and deposit itself in the Northwest, so we should be thinking about how to bring some of that down into the Southwest, something along the lines of NAWAPA; ensure that the water that does get deposited, gets distributed and utilized and put to good work! This water spent a lot of time in the ocean, sitting there waiting to do something. Only a very tiny, select percent of the water gets the chance to take that trip into the atmosphere, take the skyline travel, and gets to land on land. And only 10% of the water evaporated from the oceans actually makes it on land, so even that's a select amount. So, one out of ten of a tiny percentage.

Then, that poor little water molecule, waiting all this time to go on this ride and get some work done, lands on the Alaskan coast, and then just runs right back into the ocean again! Let's have some concern for this water molecule! Let's ensure that these systems actually do something useful. NAWAPA as a concept is something we need to be pursuing, but from this standpoint: In conjunction with recognizing that it's one aspect, a two-dimensional aspect, of a multidimensional process that we need to understand as a whole, and manage as a whole. The water that's precipitated, we're going to get the most work out of as is possible. We'll make sure it produces the most plant-life, the most photosynthetic activity, the most crops, and supports human economic activity most importantly. We'll ensure that that water cycle, the natural water cycle that exists, does something useful.

But then, go beyond that. In the coastal regions, especially, to start creating our own freshwater inputs: Pursue nuclear power, increase the energy-flux density of the economy, give mankind the depth, the capability to begin creating our own rivers. We're doing it on a *tiny* scale now, but the technology exists. And in the context of a fusion-driver program, we can be doing this on a much larger scale. The planetary system, the biospheric system itself can be much more productive, can get much more done under mankind's management. How we can

manage this Pacific-continental interaction is one aspect. But then, again, we need a crash program to pursue the atmospheric aspect. We have to begin to understand how these cosmic inputs work, and utilize that understanding to provide us with a new capability, a new power to influence them, to direct the moisture where it's needed to keep it from where it's not needed. Under mankind's management, the entire system can be much, much more productive than it currently is.

Those are the boundary conditions defining the absolutely necessary solution to the current water crisis in the West. Again, this is not just an objective problem. We have many of these technologies. We have the means to pursue and to better understand many aspects of them. What we need to start with is eliminating the degeneration, eliminating Jerry Brown: Get him out of there. He doesn't belong in a city council much less the governorship of a large state.

And we need a government that recognizes that this is mankind's activity, this is the only thing that makes us unique, and gives us meaning as a species. We're not defined by any level of technology; mankind is not defined by any particular cultural stage, or economic stage or level of technological development. It's not like this set of tools is what makes us "human." It's always the ability to create new tools, to create new stages, to create new economic platforms.

If we ever reject that, which we have done over the past two generations, which Brown typifies, we condemn ourselves to death, as California has been condemned to death under the current policy being pursued and imposed by Brown.

So we have to be human: We have to pursue the creation of completely new solutions, moving to completely new levels to create a new stage of mankind. It's only when we're doing that, and creating the conditions in which the next generation can go further, it's *only* when we engage in that kind of activity that we can have a healthy economy, that we can pursue our true nature as a unique creative species on this planet.

As we've discussed on these broadcasts, we have the potential to do that globally: That is happening! That's what China is doing. That's what the BRICS nations are doing. China's space program is taking mankind to a completely new perspective in our relationship to the Solar System as a whole. It implicitly takes us to this perspective, of redefining and reconceptualizing the water cycle as a cosmic process, not an Earth-based process. That's where we have to take mankind.

That's the next stage. We're not an Earth-based species; we're not an animal species.

This water crisis is a crisis of our failure to recognize that if we don't reach for the stars, reach for the galaxy, understand these higher processes, and utilize our understanding to improve the conditions on the planet in a way that only mankind can, we will destroy ourselves: And California's being destroyed right now.

This has been two, not generations, but two de-generations, typified by Pat Brown to Jerry Brown. So what we need today, is not just to reverse that, but to leapfrog, to go to this higher level. And that's what Mr. LaRouche has defined with the challenge of needing to create a new Presidency in the United States, which will commit itself to not just solving some practical aspects of the water crisis in California, but will commit itself to developing, pursuing, and implementing a new conception of mankind as a cosmic-based creative force, in conjunction with other nations. We're at the point where it's either we pursue our true destiny in that direction, or we wither and die, as Jerry Brown is demanding, the people—not the frackers—but the people of California do.

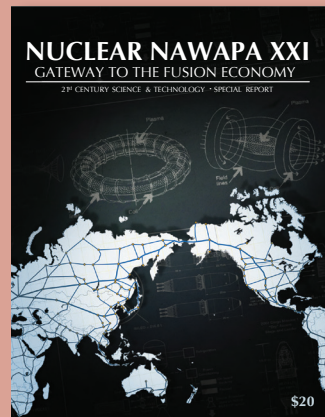
Nuclear NAWAPA XXI Gateway to the Fusion Economy

A 21st Century Science & Technology Special Report

By the
**LaRouchePAC Scientific
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II. Man Reshapes the Water Cycle: A Galactic Perspective

Categories of Interaction With the Water Cycle

by Benjamin Deniston

Preface

The future of water depends upon a new understanding of the global water cycle as driven by solar and galactic processes, and a new commitment for man to improve his management of the system from these higher levels.

The vast majority of current water management exists within one particular category of interaction with the water cycle: the utilization and management of the water that has fallen to the ground, making itself available in the form of lakes, rivers, and groundwater stores. But managing water as it makes its way across the land and back into the ocean is only the end-phase of a larger water cycle.

Surface and ground water come from the precipitation of only a fraction of the larger store of atmospheric water vapor filling the world's skies. On average globally, about 90% of water evaporated from the oceans never makes its way onto land, instead precipitating back into the oceans, and there is, on average, ten times more fresh water flowing from the oceans into the atmosphere than there is flowing from rivers

back into the ocean.¹

The ocean itself is an essentially endless source of water, containing 97% of all the water on Earth, and well over 300,000 times more water than all the world uses in a year.

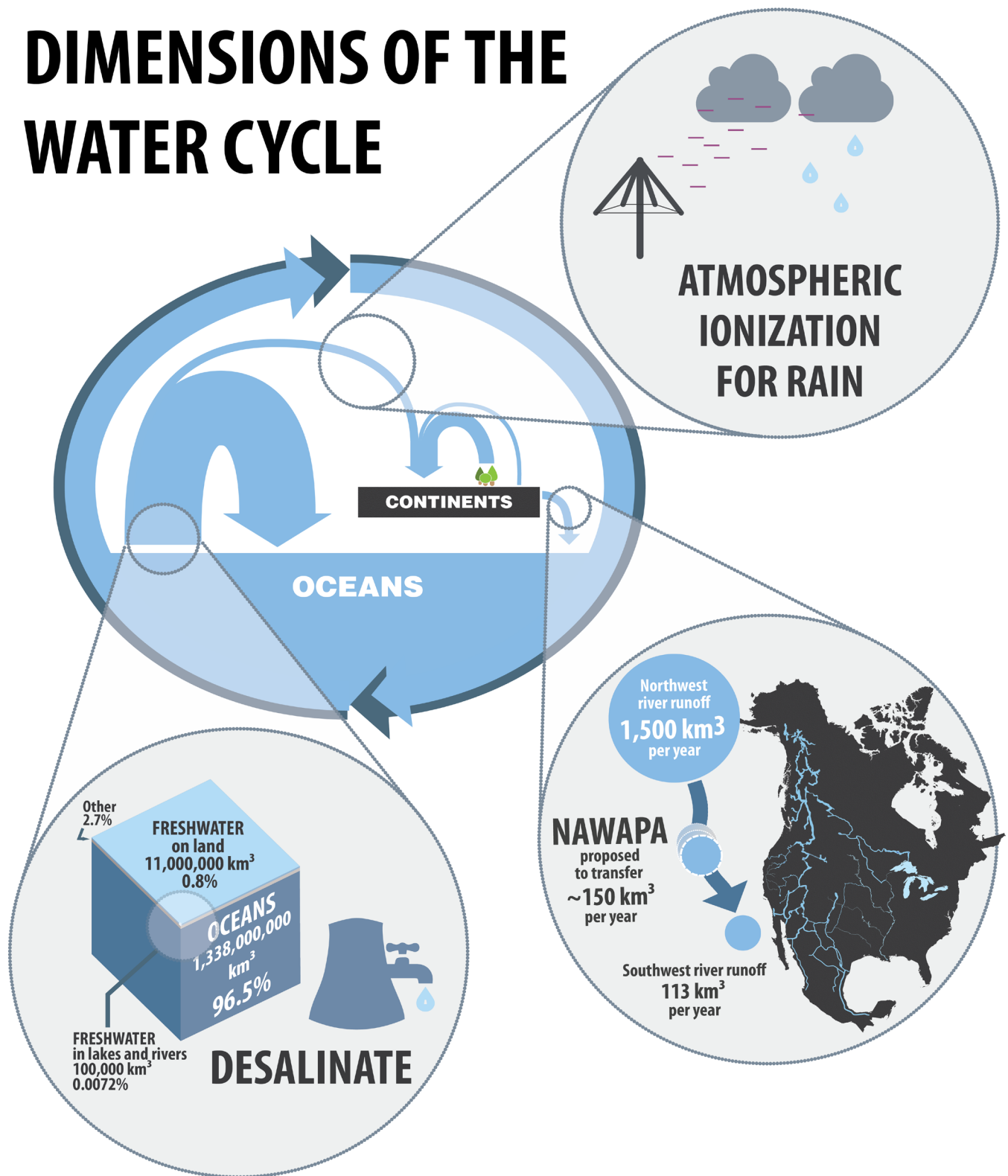
There is nothing preventing mankind from developing, expanding, and augmenting the global water cycle from these higher levels.

For California and the western United States, this means going beyond the management of the snow-pack, rivers, groundwater, and related systems of the region. Providing water for the West now starts with the North Pacific ocean as a whole, managing its relationship with North America.

As the "westerly" winds carry the moisture of the Pa-

1. Estimates of current global water distribution and water flows used throughout this report are taken from the study, "Estimates of the Global Water Budget and Its Annual Cycle Using Observational and Model Data," by Kevin Trenberth et al., from the National Center for Atmospheric Research in Boulder, Colorado; published in the *Journal of Hydrometeorology*, Volume 8, 2007. This does not include the recent discoveries of large aquifers beneath the oceans, and even larger amounts of water in mineral formations deep within the Earth's crust.

DIMENSIONS OF THE WATER CYCLE



cific Ocean from the west to the east, the vast majority of the atmospheric moisture delivered to western North America is unfairly concentrated in the northwest, where much of it returns to the ocean rather rapidly. A first-order approach to addressing the southwestern water crisis, is to extend the geographic length and time of the surface component of this cycle by a grand water transfer project to bring a portion of this available freshwater throughout the southwest, before returning it to the ocean. The design for the North American Water and Power Alliance still stands as the most developed proposal for this aspect of a new era of managing the interaction of the Pacific Ocean and the North American continent.

But this is only the last component of the cycle (managing surface flows). We must also go to the first component, the source of the water for the land: the oceans. Desalination technologies exist, allowing mankind to supersede a dependence upon the natural process of evaporation and precipitation, by generating his own sources of freshwater directly from the oceans. While this is being done in small scales around the world, the higher levels of power per capita and per square kilometer provided by a nuclear economy and a fusion driver program will enable a major leap in the volume of desalination. Along the coast of California we can create small freshwater rivers, flowing from the ocean onto the land, under our direction. This goes beyond simply managing the existing distribution of freshwater deposited by the natural water cycle, expressing a qualitatively different category of interaction, *increasing the total freshwater cycle of the entire continent*, rather than simply managing what is there.

A third point of intervention into the cycle is the connection between these first and last components, the atmospheric moisture flows. This has the advantage of putting the Sun's already accomplished work to greater effect. The Sun expends a vast amount of energy evaporating and desalinating ocean water, creating conditions where incredible volumes of freshwater flow throughout the sky, over huge distances, waiting to find the particular conditions which trigger condensation and precipitation. So-called atmospheric rivers, carrying flows of moisture through the sky comparable to the flow of the Mississippi River, are not uncommon. Unfortunately, on a global average, only 10% of the atmospheric moisture provided from the oceans ever makes it onto land. However, numerous trials have already demonstrated that certain ground-based ionization systems can be used to modulate the atmospheric condi-

tions involved in determining when and where the atmospheric moisture condenses and precipitates. Though it is not clear exactly how much new water such systems can provide for California, this technology *can* increase rainfall in desired regions, and should be immediately deployed along the California coast.

Each of these three approaches—surface water transfer, desalination of ocean water, and atmospheric moisture control—represents a qualitatively different interaction with the water cycle, but they must be developed as interacting and interdependent components of a single program of action for California and the southwest. The survival of the population of this region depends upon the development of a higher-order management of the Pacific Ocean–North American water cycle as a whole, in all its aspects.

In what follows we will elaborate each of these three categories, their potentials and interactions, and applications to the specific crisis facing the United States.

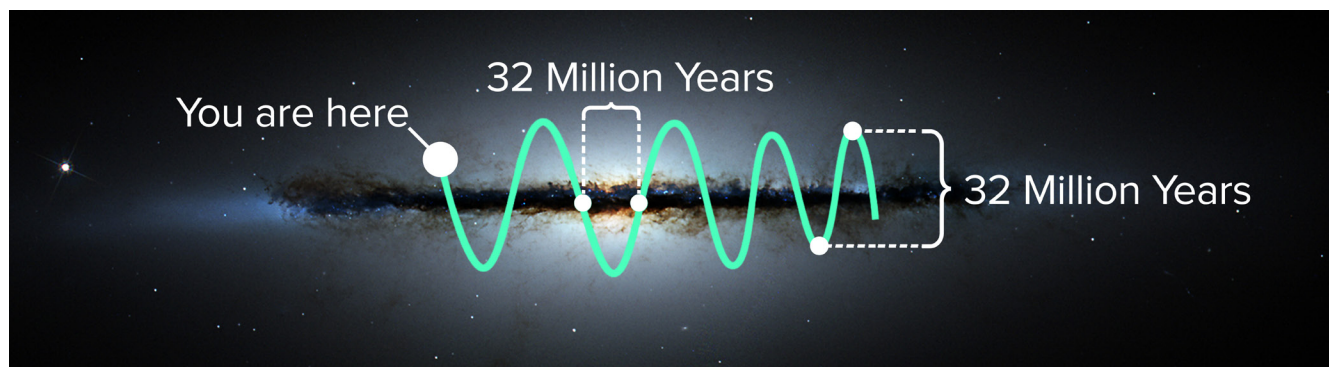
Atmospheric Moisture Control

Based on estimates of the global average, 413,000 cubic kilometers of freshwater is evaporated from the oceans each year. For comparison, the mighty Mississippi River discharges only 530 cubic kilometers into the Gulf of Mexico each year. The sum of all rivers added together only reaches 40,000 cubic kilometers per year—less than a tenth of the total ocean evaporation.

This atmospheric flow is an immense source of freshwater, generously provided by the work of the Sun—although 90% of it never reaches the land. Could mankind possibly tap into this unused portion of the freshwater being constantly produced by the Sun, a resource which is an order of magnitude larger than what is available in all the world's rivers combined?

This has been the subject of much speculation, investigation, and desire. “Rainmaking,” “weather modification,” and “cloud seeding” are terms that immediately come to mind. Could there be greater potentials for addressing the water crisis in this long-desired ability to influence and control the weather?

Here we will focus on one particular technology, the use of ionization systems to stimulate condensation and precipitation of atmospheric water vapor. A few differ-



The 32-million year cycle of the motion of our Solar System above and below the galactic disc.

ent variations of these ionization technologies have already been successfully used to increase rainfall in various nations, under various conditions, for decades. However, before discussing the successful demonstrations, the potential applications for the United States, and the interaction of this approach with others, we must start with a higher understanding of what this approach tells us about our water cycle.

The general method is to use these ground-based ionization systems to modulate the atmospheric conditions involved in determining when and where the atmospheric moisture condenses and precipitates. However, while these systems have shown clear success, we don't fully understand all the aspects of the atmospheric conditions involved in these processes—and the pursuit of a fuller understanding takes us in to a higher, galactic perspective on the nature of the Earth's water cycle.

A Galactic Perspective

As early as 1989, one of Russia's leading scientists in the field of solar-terrestrial physics, M.I. Pudovkin, put forward the hypothesis that galactic cosmic radiation was affecting the Earth's climate and weather.² Over the subsequent years, Pudovkin and his team became a leading group within a growing movement studying this Galaxy-Sun-Earth interaction.³

2. Correlations between solar activity and variations in climate have been long documented, but there is still much debate about how the interaction occurs. Because the Sun (through its magnetic field) modulates the galactic cosmic radiation reaching the Earth, Pudovkin proposed that it is actually the galactic cosmic radiation that is affecting the Earth's climate, and the correlation of climate changes with changes in solar activity is attributed to the Sun's role in modulating the flow of galactic cosmic radiation reaching the Earth.

3. O.M. Raspopov and S.V. Veretenenko, "Solar Activity and Cosmic Rays: Influences on Cloudiness and Processes in the Lower Atmosphere (in Memory and on the 75th Anniversary of M.I. Pudovkin)," *Geomagnetism and Aeronomy*, April 2009, Vol. 49, No. 2 (pp. 137-145).

In the West, a similar thesis began being popularized in the late 1990s, when the Danish physicist Prof. Henrik Svensmark began to champion a new science of "cosmo-climatology." Svensmark and his associates showed correlations between changes in global cloud cover, and variations in galactic cosmic radiation, and proposed that the ionizing effects of cosmic radiation were playing a role in stimulating cloud formation, and thus affecting the climate by modulating the amount of solar radiation reaching the Earth's surface, by creating clouds. He posited that the ions created by galactic cosmic radiation become centers around which water vapor can condense, facilitating the development of clouds.

The role of galactic cosmic radiation in helping to stimulate the condensation of water vapor, carries additional implications for the energy balance of the atmospheric system. Because it takes a relatively large amount of energy to evaporate water, there is a vast store of potential energy in the water vapor of the atmosphere, and this energy gets released as heat when the water condenses back to a liquid state.⁴ Just how much energy is involved here? Nearly a quarter of the Sun's energy reaching the Earth is captured in the process of evaporation, and released back into the atmosphere, as heat, when the vapor condenses. An energy equivalent to 7 million megatons of TNT is stored in the water vapor of the atmosphere at any one time, and the average flow of energy released by the condensation of water vapor in the atmosphere is about 30 million gigawatts (providing a major source of the warmth of the atmosphere)!

In comparison, the total energy of all the galactic cosmic rays intersecting the Earth is extremely small, quantitatively. However, the ionizing quality of that ga-

4. The importance of this latent heat release has been emphasized by Professor Sergey Pulinets. See, "Are Earthquakes Foreseeable? The Current State of Research," *EIR*, August 5, 2011.

Cosmic Rays and Katrina

To better understand the significance of galactic cosmic rays modulating the energetic conditions of the atmospheric system, consider a 2008 study that showed a remarkable relationship between solar activity, galactic cosmic rays, and the infamous hurricane Katrina which devastated New Orleans in 2005.¹

As described in the study, one key component in the intensity of cyclones and hurricanes is the temperature difference between the relatively warm ocean, compared with the colder upper atmosphere. A greater temperature difference leads to a more intense convection process, in which the warmer ocean air rises up to meet the colder air high in the atmosphere above.

In the case of Katrina, while the storm was out over the Atlantic Ocean, the Earth's magnetic field entered a period of intense fluctuation, known as a geomagnetic storm.² Geomagnetic storms can, in

turn, reduce the galactic cosmic rays entering the Earth's atmosphere, because the Earth's magnetic field acts to deflect charged particles like galactic cosmic rays. This lowering of cosmic-ray flux reaching the Earth due to a geomagnetic storm is a well-known phenomenon, called a Forbush decrease.

This geomagnetic effect is important, because the constant inflow of cosmic rays causes an ionization of the Earth's atmosphere, inducing condensation of water vapor and the release of latent heat.

Latent heat release plays a critical role in increasing the temperature of the cold upper atmosphere. A reduction in cosmic-ray flux (and its ionization effect) lowers the rate of condensation and latent heat release—leading to an even cooler upper atmosphere. As Katrina approached the Gulf of Mexico, the reduction of the cosmic-ray flux caused by the geomagnetic storm of August 24-25 led to a 9°C drop in the temperature of the upper atmosphere, *and a consequent increase in the intensity of the hurricane* (because the increased temperature difference between the warmer ocean and the now even colder upper atmosphere resulted in increased convection).

This shows how significant the seemingly weak force of galactic cosmic radiation can be in its interaction with the Sun-Earth system.

1 V.G. Bondur, S.A. Pulinet, and G.A. Kim, "The Role of Galactic Cosmic Rays in Tropical Cyclogenesis: Evidence of Hurricane Katrina," *Doklady Earth Sciences*, 2008, Vol. 422, No. 2, pp. 244-249.

2 Geomagnetic storms are generated by strong outbursts of solar activity which bombard and rattle the Earth's magnetic field, causing fluctuations in the intensity.

lactic input can act as a factor modulating these much more significant energy flows, by stimulating cloud formation and latent heat release. For an illustration of the type of effect, variations in galactic cosmic radiation can have on even the most powerful atmospheric systems, see the study by Professor Sergey Pulinet showing how a variation in the galactic cosmic radiation flux led to a significant strengthening of hurricane Katrina in 2005 (see box).

This provides a completely new perspective on the nature of the Earth's global water cycle. The atmospheric component of the water cycle, and the associated climate and weather experienced on Earth, expresses an effect from the galactic system as a whole—taking the water cycle beyond the Earth, or even the Solar System.

Other lines of evidence have already been pointing in this direction.

Studies of the very long-term records of the Earth's

climate have indicated cycles of large-scale climate variations on the scale of tens of millions of years. On the order of about 140 million years, the Earth has cycled in and out of major periods of global glaciation, in a cycle which corresponds to the motion of our Solar System into and out of the spiral arms of our galaxy.⁵ In a slightly shorter period, records indicate a 32 million year cycle of climate cooling and warming as well, a variation which corresponds to the oscillations of our Solar System above and below the plane of our galactic disc.⁶

The galactic cosmic radiation conditions vary in these different regions of the galaxy (above or below the disk, in the disk, in a spiral arm, etc.), and in both of

5. "The spiral structure of the Milky Way, cosmic rays, and ice age epochs on Earth," by Nir J. Shaviv, *New Astronomy*, Volume 8, Issue 1, January 2003, Pages 39-77.

6. "Is the Solar System's Galactic Motion Imprinted in the Phanerozoic Climate?" Nir J. Shaviv, Andreas Prokoph, and Ján Veizer, *Nature Scientific Reports*, August 2014, #6150.

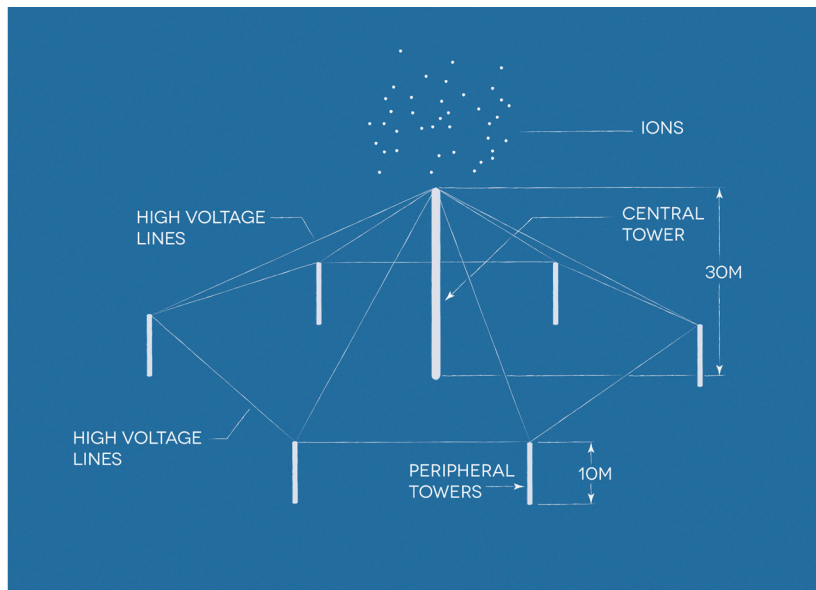


Illustration of the structure of an ELAT tower.

these long-term cycles, we see indications that the Earth's climate (and necessarily the global water cycle), changes in response to the experience of these different galactic environments.

This brings us back to the opening question: how to better understand and utilize the atmospheric conditions involved in determining when and where the atmospheric moisture condenses and precipitates. We see that this takes us to nothing less than the relationship between the Solar System and our Milky Way Galaxy.

The frontiers of water cycle management include tapping into and modulating the conditions related to and associated with this galactic factor in the water cycle (and climate)—that is, developing a galactic perspective on the water cycle, and utilizing that understanding to produce our own control over the system.

As mentioned above, tapping into this aspect of the global water cycle has certain unique advantages. First, it is a large resource. The water flow (from the oceans to the atmosphere) is an order of magnitude larger than the flow through all the world's rivers. Second, the Sun has already put in the bulk energy requirement for desalination. Third, tuned processes of ionization (using relatively low power levels) can trigger large effects, enabling a relatively small input to be able to access these vast stores of atmospheric water.

Here we will review some of the places where these types of effects have already been successfully utilized by ground-based ionization technologies to increase precipitation in desired locations.

According to the information available to this author, one variation of this technology was developed and utilized in Russia in the 1980s, then brought into use in Mexico in the 1990s, and successfully used in Israel more recently. Another variation of this technology was tested and demonstrated in Switzerland in 2005, brought online for use in the United Arab Emirates the following year, then used for a series of successful trial demonstrations in Australia from 2007 to 2010, and is now being used for a new series of trials in Oman which started in 2013 and are scheduled to run to 2018.

ELAT—From Russia to Mexico and Israel

In 1984 experimental work on weather modification using electrical ionization systems began at the Laboratory of Meteorological Protection of Moscow at Moscow City Hall. The first active station—referred to as using ELAT (Electrification of the Atmosphere) technology—was constructed in 1986, and used to experiment on improving the weather conditions in Moscow. In the 1990s a Russian scientist involved in this earlier work, Dr. Lev Pokhmelnikh, began to publicly offer his services for weather modification, based on his experience with technologies developed in Russia.⁷ This created enough of a buzz for the *UK Independent* and *Wall Street Journal* to cover the story in 1992.⁸

Around this time, the then-director of the National University of Mexico's Space Research and Development Program, Dr. Gianfranco Bissiachi, began collaboration with Dr. Pokhmelnikh. In 1996, supported by Heberto Castillo, then-president of Mexico's Senate Committee on Science and Technology, Pokhmelnikh and Bissiachi oversaw the development of an initial net-

7. According to an article by Professor Pulinets, "Pokhmelnikh's former colleagues in Russia did not forget what he had taught them, and over a number of years the technology was applied in the Krasnodar region, resulting in increased harvests." See, "Weather control? Yes, it is really possible..." by Sergey Pulinets, in *Russia Beyond the Headlines*, March 25, 2009 - http://rbth.com/articles/2009/03/25/250309_weather.html

8. "Rain, Rain, Go Away, Go Soak Someone Less Willing to Pay: Moscow Firm Offers 'Weather Made to Order'; Our Man Requests Three Days," by Adi Ignatius, *Wall Street Journal*, October 2, 1992. "Out of Russia: For a Price, Even Weather is up for Sale," by Andrew Higgins, *UK Independent*, October 9, 1992.

work of three ionization stations based upon Pokhmelnikh's designs. Reuters covered these developments in 1996.⁹

The ELAT stations (operating at only one to two kilowatts) looked somewhat like a wire frame of a large tent, with high voltage wires connecting a small array of poles. With the correct electrical current and voltage, these wires will ionize the surrounding air, creating streams of ions which help the processes of water vapor condensation and precipitation.

The success of the initial tests generated enough interest and support, that the system was expanded from three stations in 1999, to 21 by 2004. In 2003, *Mass High Tech* ran an article discussing the potential use of ionization systems in the United States, based upon the precedent set in Mexico. It describes the success of the first Mexican ELAT ionization station as follows:

That country's first ELAT station, in the drought-stricken state of Sonora, increased average rainfall from 10.6 inches to 51 inches in the first year, according to Mexican department of agriculture statistics. When a lack of state funds shut down the station the following year, area rainfall measured 11 inches. In the third year, with the station operational again, the area recorded 47 inches of rainfall. [In 2003 the technology was operational] in eight states in the driest regions of Mexico, and some areas [reported] a doubling or tripling of annual rainfall.¹⁰

In 2004, *IEEE Spectrum* also covered these Mexico operations, citing a doubling of the average historical precipitation in Mexico's central basin, resulting in a 61% increase in bean production in the affected areas.¹¹

9. "Russian Scientist—Mexico's New Rain God?" Reuters, June 24, 1996.

10. Jay Rizoli, "Looking for a Change in the Weather?" *Mass High Tech: The Journal of New England Technology*, March 10, 2003.

11. "Electric Rainmaking Technology Gets Mexico's Blessing, But for now, doubters prevail north of the border," by Samuel K Moore, *IEEE*

ELAT STATIONS & PRECIPITATION IN DURANGO

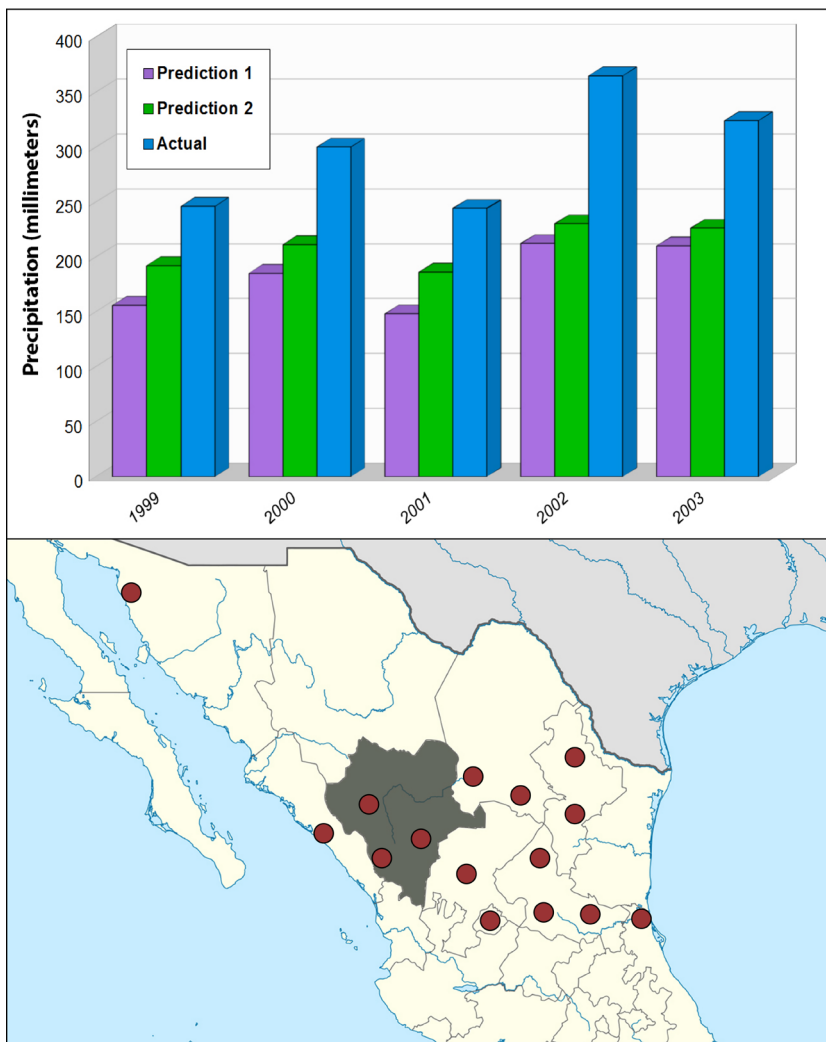


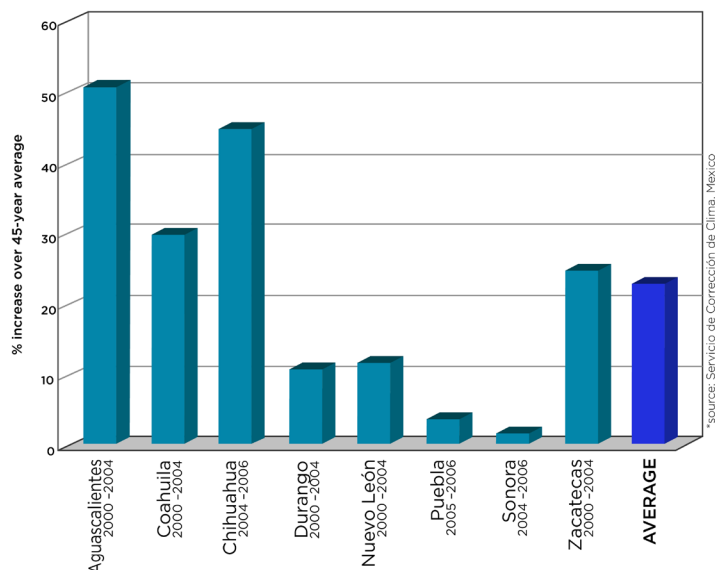
Chart (top) showing the actual rainfall (blue) with that predicted without ELAT, in the state of Durango (shaded, below).

A 2008 paper on the potential use of these ionization systems in Texas analyzed the rainfall levels in the Mexican state of Durango, which benefited from these systems. Each year from 1999 to 2003 showed a significant increase in rainfall over the expected levels. The authors of the paper calculated that there was less than a 1 in 400 billion chance that this could have happened by coincidence.

Following the successful demonstrations up to 2004, a meeting was held to discuss the technology with representatives of seven Federal agencies and of

Spectrum, April 1, 2004. <http://spectrum.ieee.org/energy/environment/electric-rainmaking-technology-gets-mexicos-blessing>

INCREASE IN PRECIPITATION IN STATES WITH IONIZATION SYSTEMS



The effectiveness of ionization systems can be seen in these graphs of reservoir levels and rainfall measures.

the nine states in central and northern Mexico which were using or planning on using the technology. This resulted in further support, including from the Mexican Council on Science and Technology, to fund the continued expansion of the network to 36 stations by 2006. These systems were so effective that they were used to fill specific reservoirs and to even put out fires over large areas of the Yucatán Peninsula.

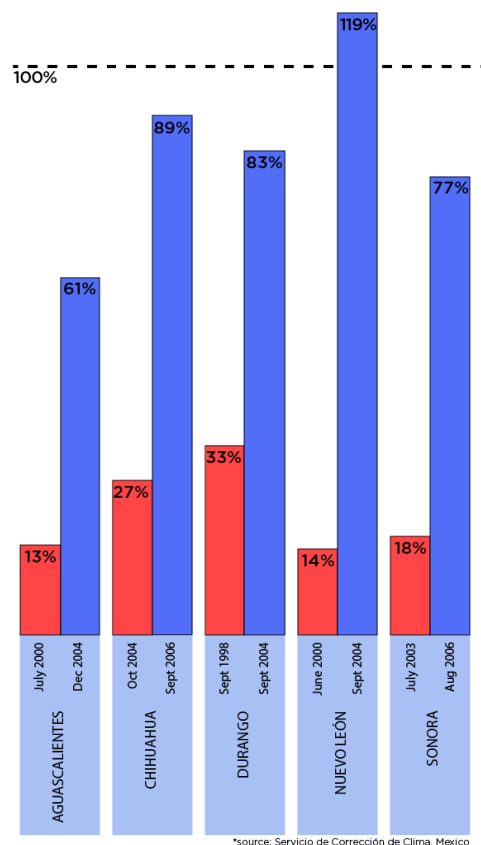
Before passing away in 2006, Dr. Bisiacchi expressed an optimistic vision for what mankind could do with such systems, “One of my dreams is some time to be able to go to Africa and stop the advance of the Sahara desert.”

Unfortunately, after more than eight years of successful commercial operations (preceded by four years of successful tests), in 2008 the ELAT systems lost support in Mexico, with particular opposition from Mexico’s National Water Commission (which, at the time, was operating under the direction of José Luis Luege Tamargo, a direct agent of the British Monarchy’s leading anti-growth, population reduction outfit, the World-wide Fund for Nature¹²).

Dr. Pokhmelnikh then brought the ELAT technology to the Middle East, where he led the installation of

12. For more on Tamargo, see “Luege Tamargo: WWF’s Hitman Against Mexico,” by Gretchen Small, *EIR*, May 30, 2008.

INCREASE IN STORAGE UTILIZATION OF RESERVOIRS USING IONIZATION SYSTEMS



three stations in the Golan Heights area in 2011. Operating these stations during the winter periods of November 2011 to March 2012, and from November 2012 to January 2013, they were able to increase the rainfall in the catchment areas of seven reservoirs in the region.

By the conclusion of their work, all seven reservoirs were filled to their full capacity, something which had not occurred in the forty years since their initial construction.¹³

Meteo Systems—From Switzerland to the UAE

Another variation of the technology was developed by a group in Switzerland, Meteo Systems, which began carrying out initial trials in Switzerland in 2005, and then in the United Arab Emirates in 2006.

In early 2011, a barrage of media reports covered

13. “Inducción Experimental De Lluvias Por Ionización Atmosférica En Las Alturas Del Golán, Israel, En El Período Invernal 2012-2013,” by Mario Domínguez and Lev Pokhmelnikh, May 2013.

successful results of the systems in the UAE, starting when the *London Sunday Times* broke the story.¹⁴ The initial coverage pointed to 52 unanticipated rain showers, and cited interest from numerous scientists. However, the level of publicity apparently generated opposition and backlash, with subsequent media coverage filled with “skeptical” reports insisting such systems could never work.¹⁵

National Geographic consulted Peter Wilderer of the Technical University of Munich, who provided some deeper background to the issue, saying, “ionization technology was first mentioned in 1890 by [Nikola] Tesla. In 1946 General Electric executed some field trials under the leadership of [Bernard] Vonnegut. Later the technology was used for military purposes in the former Soviet Union.” Wilderer cited evidence he had seen from radar images, suggesting that ionization can generate some effects, but he couldn’t personally attest to the work of Meteo Systems.¹⁶

After the publicity died down, in 2012 Meteo Systems redesigned and expanded its website, providing greater explanations of their work, locations of their trials, images of the systems, and assessments of what conditions are required for the systems to work.¹⁷

Atlant—From Australia to Oman

A spin-off of Meteo Systems, Australian Rain Technologies (ART), began operation in 2007, with an initial pilot trial supported by some funding from the Australian Government’s National Water Commission. Using their Atlant technology (a variation of these ionization systems), they averaged 10% or more enhancement in rainfall in the affected areas, and the program expanded to new trials from 2008 to 2010.

In the same location as the pilot trial (Paradise Dam, Bundaberg), from January to May, 2008 ART’s systems produced a 17.6% increase above anticipated rainfall in a 30° downwind arc from the system.

Later that same year, they started a series of three trials at a new location, Mt. Lofty Ranges, Adelaide. From August to November, 2008 they were able to pro-

duce an increased rainfall of 15.8% above the anticipated levels over a 120° arc downwind from the system. A year later, from August to December, 2009, they were able to expand this success, generating an increase of 9.4% over an area roughly twice the size of the previous trials. The following year, from August to December, 2010, they were able to again replicate their results, with a 11.5% increase in rainfall.

Extensive documentation on each of these trials is available on their website.¹⁸

Following their success in Australia, the company has more recently found partners in Oman, and in 2013 initiated a new five-year trial there. This trial program includes an independent evaluation of the results by the National Institute for Applied Statistics Research Australia (NIASRA) at the University of Wollongong, and started with two stations, with the plan of adding an additional two stations each year until the completion in 2018.

In the first year of the Oman trial, they ran their two stations for 170 days (May to October, 2013), and reported an 18% boost in rainfall for the area, resulting in greater runoff and reservoir fill-rates. For the second year, as planned, they added two more stations, and reported a 18.5% increase in rainfall from their expanded array of four stations (operating for 140 days, June to October, 2014).

Extensive reports on the success of the first two years of the trial are already available on Australian Rain Technologies’ website, and they are in the process of proceeding with the addition of two more stations this year, in preparation for the third year of the trial.

The volume of rainfall increase attributed to these stations in 2013 and 2014 was estimated to be about 15 billion gallons each year.¹⁹ This estimate allows us to make an interesting comparison. Because each station only takes about 500 watts to operate, we can determine that the amount of energy required to increase the freshwater input for Oman was about 250 to 500 joules per cubic meter of added water (or 50 to 100 million gallons per day, per kilowatt), measured over the time span of operation.

For comparison, a new, state of the art desalination

14. Rod Chayto and Jonathan Leake, “Looks Like Rain: Science Creates Downpours,” *London Sunday Times*, Jan. 2, 2011.

15. For example, see Jonathan Gornall, “Rumors and Rainmaking in Al-Ain,” *The National of UAE*, Feb. 3, 2011.

16. Brian Handwerk, “Scientists Make Dozens of Storms in the Abu Dhabi Desert? Claims of Manmade Rain Clouds Spark Skepticism,” *National Geographic*, January 18, 2011.

17. <http://www.meteo-systems.com/>

18. <http://australianrain.com.au/resources/>

19. “Two Cloud Ionisation Stations To Come Up In Sohar, Dima Wa Al Taien To Boost Rainfall,” by Swapna Tarafdar, April 1, 2015, Muscat-Daily.com <http://www.muscatdaily.com/Archive/Oman/Two-cloud-ionisation-stations-to-come-up-in-Sohar-Dima-Wa-al-Taien-to-boost-rainfall-3y3m>

plant being constructed in the San Diego area of California will have a capacity of 50 million gallons per day (a production rate comparable to the rainfall increase in Oman), but will require 38,000 times more power to operate, 38 megawatts (producing freshwater at 10.8 million joules per cubic meter).

This brings us back to the interesting characteristics of the atmospheric component of the water cycle. The Sun has already provided the bulk energy input to evaporate (and desalinate) the ocean water, placing it into the atmosphere, but a properly-tuned weak force (galactic cosmic radiation or ground-based ionization systems) can play a major role in tapping into this large potential.

Proposal for California

Based on discussions with the individuals involved in these operations, and this author's understanding of the published results, it appears that the ionization stations employed in the UAE, Australia, and Oman are designed to operate on a slightly smaller scale than the ELAT technology that has been used in Russia, Mexico, and Israel. Also, it appears that the leaders of Australian Rain Technologies are being very conservative with their assessments and claims for the potential of ionization technologies.

While it is clear that these systems can increase rainfall under certain conditions and at certain times, it is not yet clear to what scale they can be developed and what conditions can be overcome.

A crash effort should be made to develop an array of these ionization systems along the California coast, with different sets of stations employing the different variations of the technology (ELAT, Atlant, etc.), and employing different power levels and settings, to accelerate our understanding of the potential of these systems, while at the same time providing immediate relief to California based on their already well-demonstrated capabilities.

The immediate goal will be to determine how to best utilize an array of such stations—to create the pressure gradients needed to draw inland new atmospheric moisture (from over the Pacific Ocean). This was a basic facet of the ELAT operations in Mexico, and is a key design feature of the proposals to utilize these technologies in California and other locations. This would ensure that these systems can expand the volume of the water cycle, by bringing in new sources of water.

A critical part of the testing of these systems will be to develop new insights into how the atmospheric component of our water cycle functions, insights which will

be directly connected to our understanding of the relationship between our Solar System and our Galaxy, as expressed in the processes of water and climate.

This galactic perspective on the atmospheric component of the global water cycle provides a revolutionary basis to better develop all aspects of the water cycle. In the case of California, we are dealing with the development of the interaction between the Pacific Ocean and North America. Beginning to control the atmospheric component of this process, can enable greater stability for the existing reservoirs, rivers, lakes, and groundwater stores involved in the surface water management and transfer systems of the region. We can work to ensure that the expected atmospheric moisture-flows and precipitation patterns continue as desired, and, where needed, bring in new flows, providing water to the catchment basins which provide water to the rivers and reservoirs already being depended upon.

This might even increase the feasibility and reliability of large-scale water transfer systems, but before addressing this aspect, we will discuss the potential development of the opening stage of the cycle, the desalination of ocean water to ensure regular and steady clean water for coastal urban populations.

Desalination: Outdoing the Sun

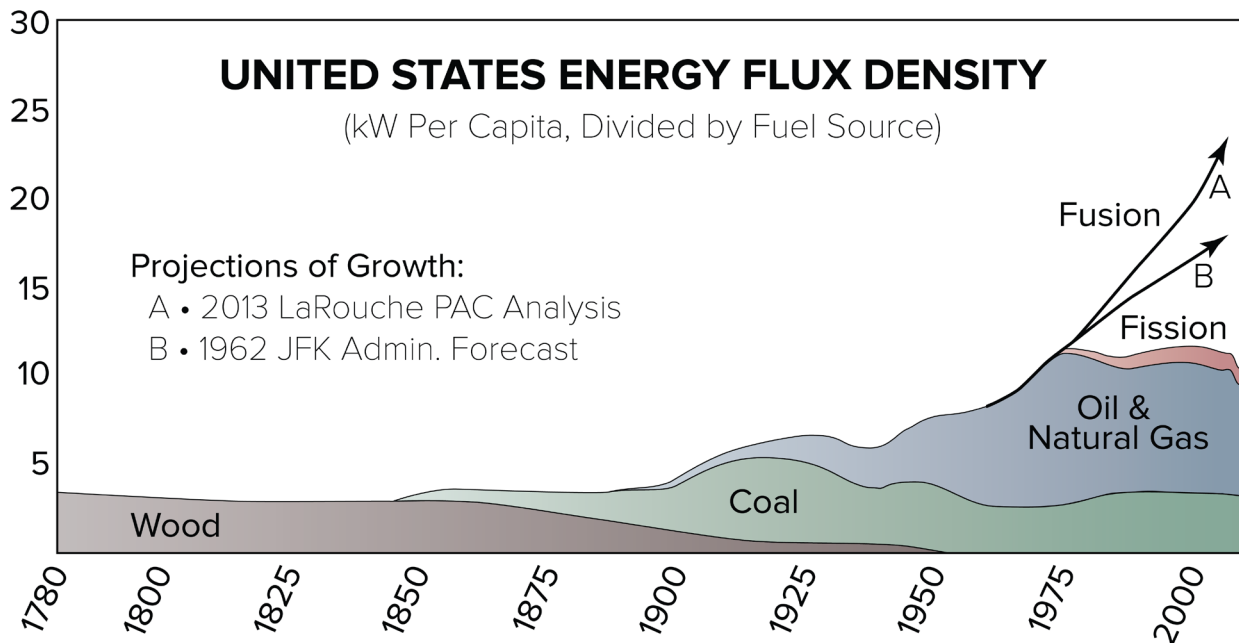
by Liona Fan-Chiang and Jason Ross

Returning to our basic understanding of the water cycle, the ocean water evaporated by the Sun is presently the source of nearly all water on land. But we don't have to be dependent on this; we can out-do the sun, and create our own fresh water from the seas, setting up new water cycles. While the sun has done a good job for the past millions of years at making life on land possible by providing it with water, it is incredibly inefficient when compared to human abilities to create fresh water from the oceans, and to better distribute that water. The "natural" (solar-powered and weather-dependent) cycle based upon evaporation and precipitation is inconsistent and less productive, than it could be. Instead of relying on the sun, we can directly do what it does: separate water from salt, and bring that fresh water where it is needed to support life.

Our desalination of ocean water is around a thou-

UNITED STATES ENERGY FLUX DENSITY

(kW Per Capita, Divided by Fuel Source)



This graphic shows per-capita power over the history of the United States, and reveals two important changes: an increase in the power per capita (until the onset of the zero-growth paradigm of the late 1960s and early 1970s), and transitions to higher sources of power. Not only did the U.S. have more power available in 1960 than in 1860, that power was of a higher quality: it could be used to make electricity, and it could be furnished by nuclear, rather than chemical changes.¹ Curves A and B on the figure show the anticipated power availability today had the post-Kennedy downshift not occurred, with fission power being fully developed and fusion power being realized. In such an economy, large-scale desalination would already be a reality, and the global water systems would be much improved under the guidance of man.

¹ See "[Forging Fusion: Physical, Chemical, Nuclear, Fusion!](#)" in EIR, Feb 6, 2015.

sand times more efficient than "natural" solar-powered desalination. There are 60 million gigawatts of solar power incident on the planet's oceans, from which 413,000 cubic kilometers are evaporated, salt-free, every year. This comes out to 1,300 kWh (kilowatt-hours) of incident sunlight per cubic meter of evaporated water. Given that most of this water (90%) falls back into the oceans, rather than on land, the effective power rate for solar-desalinated ocean water precipitating on land, is 13,000 kWh per cubic meter. This is incredibly energy-intensive compared with the absolute theoretical minimum energy required: only 0.75 kWh per cubic meter. Currently mankind's most energy-efficient method of desalination, reverse osmosis, can operate at efficiencies of 3 kWh per cubic meter, or even better—over a thousand times more efficiently than the Sun.

While these efficiencies have enabled the wide-

spread use of desalination on smaller scales, we are on the verge of being able to make a huge leap.

Current global desalination capacity is just under 30 cubic kilometers per year (equivalent to about one and a half times the flow of the Colorado River). This is a little less than 1% of the current global water use, and a little less than a tenth of a percent of the natural freshwater flow into and out of all the world's continental systems.

Since energy is still the largest determinant of cost for desalination, the widespread development of nuclear fission power and, even more importantly, a crash program for the development of fusion power can enable desalination on massive scales. By increasing the energy flux density of the economy, measured as power per capita and per square kilometer, the oceans can become an easily accessible resource for developing fresh water.

Types of Desalination

There are essentially three main techniques for removing salt from water: distillation, electrodialysis, and reverse osmosis. Distillation involves using a change in state to separate water from the salt and other materials it contains. When water turns into vapor, by heating or reducing the surrounding pressure, salt does not evaporate with the water. The water vapor can then be condensed—“distilled”—back into pure liquid water. Electrodialysis removes salt from water by setting up an electric potential across the motion of the water to be treated. The different charges attract the salt ions and pull them out of the water. Current research is studying ways of using the technique to remove other substances, such as bacteria. Reverse osmosis uses a semi-permeable membrane through which water can pass, but salt and other substances cannot. By pumping water at pressure against the membrane, pure water moves through it. Since water usually moves across such a membrane in the direction from purer water towards saltier water, it takes energy to push it in the opposite direction, putting the “reverse” in reverse osmosis.

The different techniques each have their own particular advantages and disadvantages, in such factors as electricity and heat use, maintenance needs, construction costs, and quality of power required. For example, a power plant specifically made for desalination could generate electricity to power reverse osmosis, and use the waste heat from the process of generating electricity for distillation, increasing the overall water production.

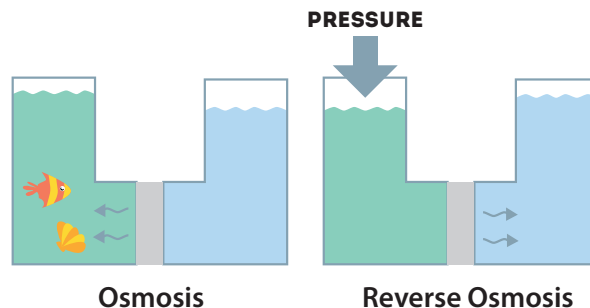
The world’s largest desalination facility, the Al-Jubail plant in Saudi Arabia, produces one million cubic meters of clean water per day (0.37 cubic kilometers per year) by multi-stage flash distillation. While this technique provides half of the world’s desalinated water at present, it is much more energy-intensive than reverse osmosis. Developments in membrane technology are moving the world towards reverse osmosis as the

Water Comparisons

- Gallons: the average use per Californian is 100 gallons per day.
- Cubic meter: 264 gallons—a typical California family of four uses 1.5 cubic meters per day.
- Cubic kilometer per year (cubic kilometers per year)—The discharge of the Colorado River is 20 cubic kilometers per year.

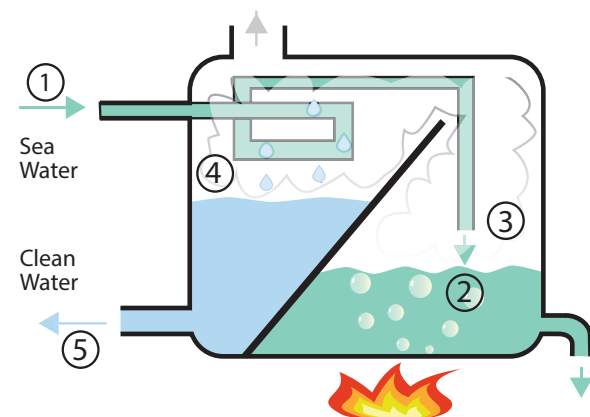
DESALINATION METHODS

Reverse Osmosis



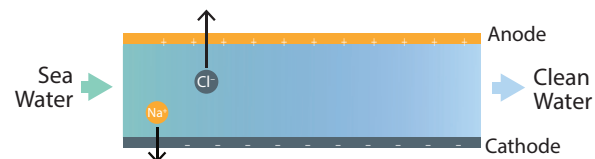
If salt water and fresh water are separated by a semipermeable membrane, osmosis occurs, whereby water flows from the fresh water reservoir to the salt water one. The process of reverse osmosis applies pressure to reverse that process, creating fresh water.

Distillation

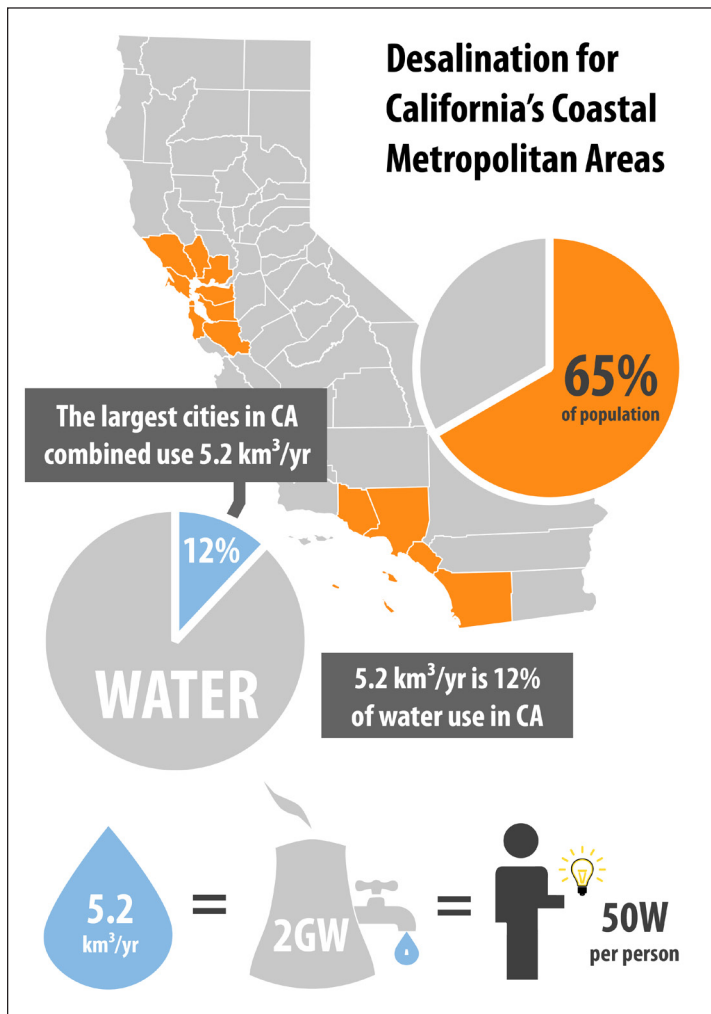


1. Seawater enters cold, 2. gets heated, and 3. turns into steam. The steam then 4. condenses on the cold pipes bringing in water, falls, and 5. is collected.

Electrodialysis



In electrodialysis, an electric potential is applied perpendicular to the water flow. As salty water flows across, the Cl^- ions are attracted to the positive electrode, while Na^+ is attracted to the negative one. They exit through a permeable membrane, leaving pure water behind.



the size of Saudi Arabia's Al-Jubail plant, two dozen plants like Israel's Sorek plant, or about eighty plants the size of the Carlsbad plant. Assuming a typical reverse osmosis energy use of 3 kWh per cubic meter, the power requirement would be on the order of two gigawatts to supply the entirety of the water needs of California's largest coastal cities.

The volume of this desalinated water would be comparable in scale to the major water transfer projects of the 1930s to the 1960s. In 1939 California opened the Colorado River Aqueduct, transferring 1.5 cubic kilometers per year from the Colorado River to Southern California. The California State Water Project and the Central Valley Project transfer 3 cubic kilometers and 8 cubic kilometers per year from the North to the South (when operating at capacity).

With desalination, two gigawatts of power can transfer another 5 cubic kilometers per year, from the Pacific Ocean directly onto land (leaving the salt behind). This wouldn't be simply transferring existing surface supplies, but accessing a new dimension of the water system by creating a new cycle, increasing the water available in the state. This would free up more water inland, as these coastal regions would no longer need to pull from the existing inland water transfer systems, leaving that water for agriculture and other inland needs.

Returning to the energy requirements, for the state of California this would be about 50 watts per capita to power a desalination project of this scale. This is only a small slice of the increased power per capita made available by a full scale development of a nuclear economy, and practically nothing in the energy flux density levels enabled by an advanced fusion economy.

Additional expansion of desalination could make more water available to pump further inland, providing for inland urban centers and industries, or even advance agriculture. Under a fusion driver program California could create new water cycles, emulating the effect of evaporation and precipitation with desalination and transfer systems, increasing the scale of the hydrological interaction between the Pacific Ocean and North America.

This can become a solid and reliable cycle, completely under the control of man, providing a guaranteed baseline, while weather modification can work to manage atmospheric moisture systems, and expanded water transfer can ensure the best use of what does get precipitated over land.

most efficient method for desalinating large volumes of water. The largest reverse-osmosis desalination facility, the Sorek plant in Israel, produces 627,000 cubic meters per day (0.23 cubic kilometers per year). Compare these with what will be the largest desalination plant in the United States (and in the western hemisphere), the Carlsbad desalination facility in California, which will have a potential output of 190,000 cubic meters per day (0.07 cubic kilometers per year).

While these and other desalination plants have demonstrated the viability of desalination technologies, it is time to expand the capacity to a new scale.

Case Study: California

California's coastal cities use 5.2 cubic kilometers of water per year, which is 65-70% of total urban water use in the state, or about 12% of the state's total water use. To produce the entirety of this coastal urban water by desalinating ocean water, would require only a dozen plants

Surface Water Transfer

by Benjamin Deniston

The last component of our water cycle, the management of the water that has precipitated over land, can also be greatly improved, overcoming the imbalances created by nature.

Life in the western regions of North America is supported by the water provided from the Pacific Ocean. As the Sun fills the air above the Pacific Ocean with fresh evaporation, westerly winds sweep up this atmospheric moisture for delivery to the western part of North America. However, this is not a fair distribution. As measured by freshwater runoff from the rivers, the water available in the northwestern section of the continent is over ten times greater than the water available in the southwestern section.

In the Southwest, the largest rivers, including the Colorado, the Sacramento, and the San Joaquin, each carry 15 to 20 cubic kilometers per year. In the Northwest the largest rivers are an order of magnitude larger, with the Yukon, the Mackenzie, and the Columbia each carrying between 200 and 300 cubic kilometers per year, and there are another ten rivers significantly larger than anything in the Southwest.

The 1960s design of the North American Water and Power Alliance (NAWAPA) stands as the most fully developed proposal to better manage the totality of the water cycle of this western range. Using existing rivers and geological features, along with many tunnels, reservoirs, and canals, the NAWAPA program would divert a fraction (around 10%) of this Northwestern water to the south, pumping it onto the Great Basin, and then distributing it throughout the southwestern United States and Northern Mexico.

Because the entire western coast is characterized by this flow of Pacific Ocean moisture, NAWAPA doesn't draw down finite water supplies. It modifies an existing cycle, ensuring that the natural precipitation deposited on the continent is as productive as possible, before it returns to the ocean.

For example, using information provided by NASA's Earth Observing satellites, we can measure the amount of new plant growth each year in different regions of the world. For the northwestern section of North America, an average of 1.5 billion tonnes of new plant life is created each year. Because the water

cycle supporting this growth is about 1,500 cubic kilometers per year, we can determine that the average productivity of the water cycle in the northwestern region as a whole is about one million tonnes of plant life per cubic kilometer of water flow (both measured per year).

Compare this with the southwest, where about 0.6 billion tonnes of new plant life is created per year by a water cycle of 113 cubic kilometers per year, indicating a much higher productivity, 5.5 million tonnes per cubic kilometer of water flow.

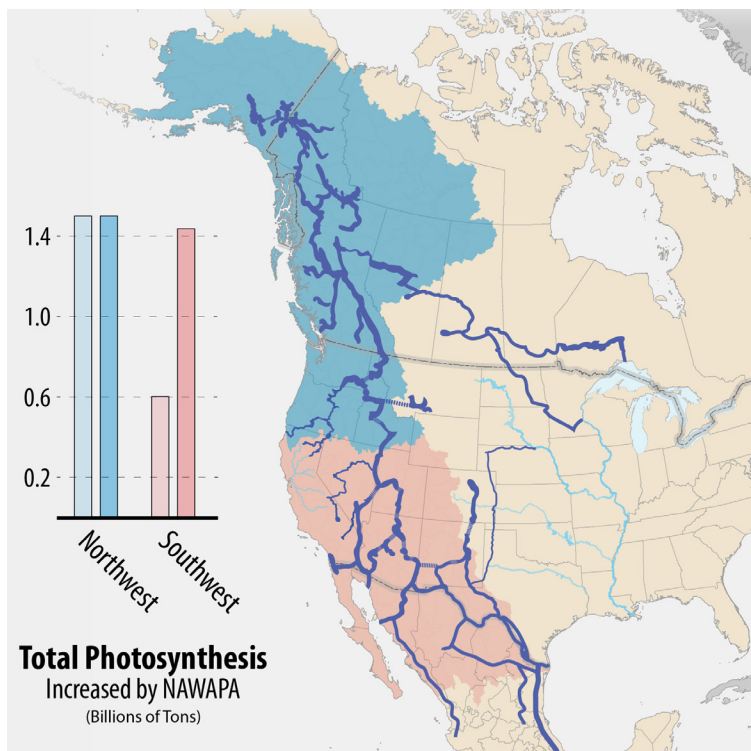
Based on this comparison, we can make a rough assessment for how NAWAPA could potentially increase the productivity of the entire western cycle as a whole. By cycling about 160 cubic meters of freshwater from the northwest throughout the southwest (before it returns to the ocean), the amount of annual plant life produced in the southwest could increase from 0.6 billion tonnes to nearly 1.5 billion tonnes per year (assuming that the NAWAPA water would take on the average productivity rate which currently exists in the southwest).

For the total water cycle of the western half of the continent—characterized by the west to east transport of atmospheric moisture from the Pacific Ocean—the productivity could potentially be increased by around 50% with NAWAPA, from 2.1 to 3 billion tonnes per year.

This is without increasing the water supply one drop.



Nature's gifts are not evenly distributed. The northwest of the U.S. gets over a dozen times more run-off than does the southwest.



Water transferred by NAWAPA would play a much greater role in the biosphere, by dramatically increasing the biomass created by photosynthesis in the southwest and plains, while barely being missed in the northwest. The bars show billions of tons of biomass produced by photosynthesis currently, and as estimated with NAWAPA.

While this is obviously a very rough estimate, it serves as an indication of the principle at play. Under mankind's management, the existing water cycles can be improved, yielding higher rates of economic and biological productivity per amount of water in the cycle. Nothing here is being used up, or drawn down. The amount of work being done by an existing cycle is increased by better management.

In terms of distribution, by including some southern and other extensions, NAWAPA could provide a water flow equivalent to eight new Colorado Rivers, to be shared between seven states of the Southwest, three states of the High Plains, and six states of Northern Mexico.

NAWAPA, or something like it, can play an important role in the management of the surface distribution of the continental water system, and it can also open up the general economic development of the northern territories, providing a large economic opportunity to Canada, if they choose to participate in such a program. However, we must subsume the general conception of surface management with the new means of developing the water cycle discussed above.

Integration

While NAWAPA alone was an adequate plan for the 1960s, the crisis has gotten much worse, and the technological potential available to mankind has advanced further.

A new baseline of water input can be provided by large-scale desalination, powered by a nuclear driver program to increase the energy flux density of the economy. Mankind can subsume the role of the Sun—with respect to the water cycle—and create new freshwater inputs along the coast of California, Texas, and other appropriate regions. This goes beyond transferring the existing water distribution, by increasing the net, total volume of the cyclical freshwater interaction of the Pacific Ocean with North America.

Perhaps most promising will be the development of the atmospheric moisture systems. This has many critical implications for the management of the Pacific Ocean-North America interaction. The continent's rivers, lakes, groundwater stores, and snowpacks—along with the water transfer, reservoir, and related systems which depend upon them—are all products of the activity of the atmospheric moisture systems. With ionization technologies that we can take a higher level control over these systems, ensuring the precipitation continues where it has been expected, and bringing in new precipitation where it is desired.

The new era of water transfer systems includes the management of rivers in the sky, and rivers flowing from the ocean onto the land, creating stronger, more stable, and larger cycles of water flow.

California's survival depends upon this full conception of mankind's mission to develop the Pacific Ocean-to-North American interaction, and this serves in turn as a broader case study for water needs globally.

Understanding the cosmic components of climate, weather, and precipitation takes mankind off the Earth, beyond the Solar System, and into the Galaxy. With this perspective, the water cycle takes on a new meaning, with new properties, and new potentials available for use, to those with a galactic perspective.

There is no shortage of water, only a shortage of conception. Mankind can solve the water problem, in California and other regions of the globe—we just have to commit to do so, and remove those who are standing in the way.

III. The BRICS— The Next Stage of Mankind

Create Water Resources— China, the World Model

by Marcia Merry Baker

April 13—China is the world model for commitment to providing and utilizing an increasing water supply, based on the principle that “natural” resources are man-made. China is the leader in both geo-economic projects to make available more water from existing resource patterns on Earth, and in pursuing advancement in space research, to gain the knowledge and means to intervene in planetary moisture cycles, to improve the resources of the Earth. The measure? Progress of mankind.

China completed the Three Gorges Dam, the world’s largest, in 2008. China has completed, as of 2014, the first two of three water conveyance channels, for the South-North Water Diversion Project, the world’s largest. The nation is proceeding on nuclear power, with 28 reactor stations under construction, and a goal of tripling its nuclear capacity by 2020. There are key initiatives for nuclear-powered seawater desalination. In 2013, China landed its rover, Yutu, on the Moon—signifying its general drive for space research, essential to the future of life on Earth.

These actions by China are critical for the United States, which, across the Pacific, is facing doom for refusal to take necessary measures to create more water. The United States urgently needs to collaborate with



CC/Pedro Vásquez Colmenares

The Three Gorges Dam, largest in the world, opened in 2008; it generates 22,500 MW, and provides flood control.

China on all aspects of water policy, from space science to infrastructure engineering.

China’s emblematic, outstanding water infrastructure project—the Three Gorges Dam—is not only an instructive, “Extreme Engineering” success, but it is an inspiration for all humanity. It shows the mind-of-man at work.

South-to-North Water Diversion

In December 2014, the first “new water” began arriving in water-short Beijing from the Central Route of the grand South-North Water Diversion Project (SNWD), a three-route scheme for diverting flow northward to the water-deficient North China Plain, from the various parts of the water-plentiful Yangtze River Basin. This Central Route system takes water north through some 1,200 km of channels and pipes, from its southerly origin in the middle reaches of the Yangtze River Basin. In December 2013, the Eastern Route of the SNWD was opened, and is now taking water from the lower basin of the Yangtze, northward to the lower reaches of the Yellow River.

This Eastern Route follows China’s ancient Grand Canal. The Western Route is still in the planning stages.¹

Figures 1 and 2 show national maps of the situation: the highly uneven rainfall pattern; and the schematic picture of how the SNWD routes are designed to move water from the regions of water abundance northward, to regions of scarcity.

The far northwest of China is a continuation of the desert drylands from north Africa, across Arabia, thence spanning Southwest and Central Asia. This aridity pattern decreases eastward, as the monsoonal effect comes into play, to the point of very high rainfall in Southeast China. The great Yellow River (Huanghe) in Northern China, courses through drylands and loess formations, and in several places, its river bed is higher than the surrounding plains! The long Yangtze River, rising in the highlands of the Tibetan Plateau, has a large catchment area, with a sizable flow, emptying at Shanghai, into the sea.

Diverting plentiful water northward has long been discussed, most seriously after the 1949 Revolution. Then, in 1958, the Yellow River and Yangtze River

FIGURE 1
South-North Water Diversion Project



Source: Chinese Ministry of Water Resources, futuretimeline.net; Will Fox

Commissions began to study seriously the possibility of sending water north, and investigations were continued for over 40 years.

In 2002, the China Water Resources Ministry announced that construction would commence. Zhang Jiyao, Vice Minister of Water Resources, said at a November press conference that year, that the new project would create three new man-made “rivers.” He said it would be carried out as a “mega-project that is strategically aimed at realizing the optimal allocation of water resources” in China.

With the future completion of the western diversion route, the total SNWD system, when complete, will be transferring 44.8 billion cubic meters of freshwater to the parched north. (Compare this with the total annual flow of the Yangtze, which is 600-950 bcm). This is vital for Northern China, where almost 60% of China’s farmland is located, and 45% of its population lives. However, it was known from the start, that it would not be enough.

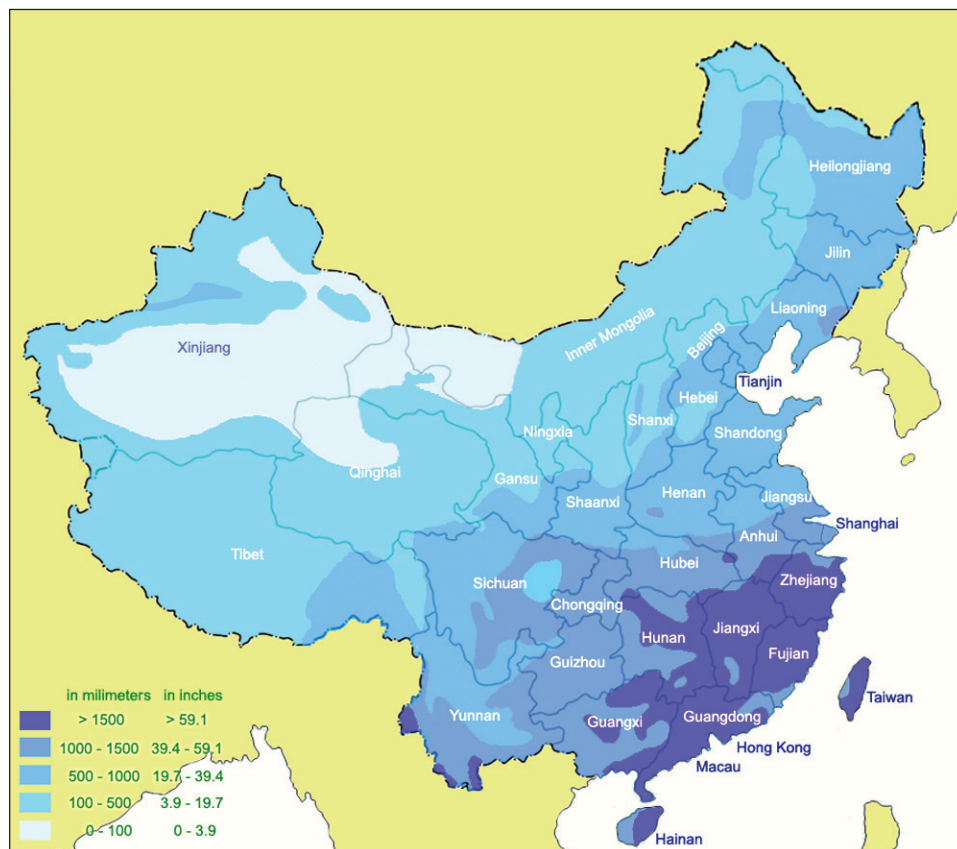
What characterizes the SNWD, the Three Gorges Dam, and other big projects in China, is the commitment to seeing them through as a continuing process. In September 2014, when the sluice gates on the Central Route system were ceremonially opened for the first

1. Mary Burdman, “China Opens the Floodgates: Huge Project To Address Water Scarcity,” *EIR*, Oct. 31, 2014.

FIGURE 2

China—Great Disparity of Rainfall

(Average Annual Precipitation)



Wikipedia/Alan Mak

time, a national water spokesman stressed to CCTV, “We know this won’t solve everything. We will still need more water. But we will solve that in the future.”

That makes the many “firsts” and “records” set in the course of constructing the SNWD, all the more delightful. In Beijing itself, which is receiving two-thirds of the Central Route water, extensive underground storage and transmission facilities were built, sometimes at a depth of 15 stories.

The world’s largest aqueduct is on the new Central Route. It carries Central water overtop the Tuanhe River, at a flow of 420 cubic meters per second. The structure is “built to last a century,” the senior engineer Yu Pengtao told CCTV last Fall. “This aqueduct is no doubt the number one such structure in the world, in regards to water capacity, scale and weight. The design requires high precision and a scientific approach.”

The Central Route flow has to cross some 170 rivers, in the watersheds of the Yangtze, Huaihe, Haihe, and the Yellow rivers. Engineers designed aqueducts, canals, and

tunnels to deal with this, their plans driven not simply by hydraulics, but to minimize intermingling of freshwater with polluted water. Reduction of pollution of water, land, and air is a major goal and necessity in China today.

At the same time that progress on the SNWD proceeds, other water infrastructure projects are underway. In June 2014, the third-largest dam in the world was opened, the Xiluodo Dam on the upper stretch of the Yangtze River. In July 2014, the world’s sixth-largest dam, the Xiangjiaba, opened, also on the upper Yangtze. China alone now has more large dams than the rest of the world combined.

‘Desalination Cities’—Nuclear Power

China is moving staunchly on seawater desalination, with important initiatives for nuclear-powered desalina-

tion, toward a future massive scale. In February 2012, China’s State Council set a desalinated water target for the 12th Five-Year Plan (2011-15), including a program to build a chain of desalination facilities along the dry northeastern coast. This involves sites from Shandong to Liaoning. The list was expanded in 2013, when the National Development and Reform Commission announced the addition of new coastal cities.

Currently, the overall target set by the central government’s Special Plan for Seawater Utilization calls for a fourfold increase—up to 3 billion liters—by 2020, in the country’s current capacity. Work is underway on both non-nuclear and nuclear desalination.

On the shore of Bohai Bay, for example, construction has started on a thermal desalination plant near Tangshan, part of whose output—planned to begin in 2019—will then be piped 270 km to Beijing. Work on this new water pipeline has begun. The project is being done jointly by the Norwegian firm Aqualyng, and the Hong Kong-based Beijing Enterprises Water Group.

There are projects at other points along the chain of “desalination cities,” at various stages of progress. These include Dalian, Qingdao, Shenzhen, Shoushan, Luxixiang Island in Zhejiang Province, Binhai New Area in Tianjin, Bohai New Area in Hebei, and a number of industrial parks.

The chain of “desalination cities” also includes pre-existing de-salting operations, for example, at the port city of Tianjin, where the Dagang coal-powered plant has been producing 3,000 cubic meters a day for 15 years for cooling, with a U.S.-designed multi-flash (MSF) unit. The Tianjin Beijing Power and Desalination Plant, specially designed and built by Israel’s IDE Technologies, is one of the world’s largest thermal plants using multi-effect distillation (MED), and the largest desalination plant in China. It began operating in 2010, and produces 200,000 cubic meters a day, about one-third of China’s current desalinated water output.

Nuclear power is the precondition for mass-scale desalination of seawater and inland brackish water, which is needed at many locations across Eurasia. At present, China has 21 nuclear power stations (the first went on line in December 1991), with 28 more under construction. Although by percentage of type of power generation, nuclear will still be under 10% of China’s power base when the project is completed (contrasted to the U.S. at 20%, or France at 50%), the commitment to a nuclear future is clear.

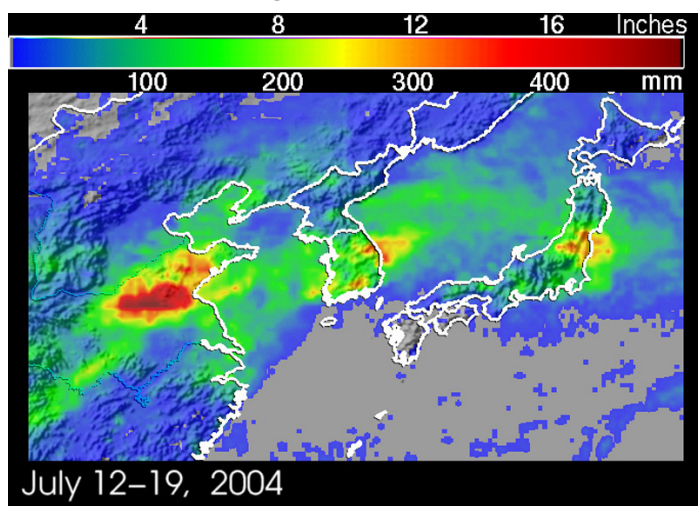
There are some nuclear desalination initiatives. The new Hogyanhe nuclear power project in the northeast, at Dalian in Liaoning Province, undertaken by CGN (China General Nuclear Power), will use waste heat to desalinate 10,080 cubic meters of seawater per day, to provide its cooling heat. Chinese authorities are looking at a seawater desalination facility on the Shandong Peninsula, in the Yantai area, to produce up to 160,000 cubic meters a day by MED, using a MWt (thermal megawatt) NHR-200 reactor.

Water from Heaven

China’s leading role for advances on Earth is exemplified by the December 2013 landing on the Moon, by its rover, the Yutu (Jade Rabbit), after an almost 40-year pause in mankind’s activity on the Moon. This successful project reflects China’s commitment to seek maximum knowledge of, and dominion over, the processes of our universe. China has put forward its next immediate steps in a 2014 statement, “Lunar Exploration Program.” There is work underway for a lunar base of operations,

FIGURE 3

NASA Satellite Image: Monsoon Hits East China



NASA/Hal Pierce

with a focus on new energy development, and circumstances for living, as a base for further space probes.

China’s initiative and effort constitute the means—through new instrumental readings, new insight and thought—to reach to a higher understanding, in particular, of the dynamics of Earth’s water cycles. This can be the basis for modifying what have seemed to be intractable climatic patterns, to the lasting benefit of all.²

China itself is hostage to a fierce pattern of dryness in the west and north, while being pelted in the southeast by the Summer monsoons. The NASA image shown here (**Figure 3**) is a satellite view of a monsoon centered on eastern China. It captures a rare instance (July 2004) in which a big monsoon went even farther north from its typical range—still not as far as Beijing—and dumped more than 16 inches of rain (red) in just a week.³

Across the Pacific Rim, the United States West is also drying out, a hostage to the phenomenon of the Pacific atmospheric river (the “Hawaii Express”) flowing in from the ocean, but not regularly dropping its rainfall potential on land.

Hoping for a monsoon, or praying for rain, isn’t a viable policy. Being able to direct or influence these large water dynamics is the future. The China space policy is the commitment to progress that can ultimately bring rain from Heaven.

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2. Benjamin Deniston, “Solve the World Water Crisis,” *EIR*, Jan. 30, 2015.

3. See NASA, Tropical Rainfall Measuring Mission (TRMM), which utilizes the near-real-time MPA—Multi-satellite Precipitation Analysis for rainfall estimates over the global tropics.

India Must Use Science, Technology, Infrastructure To Give Water to Millions

by Ramtanu Maitra

April 10—India is not a water-short nation. Monsoon rains and ice-melt of the Himalayan glaciers during Summer provide its rivers with more than adequate water; and yet, millions of Indians, mostly women, spend the greater part of their daily lives procuring water manually from a distance, to enable their families to survive. This condition is intolerable, and particularly so, since India possesses the scientific and technological capabilities to generate freshwater, as well as the expertise to develop the infrastructure to transfer water from a surplus river basin to water-starved areas. All it needs is focused efforts to prioritize this vital infrastructure, which would provide an essential ingredient to turn India into a hub of manufacturing and agriculture, and pave the way for a healthy and productive future.

India's present-day strength in resolving the uneven distribution of its annual water supply across the country, is evident in its proven excellence in its mastery of space and nuclear technology. Both these sources of knowledge and acquired capabilities need to be exercised to deal with its present and future water requirements. India has developed cadres of scientists and experts in these two areas, who should be channeled now to tackle the water problem.

Topology and Types of Rivers

India receives an average of about 4,000 billion cubic meters of rainfall annually, and India's landmass is close to 3,600 billion square meters. If this water were distributed evenly throughout the country, the landmass would have annually 1 meter's height of water. However, the rainfall distribution is highly uneven. About 30% of India's landmass receives an annual rainfall of no more than 750 mm, while 70% receives less than 1,150 mm. In most parts of the country, the monsoon rainfall, which provides the bulk of water, lasts for 3-4 months, but 75% of that rainwater, after flooding large areas, flows into the sea because of lack

of water storage and adequate means for transfer of water.

In addition to the uneven distribution and the brief period of rainfall, India's topology does not allow water from the water-surplus areas to flow into water-short regions.

India's rivers are classified into two categories: Himalayan and Peninsular (**Figure 1**). The Himalayan rivers are in the north. The main rivers are the Indus, Ganga (Ganges), Yamuna, Brahmaputra, and Spiti, in addition to the five rivers of Punjab—Jhelum, Sutlej, Beas, Ravi, and Chenab. The Jhelum, Sutlej, and Indus rivers flow westward into Pakistan.

The Peninsular rivers in the southern peninsula of India are the Godavari, Mahanadi, Penner, Krishna, and Cauvery.

These two categories of rivers are completely different from each other. The Himalayan rivers rise in high mountains with their sources in glaciers. The ice melt gives them their perennial nature. These rivers flow down from the high Himalayas, a young mountain range, carrying water at a high velocity along with debris from the young mountain, and cutting deep gorges. These rivers have long courses flowing down the mountains, then through level plains and marshy deltaic tracts in the east.

On the other hand, the Peninsular rivers lie in plateaus and low hills that are free from snow. They exhibit a gradual profile, gently flowing through the plateau and narrow coastal plains, depending entirely on seasonal rainfall. As a result, most of these rivers disappear during dry season. Other differences are that the Himalayan rivers are utilized for power generation in hilly areas, and for irrigation, drinking water, and inland navigation in the plains. Their long journey through alluvial plains allows them to build up huge reservoirs of water underground. By contrast, the Peninsular rivers, although suitable for some power generation in their upper reaches, have limited use in irrigation and navi-

gation, confined to the deltaic plains. In addition, the topology of the peninsular region is hard and impermeable, preventing buildup of large underground storage.

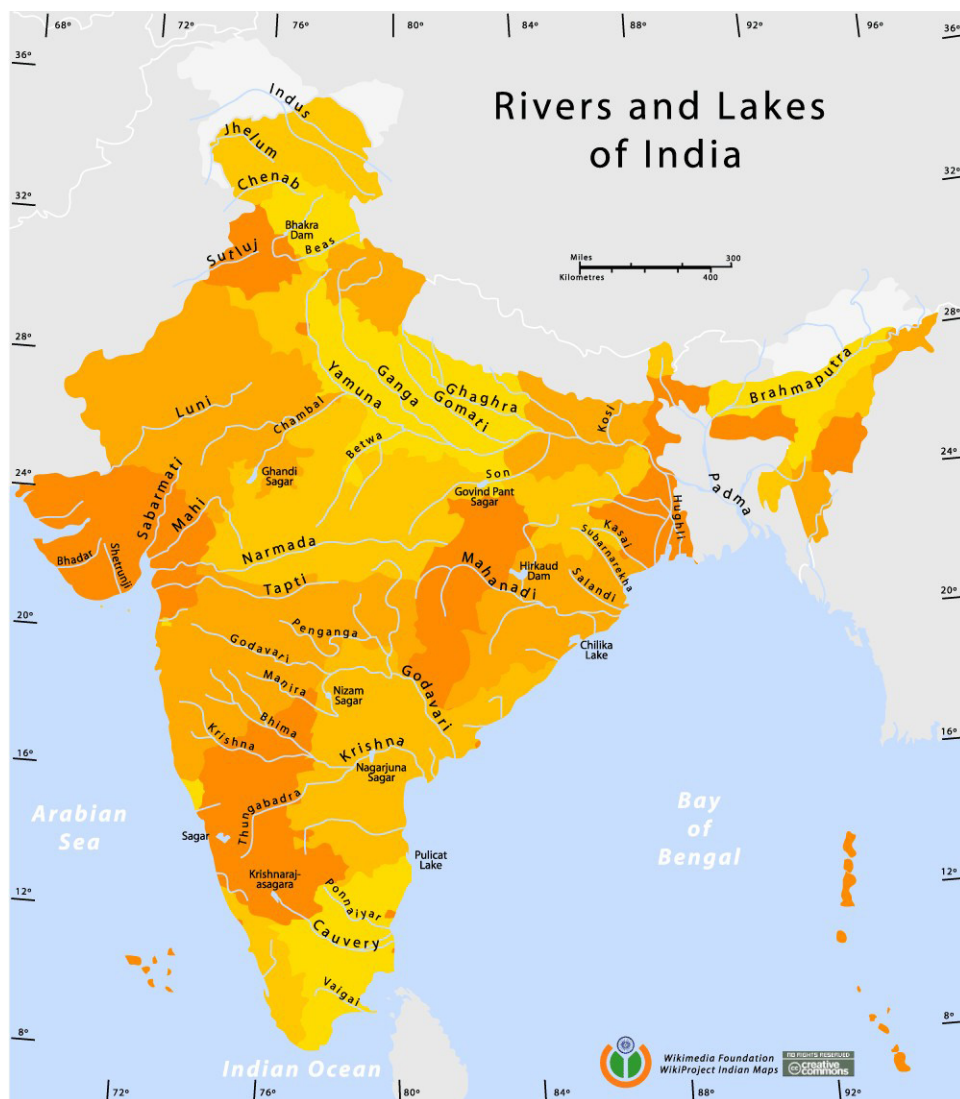
India has a long coastline of 7,500-plus km, extending southward from the state of Gujarat in the northwest, to the state of West Bengal in the northeast. Much of the coastline belongs to peninsular India. Coastal areas such as the states of Tamil Nadu, Gujarat, and Andhra Pradesh have a huge problem of water scarcity, due to poor river water availability, low groundwater levels, and high demand. All three states have strong industrial bases and contribute in a large way to the country's economy. Tamil Nadu and Andhra Pradesh have extensive agricultural lands.

Applying Science and Technology

The key to resolving India's uneven water distribution, which has caused hundreds of millions to live in perpetual water shortage over decades, lies in using the science and technologies that India has mastered. Back in the 1950s, under the leadership of the late Dr. Homi Bhabha and with adequate support from many accomplished scientists, India started its nuclear power generation program with an eye to resolving the country's future agro-industrial power requirements. Their competent work, undermined for decades by the Western nations for geopolitical reasons, long ago reached the point that it can also resolve peninsular India's water shortages.

In addition to mastering the complete nuclear fuel cycle, India produces its own **pressurized heavy water reactors (PHWRs)**. It has installed 16 such indigenous reactors, and many more are in the process of being set

FIGURE 1



up. Most of India's PHWRs are of a relatively small capacity of 200 megawatts (MW). India is in a perfect situation to utilize small PHWRs and their waste heat, to desalinate water all along the vast coastline, providing domestic, commercial, and industrial water to the water-starved citizens. Hundreds of those nuclear desalination plants, providing at least 300-400 million liters per day (MLD), can be set up all along the coastline resembling a necklace, using the waste heat of indigenous PHWRs for desalination, and the power generated by these nuclear power plants to provide power to the community.

However, India grossly lags in developing this essential infrastructural ingredient using its indigenous

FIGURE 2



technology. Although it has dozens of small desalination plants, in the state of Tamil Nadu only two 100 MLD plants have been set up, and another 150 MLD plant has received clearance. All three plants use or will use **reverse osmosis (RO)** as the process to desalinate. A 1.8 MLD capacity desalination plant using the RO process has been set up as part of **Nuclear Desalination Demonstration Project (NDDP)** at Kalpakkam, Tamil Nadu. Another plant, a **Multi-Stage Flash (MSF)** desalination plant, with a capacity of 4.5 MLD, has also been set up at Kalpakkam, to use the steam from the RO plant as its energy input. The hybrid MSF-RO plant produces distilled water for high-end industrial applications, and potable water for drinking

and other applications.

One major problem of the RO, or the **seawater reverse osmosis (SWRO)** process, is that it does not produce power, but consumes it, whereas in a nuclear desalination project, desalination takes place utilizing the waste heat, while the nuclear power plant generates power for all human uses. Moreover, reverse osmosis membranes are subject to fouling or plugging on the membrane surface. This can decrease the permeate production capacity of the membrane or require an increase in operating pressure (and therefore energy) to overcome the fouling effect. As a result, virtually every membrane desalination facility in the world (including SWRO) requires properly pre-treated seawater. This involves flocculation/sedimentation to remove suspended material; dissolved air flotation (DAF) to remove potential algal biomass or potential hydrocarbons; granular media filtra-

tion (GMF); and/or low-pressure **ultrafiltration (UF)** or microfiltration (MF) to remove suspended particulate matter. The pre-treatment also consumes energy to be supplied from an external source.

Utilizing Space Research

Success in space technology has provided India an opportunity to utilize this hard-earned knowledge to conquer the next frontier, which would provide every Indian with adequate water in the future. Following the successful launching of the Mangalyaan Mars orbital mission (2013) in India's maiden attempt to put a spacecraft in Mars orbit, Prime Minister Narendra Modi described it as an "historic and spectacular" success. He

said he was proud that the country dared to reach out into the unknown and achieve the near impossible.

It is now time to use the accumulated knowledge of India's space science research. Scientists have worked for years to identify galactic cosmic rays' positive role in the Earth's low cloud cover. In 1997, Henrik Svensmark and Eigil Friis-Christensen reported a correlation between cosmic rays and cloud cover. They found that the observed variation of 3-4% of the global cloud cover during the recent solar cycle, is strongly correlated with cosmic ray flux. This was hailed by some as the key to the mystery of how the Sun affects climate and produced climatic changes. It was also a confirmation of the longstanding suspicion that cosmic rays were linked to global cloudiness.

Of particular interest is the observation from recent satellite data, that the cosmic ray-cloud correlation is much more intense in low-level clouds than in high-level ones. On the other hand, utilizing human-generated, negatively charged ions to attach to the condensation nuclei in clouds, would enable the water drops to grow and turn into rain.

Physical Infrastructure

One other essential requirement for India is to augment water-short areas of the Peninsular rivers, by transferring surplus water from the Himalayan rivers. It was more than 40 years ago that India's leading water expert, the late Dr. K.L. Rao, proposed interlinking the Ganges with the Cauvery, a 2,650 km-long link. This was to be a huge civil engineering project. But it was never even started. The project had called for bringing in water from the eastern part of India to the South and West.

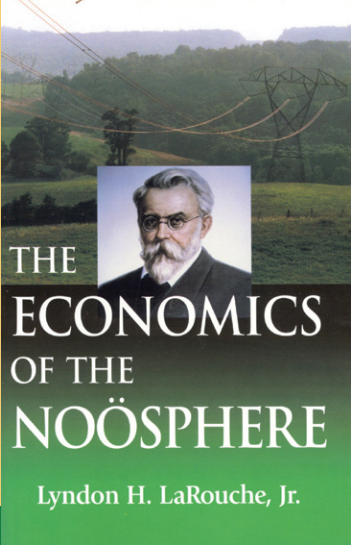
The Peninsular river interlinking would involve connecting the Mahanadi, Godavari, Krishna, and Cauvery rivers by canals. Water storage dams would be built along the course of these rivers. The objective is to bring in the surplus waters from Mahanadi and Godavari to peninsular India. It is estimated that this part of the interlinking would provide additional irrigation to 13 million hectares and would be able to generate a peak power of 4,000 MW.

The other river basin links would connect rivers flowing north of Mumbai to the rivers flowing south of the Tapi River. Again, reservoirs would be built along the way for water storage. This water was earmarked for the huge Mumbai metropolis as well as for agricultural requirements along the coastal part of the state of Maharashtra.

The third aspect of interlinking would connect the Ken and Chambal rivers to enhance water facilities for the states of Madhya Pradesh and Uttar Pradesh. In addition, the plan called for diversion of west-flowing rivers along the Western Ghats to provide water for irrigational purposes. These west-flowing rivers presently discharge into the Arabian Sea all the freshwater they carry. That leaves the Indian authorities with one more task to make India permanently water-stable.

The interlinking of rivers, which the Modi Administration has promised for India's citizens, calls for creating storage capacities along the way. However, India must also have the objective of storing a significant part of the Monsoon rainwater that now flows into the seas. The storage of water in reservoirs strewn across the land, enhances humidity in a limited area. At night, this humid air descends to improve the land.

For example, the Indira Gandhi Canal (earlier known as the Rajasthan Canal) has brought in water from the Beas River over the last 28 years, with the objective of turning the Thar Desert of western Rajasthan into lush agricultural land. Anyone who has visited that area would have observed how well that objective has been attained.



The scientific concepts of biogeochemist Vladimir Vernadsky — the initiator of the idea of the Biosphere — whose concept of the “Noosphere,” has been cited and further developed by Lyndon LaRouche.

THE ECONOMICS OF THE NOÖSPHERE
Lyndon H. LaRouche, Jr.

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From North Africa to Asia: Making the Deserts Inhabitable

by Ramtanu Maitra

April 11—Hussein Askary, chairman of the European Labor Party in Sweden, has for years discussed water development projects across the Mideast and North Africa with engineers, development experts, and political leaders. In an interview with Ramtanu Maitra of *EIR* today, Askary said, “The existing and expanding deserts are the greatest obstacles to economic development in those regions, [but] there are several interconnected ways to deal with the problem of first limiting the expansion of the desert, and then actually making use of that land for the benefit of the nations of these regions.”

The North African, Arabian, and Central Asian deserts are the most formidable “water challenges” in the world. What could have been a process to improve the situation through measures such as seawater desalination—especially nuclear desalination—has not occurred. The new Egyptian government, in particular, is confronting this challenge.

Askary describes the huge problem this poses for human ingenuity—and for China’s Economic Road and Belt development across Eurasia—in a broad geographical sweep which few people see.

“This vast desert region can be considered an interconnected and continuous climate system, as each part affects the other. It stretches almost continuously from the Atlantic coast of North Africa through the Arabian Peninsula, across the Zagros Mountains to Iran and Central Asia, and all the way to western China, for about 13 million square kilometers. Large parts of those regions receive less than 250 mm/year, and often almost

FIGURE 1



This vast desert region stretches from the Atlantic coast of North Africa through the Arabian peninsula, across the Zagros Mountains to Iran and Central Asia, and all the way to western China.

no precipitation. The semi-desert or semi-arid areas which are partly populated, receive 250-500 mm of annual rainfall.

“These deserts are, at the same time, expanding, not only due to the lack of adequate measures, but also the political destabilization and wars.”

But this process can begin to be reversed by the progress of science and application of existing modern water technology. The key measures include:

- creating new water resources, such as desalinating seawater and brackish water, using nuclear power;
- river diversion schemes, among the most important of which are the Transaqua Plan—in which the Vatican has been involved—for replenishing Lake Chad through diverting a portion of the extraordinarily large flow of the Congo River;

- developing the infrastructure systems in the existing river basins, such as the Nile, Tigris, and Euphrates, to make the maximum use of the water and reduce waste of it;

- better management of the existing vast groundwater potential;

- development of new methods and technologies for agriculture and irrigation, both to expand the green cover in the desert areas, to improve the traditional agriculture in the river basin areas, and to expand groundwater-fed desert agriculture with effective irrigation systems and reduction of the salinity of the soil.

These, Askary says, are one integrated approach.

Desalination and Nuclear Power

More than two-thirds of the world's production of freshwater by desalination occurs in Southwest Asia, specifically in the Persian Gulf. Saudi Arabia alone produces 25 million cubic meters of water per day, which is estimated to be one-half of the world's total. The United Arab Emirates (UAE) produces around 3 million cubic meters per day. However, these countries will have to more than double the amount of desalinated water in the next decade, and triple it in the decade beyond. Water consumption will rise from 8 billion cubic meters in 2012 to about 11 billion cubic meters in 2016. Massive investments are already projected in this area.

A major problem in these projections is that the desalination of seawater is reliant on thermal power plants run by oil and gas. Saudi Arabia, for example, uses 1.5 million barrels of oil daily to produce the electricity and heat used for desalination. So, tripling and quadrupling that amount of fuel is a major economic and environmental problem.

One of the key solutions to this problem is to use nuclear power for these purposes, and to use fossil fuels as chemical feedstocks. According to the International Atomic Energy Agency's studies, medium-sized nuclear reactors are suitable for desalination.

At the moment, Iran is the only country in the region which has an operating large civilian nuclear power plant. The Bushehr plant, which is a product of cooperation between Iran and Russia, was inaugurated officially in September 2011, and reached its full capacity of power production (1,000 megawatts) in August 2012. Iran is planning to build several new nu-

FIGURE 2



This is a project in Iraq. Instead of just a few hundred meters, a greenbelt should be several kilometers wide. You have a shield of greenbelts, and you move against the desert.

clear reactors, with the expressed aim of increasing the energy output of the country and desalinating seawater.

The UAE, through a contract with South Korean Korea Electric Power Corporation (Kepco) is building four 1,400 MW nuclear plants to be completed by 2020.

Egypt signed an agreement with the Russian atomic energy corporation Rosatom in February, to build the first of a number of nuclear power plants along the western Mediterranean coast of Egypt at El-Dabaa. The expressed objective is to use the power for seawater desalination in that remote and dry area of the country, where almost no freshwater exists in sufficient amounts to sustain an urban and industrial center. If successful, Egypt will continue to use the nuclear technology in the Red Sea region too.

Expanding the Desert Cover

A great deal of research has been done and is continuing in many countries, Askary reports, to develop new strains and types of crops and plants that are resistant to the high temperatures in these regions and to the increasing salinity of the soil. One type can be planted near existing rivers, canals, and abundant groundwater. These are fruit-bearing trees such as palms, olive trees, eucalyptus, and tamarind trees, for example. These are highly resistant to heat and salinity, but they still need large amounts of water.

Therefore, they are planted, as proposed by many

FIGURE 3



This is China, the Taklamakan Desert Highway. They wanted to protect the road from the moving sand. You pump water from underground: It's salty water, but they have planted types of plants that resist salt.

governments, closer to existing water resources and urban infrastructure systems, because they need a labor force to manage them, and power and water infrastructure to sustain that. These can be used as a barrier to protect the existing agriculture and urban centers against the encroachment of the desert and the frequent sand and dust storms. These, then, can be expanded in the form of “green belts” outwards against the larger desert. In certain areas where there are saline lakes or saline groundwater, such as in western Iraq or Algeria, halophytes can be planted to create another green cover for moderating the air temperature and increasing the moisture in the atmosphere.

The farther you go into the desert, the more you will be challenged by lack of water and infrastructure. Therefore, there are active plans, although on a limited scale, to plant certain types of plants or shrubs that are extremely resistant to drought, and can be sustained on a limited amount of water or even on the scarce natural rainfall. These would be a first line of resistance against the desert. These plants can be supported by “dune fixation,” or soil-stabilizing structures using dry plants or artificially produced materials such as plastics.

Then there is the development of irrigation techniques. Submerging the crops, the traditional method, leads to enormous waste of water through evaporation, and to increased salinity left behind by the

evaporated water. Therefore, this is being abandoned in many parts of these desert regions. It is being replaced by pivot-sprinkler systems and drip irrigation, so that only a minimal amount of water is administered to the roots of the plants through plastic-tube systems.

The most advanced centers for the development of these sorts of techniques are in countries that suffer from desertification, but that are equipped with technological and industrial know-how. An example is China's Ningxia Academy of Agriculture and Forestry Sciences in China, where many experts from Arab countries are trained, and the Jacob Blaustein Institute for Desert Research at Ben Gurion University in the Negev Desert in Israel.

Space Technology

The crucial question is whether there are possibilities of managing weather change in this vast arid area, and by what means.

Askary has discussed this with Egyptian and other experts. “Left to the raw powers of Nature,” he says, “these regions will be subjected to recurring cycles of droughts and wet periods. However, with the creative intervention of human labor, gradual changes can be made to moderate, and finally control the climate systems.”

The scientific frontier work for this purpose, is electrical ionization of the atmosphere—essentially using ground-based electrically powered ionization of the low atmosphere, to cause the formation of low cloud cover somewhat in the same way that cosmic rays from the galaxy have been shown to do. Two of the countries in which experiments with such ionization have been underway, are in the region: Israel and the United Arab Emirates.

Askary notes that “All the infrastructure, agriculture, irrigation projects proposed in this issue of *EIR* will have a definite positive impact on these regions, but how much impact will depend on the scale and rapidity of action.

“One way of determining that is by using space technology to follow the moisture cycles on Earth from areas of vegetation to other areas, measuring the impact of precipitation [and learning] . . . where this moisture is migrating.

“Creating new green zones in or near the deserts will potentially have a similar impact, he said.”

Catastrophic Drought in Brazil Results From Decades of Policy Failures

by Dennis Small

April 11—If it weren't so deadly, it would almost sound like a child's riddle: What country has more water than any nation on the planet, yet is suffering the worst drought in nearly a century?

The answer is Brazil, one of the five members of the BRICS group of nations.

On top of the chronic water shortage that the country's semi-arid Northeast region faces, drought has now struck with a vengeance in southeastern Brazil, the country's most populous and industrialized region—including the 20 million people who live in Greater São Paulo, South America's largest city. The drought is the worst recorded in the last 80-85 years. The rainy season, which is now coming to an end, has not significantly remedied a scarcity that is so bad, that São Paulo water officials are warning that they might soon decide to impose water rationing for as much as five of the seven days of the week.

São Paulo's Cantareira reservoir/dam system, which is still the source of water for 6.5 million of its residents, in mid-March was at 11.9% of total capacity (including the reservoir's "dead" or inactive storage). Large hospitals and water-intensive businesses—those that can—are installing in-house water treatment and recycling centers, and water trucks are proliferating around the city. But the poor do not have the resources to pay for water, and are going thirsty.

There are already reports that large numbers of slum-dwellers in the northern belt of São Paulo, who over the years migrated there largely from the impoverished Northeast, fleeing that area's drought, are now so desperate that they are heading back to the Northeast. As in California, if the crisis is not reversed, it will not be long before we see virtual death marches of millions of hungry and thirsty people on a desperate quest for survival—the intended result of the British Empire's policy of drastic depopulation of the planet.

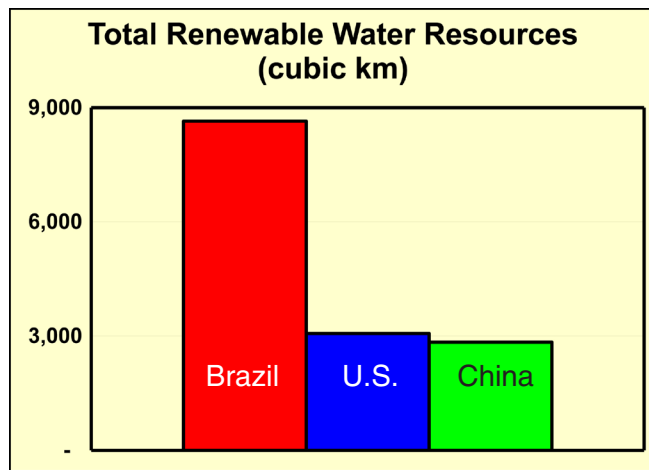
Water, Water Everywhere...

The monstrous absurdity of this situation comes into sharper focus if we consider some elementary parameters of the global water cycle, and its expression in Brazil.

As we document elsewhere in this issue, of the enormous amounts of evaporation of seawater that the Sun continually produces, only 10% falls back down to Earth as precipitation over land. The rest simply rains back down into the oceans, to continue the cycle. To date, all of mankind's advances in water management have concentrated on the 10% available on land. If we look at the planet as a whole, that 10% amounts to some 42,900 cubic kilometers per year of what international agencies such as the UN Food and Agriculture Organization (FAO) call Total Renewable Water Resources (TRWR). But mankind only withdraws, or utilizes, 9% of that amount globally. In other words, we are currently making use of less than 1% of what the biosphere, driven by the Sun, has made potentially available to us as freshwater! That clearly leaves a lot of room for improvement, if we master the science and technology needed to tap into the 99% that is currently out of reach—not to mention using nuclear desalination of seawater to add some of our own new water cycles to those that the biosphere is already providing.

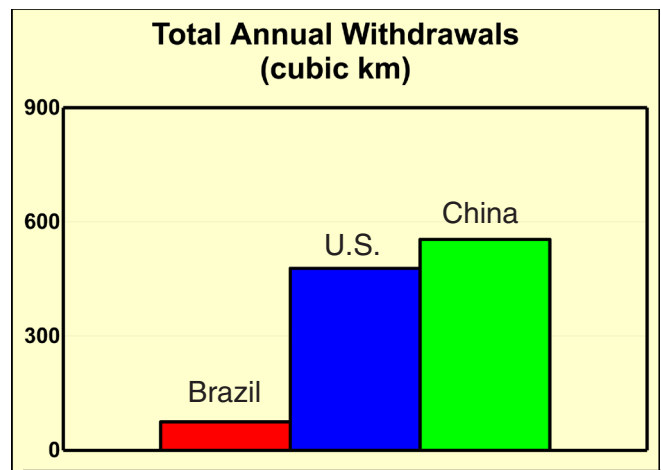
But in Brazil, the contrast is even starker than the planetary averages indicate. Brazil, with a population of 200 million, is home to fully one-fifth of the planet's TRWR—8,600 cubic km per year—and three quarters of that comes from the Amazon River system. The Amazon is not only the longest river in the world; it has a rate of discharge at its mouth of 209,000 cubic meters of water per second, which is more than *five times greater* than the discharge volume of the world's second largest river, the Congo (with 41,200 cubic

FIGURE 1



Source: FAO

FIGURE 2



Source: FAO

meters per second).

So Brazil, which in land mass is slightly larger than the continental United States, has almost three times the available freshwater that the U.S. has (**Figure 1**). But it withdraws or uses only about one-third as much as the U.S. does (**Figure 2**). Or, to put it even more starkly, if the planet as a whole is making use of less than 1% of the total freshwater that the biosphere is producing, day-in and day-out, Brazil is using an order of magnitude less than even that planetary average.

Why?

LaRouche's Track Record in Brazil

"It's their own damned fault," Lyndon LaRouche recently commented when informed about the worsening drought in Brazil. "We warned them repeatedly, and outlined the solutions."

For instance, in October 2001, LaRouche, then a candidate for the Democratic nomination for President for the 2004 elections, was invited to Brazil to address an international conference sponsored by the Brazilian Congress, on the subject of "Brazil and the Free Trade Agreement of the Americas." Although the intervention of Prince Philip's World Wildlife Fund (WWF) and other enemies of development led to LaRouche's agreed-upon security arrangements being denied at the last minute, making it impossible for him to attend in person, LaRouche did send a written presentation to the

conference on "The Future of Brazil's Agriculture." Therein, LaRouche stated:

"South America is a continent of vast, largely untapped natural resources. The principal obstacle to the physical development of those resources is the lack of basic economic infrastructure, in categories of transportation, power, and large-scale water management. The objective must be to define the continent as a unified Noösphere, which its inhabitants must manage. The objective of management is not to maintain the Biosphere in its present state, but to raise it to a relatively elevated state of health, which only mankind can do. . . . That is, in fact, Brazil's only chance for survival as a nation. It is the only chance for that presently imperiled continent as a whole."

Nine months later, Lyndon and Helga LaRouche were able to travel to Brazil, where they had extensive meetings with the country's political and scientific elite, and Lyndon LaRouche was named an Honorary Citizen of São Paulo by the city's authorities. In one high-level public exchange at a June 11, 2002 conference co-sponsored by the Alumni Association of the Superior War College (ADESG) and *EIR*, Lyndon LaRouche responded to comments made by roundtable participants Gen. Oswaldo Muniz Oliva, former director of the Superior War College, and Congressman Marcos Cintra, as follows:

"Now, you take a country like Brazil. Brazil has vast natural resources. . . . The future of Brazil lies in

development of its potential resources, in management of its resources, including the vast water resources. The Amazon system is a vast resource, a vast power resource. It's also probably more valuable as a resource for biological development, and transformation of the Biosphere, than it is as an energy source, because the long-term objective is to meet that kind of challenge. . . . The question of value lies in what the human mind is able to develop, which will transform man's relationship to nature, in the sense of the Noösphere, and thus increase not only man's condition in life; but if we can take the entire population and educate them on university levels to the age of 25, and shift our employment from low-technology to high-technology employment, and scientific employment, then we will have produced true value which our descendants will bless us for."

It's the Noösphere's Turn

LaRouche's policy recommendations registered in Brazil—but they were not acted on over the intervening dozen years, largely due to massive international pressure from the collapsing trans-Atlantic financial system and its hit-men, including in the Green movement, complemented by a specifically Brazilian penchant for foolhardy "pragmatism" and "not rocking the boat." However, the world today has changed: As a member of the BRICS, and with the global leadership provided by China in the areas of water management and space sciences, Brazil is finally in a position to implement such policies. Among the great projects to be undertaken by Brazil, its South American neighbors, and the BRICS more broadly, are:

- First and foremost, develop entirely new science and technologies to gain access to the full water cycle. Brazil should participate fully in international research and demonstration projects involving atmospheric ionization, including research on solar and galactic factors in cloud formation, precipitation, and climate changes more generally. The enormous photosynthetic efficiency that the biosphere displays in the Amazon region, could prove a useful laboratory for man's discovery of related universal physical principles.

To this end, Brazil has a significant aerospace sector which must be fully developed with its BRICS and other partners, including expanding Brazil's Alcantara space launch center on the northern Atlantic coast—the

closest launching base to the equator, which makes launches cheaper and more efficient than from other sites.

- Vastly expand nuclear energy production in Brazil, including for use in dozens of nuclear desalination plants to be built along Brazil's extensive coastline. As noted above, nuclear desalination adds an entirely new, man-made freshwater cycle to what the Biosphere is already doing. Brazil currently has two functioning nuclear power plants, Angra I and Angra II, but they produce only 3% of the nation's electricity. Fully 75% is now produced by hydroelectric plants, which is a massive vulnerability under conditions of drought such as those that Brazil is now experiencing. Because of the foolish failure to launch a crash nuclear program decades ago, the country now faces the nightmare scenario of the drought causing a shortage of both water and of electricity.

A proper policy would reverse the proportions, and have nuclear providing 70-75% of the country's energy requirements, as it does in France, which would reduce Brazil's dependence on hydroelectricity as well as make it possible to use nuclear for desalination.

- Interconnect the three great river systems of South America: the Amazon, the Orinoco, and the Rio de la Plata. This project, which dates back to Alexander von Humboldt's proposals in the 19th Century, would allow for continuous inland water transportation connecting every nation of South America (with the exception of Chile), and also open up options for large-scale water transfers from the central Amazon basin to the southeast of Brazil and Argentina. This area is the continent's scientific and industrial heartland, where every cubic meter of water consumed is far more productive, in terms of work performed, than a seemingly equivalent cubic meter of water in the Amazon.

- Complete the Great Waterway, an inland waterway already partially constructed, linking Brazil's highly productive Cerrado savannah with Bolivia, Paraguay, Argentina, and Uruguay, on its way to the South Atlantic Ocean,

In short, Brazil is a place where the Biosphere is already doing a substantial amount of productive work. But it is high time for the Noösphere, man's creative potential, to now do what it alone can do, beginning with policies and actions by the BRICS.

The New Silk Road Becomes The World Land-Bridge

The BRICS countries have a strategy to prevent war and economic catastrophe. It's time for the rest of the world to join!

This 374-page report is a road-map to the New World Economic Order that Lyndon and Helga LaRouche have championed for over 20 years. This path is currently being charted by the nations of the BRICS (Brazil, Russia, India, China, and South Africa), which are leading a dynamic of global optimism toward real economic development, complete with new credit institutions and major high-technology projects for uplifting all mankind.

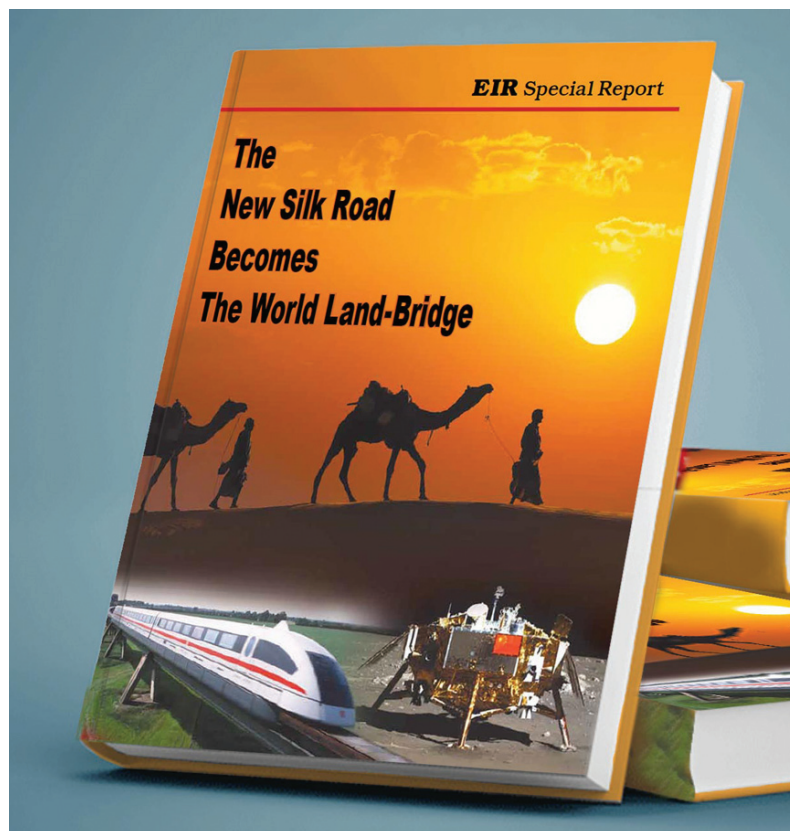
Includes:

Introduction by Helga Zepp-LaRouche, "The New Silk Road Leads to the Future of Mankind!"

The metrics of progress, with emphasis on the scientific principles required for survival of mankind: nuclear power and desalination; the fusion power economy; solving the water crisis. Detailed maps show what has been accomplished and what has not, since Zepp-LaRouche first addressed a Beijing conference on the Eurasian Land-Bridge in 1996.

The three keystone nations: China, the core nation of the New Silk Road; Russia's mission in North Central Eurasia and the Arctic; India prepares to take on its legacy of leadership.

Other Regions: The potential contributions of Southwest, Central, and Southeast Asia; Australia as a driver for Pacific Development; Europe, the western pole of the New Silk Road; Africa—the Test for Global Progress; bringing the Western Hemisphere on board; the LaRouches' 40-year fight for international development.



The report is available

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IV. Genocide Through Denial of Water

An ‘Enron for Water’? The Threat from Wall Street

by Paul Gallagher

April 11—Over the past 30 years, global financial firms have pushed for the privatization of public water supply systems all over the world, and in the past 15 years they have developed exchange-listed “water price indices” to introduce “trading floors” into the world of populations’ water supplies. While doing so, these global capital holders have been preparing for serious water shortages and intense drought conditions to appear, enabling them to play black marketeers, as Enron did so brutally with California’s electricity supplies under deregulation in 2001.

Given that the U.S. Western drought will continue, and likely intensify, until scientific solutions can be mobilized for it, we have to keep the hands of Wall Street and the water privatization lobby off Western water supplies.

The hands of the latest would-be President Bush, for example, Jeb, who told the *South Florida Sun-Sentinel*, “We must push privatization [of government] in every area where privatization is possible.”

Or New Jersey governor and Obama pal Chris Christie, who pushed through legislation in January allowing—indeed, almost requiring—any New Jersey municipality that needs serious infrastructure investment, to privatize it.

Water at a Price—of Life Itself

In the midst of the California drought emergency, the huge multinational Nestle, seller of bottled water to the world, is providing one example of what must be stopped. Gov. Jerry Brown, while cutting public water use 25% by order in Sacramento, as in the rest of the state, has placed no limitation on Nestle’s withdrawal of freshwater from aquifer springs nearby. Nestle (alias here: the Arrowhead Mountain Water Company) continues to draw water at an 80 million gallon/year rate, paying 2 or 3 cents/gallon; it bottles the water in Sacramento, and sells it for roughly \$16/gallon-equivalent to the city’s population, which has had its tap water use restricted.

This comes under the world overview of Nestle’s Austrian chairman Peter Brabeck, expressed in 2011 at Davos as follows:

“For the sustainability of ... humankind, the most important issue is water. ... We will be running out of water long before we are running out of oil.

“NGOs, in a simplistic manner, are saying, ‘Water is a human right; therefore, it’s not a commercial utility.’ My answer to this is, ‘Yes, you’re right. Water is a human right. The 25 liters of water [about 5 gallons—ed.] that you need as a minimum in order to live, is a

human right. That's a few liters for cleaning, a few liters for drinking, daily hydration and minimum hygiene.... But beyond that, this is not a human right.

"We need 25 liters of water per day. But we are using—in the United States—400 liters per capita per day. So this 380 liters, I don't think this is a human right, and this should have a price. Why? Because if you do not put a price, we will not make the investments which are necessary in order to use the most precious of resources in a more responsible manner....

"If you do not give a value to the water, those [infrastructure] investments are not going to be made, because nobody has an interest to invest, because you don't have an economic return.... If the water has *at least* a decent price, the investment can be made."

The clear "smell" emanating from Brabeck's statement is the basic reason for privatization of water: Raising the price of water (always done in privatization, as shown below) differentially hits poorer water users, some of whom will lose access to water, food, or hygiene, and either become ill, or malnourished, or die.

Population reduction is the *raison d'être* of privatization. Another Davos regular and 30-year leader of Greenpeace, Amy Larkin, made it equally clear in the April 10 London *Guardian*: "The sort-sighted approach has failed to properly factor the drought threat into its pricing mechanism.... São Paulo, Brazil's largest city and industrial center, has begun rationing water and is discussing whether or not it will need to depopulate in the near future."

Brabeck's monstrous claim—that 1% of current water use is a "right" which should be provided by governments, and the availability of the other 99% of use should depend on its price—has two gross lies embedded in it. The first is being proven by Nestle in Sacramento every day. It is using the natural water supplies of the area, not responsibly, but *extremely wastefully*, because it can bring a high price in private sale. This, in a word, is the story of privatized water systems all over the world during the past 30 years. The high price



Jeb Bush told the South Florida Sun-Sentinel, "We must push privatization [of government] in every area where privatization is possible."

cuts off the access and perhaps the lives of lower-income people, while wasting the water.

Brabeck's second lie concerns the human race. He claims that mankind does not invest time and resources into scientific and technological progress—expressed as new infrastructure—unless it commands a high money price for private investors. The extraordinary water supply and management infrastructure of the American West—built for the most part through the Bureau of Reclamation, Reconstruction Finance Corporation, Works Progress Administration, Civilian Conservation Corps, Army Corps of Engineers, and continued through the period of JFK's Presidency, as by then-California Gov. Pat

Brown—proves this is false. What we are going to do to revolutionize water management around the Pacific Rim in the future, proves it is false. And water privatization's history of failures proves it is false.

Once a French Disease

For more than a century, the huge private water companies were in France, and the largest part of France's water systems privatized. The giants were the companies known as Suez Lyonnais des Eaux ("Suez") and Vivendi Environnement (now "Veolia"). Here occurred one of the first examples of degradation of public water supplies when they are made price-dependent. This was the city of Grenoble, historically an exception in France in having for many decades a public water supply, well-managed and adequate to the city's needs. Bribery of city officials led to sale of the water system to Suez in 1987. Scandals of water price gouging, layoffs of water engineers and inspectors, water quality degradation, and large *increases* in water withdrawals all followed. Grenoble went public again in 1995, and top Suez officials escaped prison because of their financial clout with political parties, like that of Enron with the Bushes.

The private giants' water rates in French municipalities are generally 15% higher than those of public city water systems.



EIRNS/Robert Baker

Speculation in water prices during the drought is another Wall Street crime which calls for breaking up the big banks with Glass-Steagall. Here, LaRouchePAC holds a rally on Wall Street, April 9.

In 1979-80, British Prime Minister Margaret Thatcher's "revolution" privatized *all* the water systems in the U.K. by 1988. The giant private water companies started to go global through this development, entering England and Wales as Veolia, RWE Thames Water, Wessex Water, etc. Average U.K. customer water charges then doubled (a 106% increase, according to Public Services International) from 1989 to 1995, and the annual rate of "disconnections" of customers rose by 50%. In the U.K., the companies found they could average 10% profits annually.

Then when they took over Buenos Aires' water in 1993 (Suez, under the name Aguas Argentinas), they made 20-30% annual profits. Argentina fit the pattern in that water rates were raised 55% in two steps in 1991 and 1992, under the Carlos Menem government, in preparation for the privatization; and another 15% in 1994. Water use indeed expanded in Buenos Aires by the overall expansion of the system; but nitrates in the water supply rose, pressure fell, prices kept rising, until the Néstor Kirchner government made the city's water a public entity again in 2006.

This was repeated with the largest water privatization deal pulled off in the United States, when Atlanta sold the operation of its water system for 20 years to United Water (Suez) in 1999. The city cancelled the contract just four years later, after a deluge of residents' complaints of brown water, poor and interrupted service, and a roughly 30% rate increase.

The same process in Baltimore just culminated, in January 2015, in the city's abandonment of a privatization "consulting" contract with Veolia North America after citywide protests against it. According to the familiar pattern, the city had raised water rates very substantially (40% since 2013) in preparation for privatization. Following defeat of the contract, the city issued 10-day shut-off notices to 25,000 households April 8, which in many cases may also involve eviction.

Detroit is on the same path since the city's bankruptcy in 2013, with the Water and Sewerage Department having imposed 25% rate increases, attempted to shut off water to thousands of delinquent households, and formed a new corporate structure, Great Lakes Water Authority, ready for privatization. Water rates have been increased by 25% since Detroit's bankruptcy.

In Ireland, the new "semi-public" entity created, called Irish Water, sparked a nationwide mass protest movement when water rates were increased sharply to cut use. There, Veolia UK has made public its desire to negotiate for privatization of Irish Water.

Close to 50 million customers in the United States had to buy their water from private companies in 2012, with the largest private seller being American Waterworks (of which more below). A state-by-state cost comparison by Food and Water Watch in 2011 found that the average household water bill for a private water utility customer is 33% higher than for a public water utility.

And a full one-sixth of privatized water contracts were *cancelled* by the municipality between 2007 and 2011, most often because of bad water quality from the privatized system. Private water companies typically get contracts of 10-20 years, and don't make infrastructure investments which will take longer than that to pay off economically, such as really new water sources. They try to *increase* water use in order to raise their revenue, rather than trying to conserve it (like Nestle in Sacramento); and they typically keep expert staffs, on which water quality depends, to a minimum.

Gary, Ind. cancelled its contract with Veolia because water costs doubled in a few years. In 2009, Camden, N.J., sued United Water (Suez) for “unapproved payments, high unaccounted-for water losses, poor maintenance, and service disruptions.” In Milwaukee, a state audit found that the same company violated its contract by shutting down sewage pumps to save money, a move reminiscent of Enron’s behavior in California electricity markets; the move resulted in billions of gallons of raw sewage spilling into Lake Michigan.

UN, World Bank, and Wall Street

By 2012, some 7-8% of municipal and smaller water systems in the world had been privatized—overwhelmingly by the companies named above—according to the World Bank.

In fact, the World Bank—whose miserably low infrastructure investment level (ca. \$10 billion annually around the world) is one reason so many nations have joined with China in the new Asian Infrastructure Investment Bank—has pushed water privatization hard since 1992. It has made many water privatization loans to countries and cities, essentially to subsidize the private water companies in whatever infrastructure they were going to build. This practice stems from the so-called (UN) Dublin Statement on Water and Sustainable Development of 1992, which pronounced that “Water is an economic good”—i.e., not a right of human civilization. From that point on, the World Bank has advised Third World countries and cities to sell their water infrastructure to the private companies.

In 1998, the UN Commission on Sustainable Development proposed governments turn to large multinational companies for capital and expertise in water management, requiring an “open market in water rights.”

In came Wall Street. Goldman Sachs, along with General Electric and a high-powered Washington think tank called the World Resources Institute (WRI), established a market index “measuring and hedging water-related risks facing companies and their investors.” This new water index “draws on publicly available data regarding physical scarcity and water quality and overlays factors including the regulatory regime and social and reputational issues in various regions of the world.” Together the financial firms called themselves the Aqueduct Alliance, and their index the Aqueduct Index.

It is, in other words, an index to bet on water as a

commodity, even as Goldman Sachs has, since 1991, operated the dominant overall commodity price index. There are, in fact, now six such Wall Street/London/Frankfurt water-price betting indices, all of them started since 2000. Bloomberg News reported March 31 that California’s water cost index rose 36.7% from 2009 to 2014—compared to supposed general inflation of 8.7%—and that the index for Texas rose 19.8% in the same period.

The Goldman et al. index concentrates on regions of the world where water scarcity is enticing speculators to secure water-rights in a “buy-and-hold” strategy. Its model focuses on recent events in Australia. The government stupidly introduced a private water market for the Murray Darling Basin, its largest water-source region, in the 1990s, with speculators buying land with water rights. Drought hit during the following decade and the speculative market exploded, with the government having to repurchase land/water rights. With prices zooming, hedge funds made several billion dollars in profits.

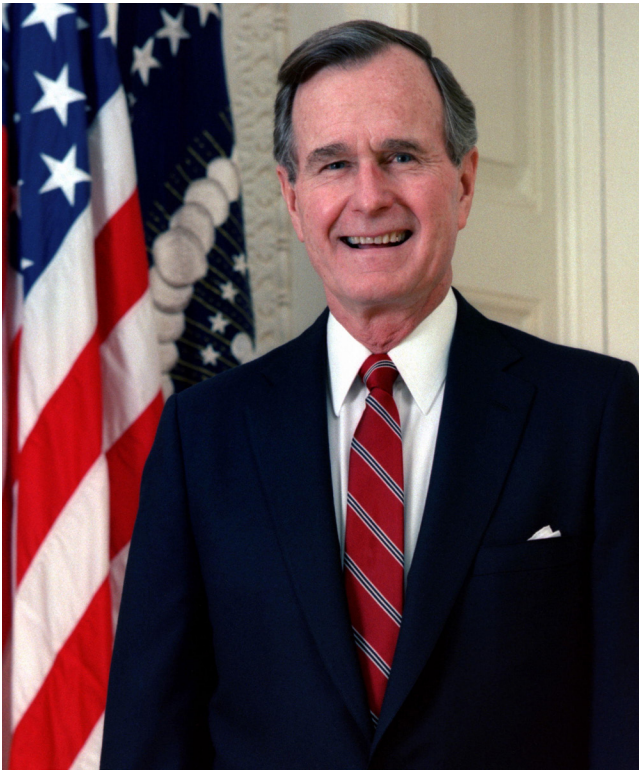
Even post-drought, the Aqueduct Alliance index remains focused on the Murray-Darling Basin. One hedge fund advisor was quoted by the *New Internationalist* magazine in 2013: “An emerging worldwide water crisis is creating serious profit opportunities for those in the know. If you play it right, the results of this impending water crisis can be very good.”

Currently, Goldman Sachs uses its index to advise water-rights holders in the United States as well, on when and to whom to sell. Its advice is to sell to “frackers”—hydraulic fracturing oil drillers—obtaining a far higher price than to farmers, ranchers, or even municipalities, for now.

Goldman Sachs itself bought Veolia (formerly Vivendi) UK and Veolia North America in 2012; tried to privatize Reno, Nev.’s water system for 50 years in 2009; teamed with Deutsche Bank in unsuccessful 2007 bids for two other U.K. private water companies; and in 2003, bought Odeco Nalco, a water treatment technology company with 10,000 employees, from Suez.

Willem Buiter, Citigroup’s chief economist, wrote in 2012: “Water as an asset class will, in my view, become eventually the single most important physical-commodity based asset class, dwarfing oil, copper, agricultural commodities and precious metals.”

Enron itself was going into privatized water sales when it was exposed for its electricity black marketeer-



George H.W. Bush said in 1965: "I have decided to give my vigorous support for population control in the United States and the world."

ing and other speculations, and blew up. Enron had bought Wessex Water (U.K.) and formed Azurix, which then bought half a dozen water companies in South America, Canada, and India. Azurix has now become American Waterworks, with a substantial position in the company by JPMorgan Chase Bank.

Bank holding companies and banks were not permitted to own commodities or commodity infrastructure under the Glass-Steagall Act, and are still prohibited from doing so under the Bank Holding Company Act of 1957—water speculation like this is given to them on waivers of the latter act by the Federal Reserve.

Bush Water Barons

The *New York Times* on March 31, in a column much like Nestle CEO Peter Brabeck's pronouncements quoted at the outset, published Council on Foreign Relations Fellow Scott Moore, on the California water crisis. "Water Pricing, Not Engineering, Will Ease Looming Water Shortages," was the title. The United States, Moore wrote, "needs to move away from engineering solutions in favor of economic approaches." Water prices are "simply too low," he argued, "giving

users little incentive to conserve." The solution: Create water markets.

"Under a market approach, regulators set a cap on the total amount of water that can be used in a given area. The right to use a certain portion of this amount is granted to different water users, including farmers and utilities. Water users who use less than their allotted amount can sell the surplus to other water users at a profit, encouraging conservation and investment in more water-efficient technologies and processes."

The Enron electricity smash-and-grab in California showed that users do not sell to homely "other users," but to financial brokerages like Enron, creating infrastructural chaos and price hyperinflation for superprofits.

This is what a Wall Street "national water market" would do, on the model of the Australian events on which Goldman Sachs' Aqueduct Index is focussed. The big winners are the "buy-and-hold" speculators in water rights.

This brings us to the Bush family.

Billionaire T. Boone Pickens owns Mesa Water, which owns the water rights to recover 65 billion gallons/year of water from under the land it owns over the Ogallala Aquifer. Mesa Water was formed to buy up these rights and build a pipeline to Dallas (ca. 250 miles away) to sell the water to the city, into the intensifying drought.

George H.W. Bush said in 1965: "I have decided to give my vigorous support for population control in the United States and the world." At that time his fellow members of Congress called him "Rubbers" because of his fanatical support for reducing human births in the world.

Obviously, Prescott Bush's son knows that populations can also be reduced by resource crises, and certainly by lack of water to grow food.

So the Bushes go Pickens one better. The Bush family owns, according to many published reports, 300,000 acres in Paraguay which sit over (and have water rights to) the Guarani Aquifer—the world's largest single underground water source, largely beneath Brazil. George H.W. Bush bought 200,000 acres in 2005. Then in 2006, while on a trip to Paraguay for UNICEF and presumably directed by her grandfather, "W" Bush's daughter Jenna reportedly bought 98,840 acres of land in Chaco, Paraguay, near the Triple Frontier (Bolivia, Brazil, and Paraguay). The two huge parcels are very close together.

Jerry Brown's Brownshirt Genocidal Policy; If It Is Brown, Flush It!

by William F. Wertz, Jr.

April 11—Faced with a drought in California and other Western states, which may very well last decades, California Governor Jerry Brown, whose own anti-nuclear power policies in the 1970s and 1980s prevented the development of nuclear desalination in California, which would have alleviated the current crisis, announced a genocidal program for dealing with the drought which relies solely on conservation of diminishing supplies of water.

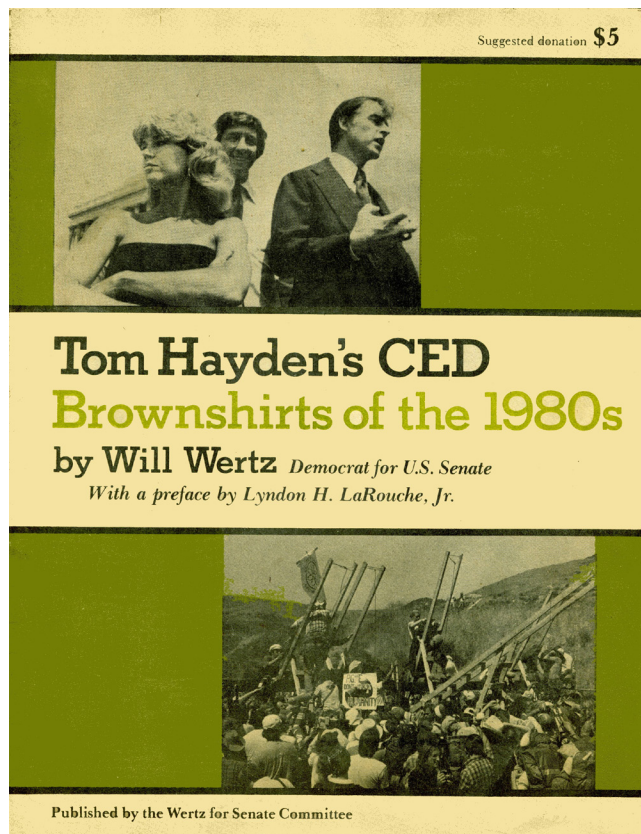
Ideologue that he is, Brown instead of blaming his own suppression of nuclear power for the current crisis, proclaimed on Sunday, April 5, on ABC News' "This Week": "And I can tell you, from California, climate change is not a hoax. We're dealing with it and it's damn serious."

In a *New York Times* article entitled "California Drought Tests History of Endless Growth," published the same day, Jerry Brown is further quoted as follows: "You just can't live the way you always have. For over 10,000 years, people lived in California, but the number of those people were never more than 300,000 or 400,000."

Thus, in contrast to his own father, former Governor Pat Brown, who fostered numerous water management projects in California, Jerry Brown is now prepared to use the crisis which is a result of his own anti-science bias, to pursue a policy which will deliberately reduce the capacity of California and other Western states to sustain human population.

The LaRouche movement first locked horns with Jerry Brown in the early 1980s, when he was set to run for U.S. Senate after having served as Governor of California from 1975 to 1983. In 1982, Brown was opposed in the primary for the Democratic nomination for U.S. Senate by the author of this article, LaRouche Democrat Will Wertz.

At that time, Brown was reeling from another crisis of his own making. California was experiencing an in-



A pamphlet from the Will Wertz for Senate campaign in California, 1982.

festation of the Mediterranean fruitfly which was devastating the state's agriculture. As in the case of today's water crisis, the medfly crisis was aggravated by Brown himself. Brown delayed spraying the medfly in favor of what he called "integrated pest management."

This crisis, however, was only paradigmatic of Brown's anti-human, anti-science, fascist degeneracy.

Brownshirts of the 1980s

Throughout his governorship from 1975 to 1983, Brown allied with Tom Hayden and Jane Fonda to fa-

natically oppose the development of nuclear energy. In early 1978, his threatened veto resulted in the scrapping of the Sundesert nuclear plant. In July 1978, Brown established the Solar Cal Council by Executive Order. He then proceeded to appoint several members of Tom Hayden's Campaign for Economic Democracy (CED) to the Council. He subsequently appointed Hayden himself to represent the State of California on the federally funded Western SUN, the solar coordinating body for the western states.

On March 16, 1979, twelve days before the Three Mile Island nuclear accident in Pennsylvania, the Hayden-Fonda-Brown campaign against nuclear power escalated with the release of the movie *The China Syndrome*, starring Jane Fonda. In the film, a small nuclear power plant in California suffers a meltdown, which one character in the movie says, would render "an area the size of Pennsylvania" permanently uninhabitable.

During Brown's run for the Democratic nomination for President in 1980, he was the only candidate to oppose the Seabrook nuclear plant in New Hampshire.

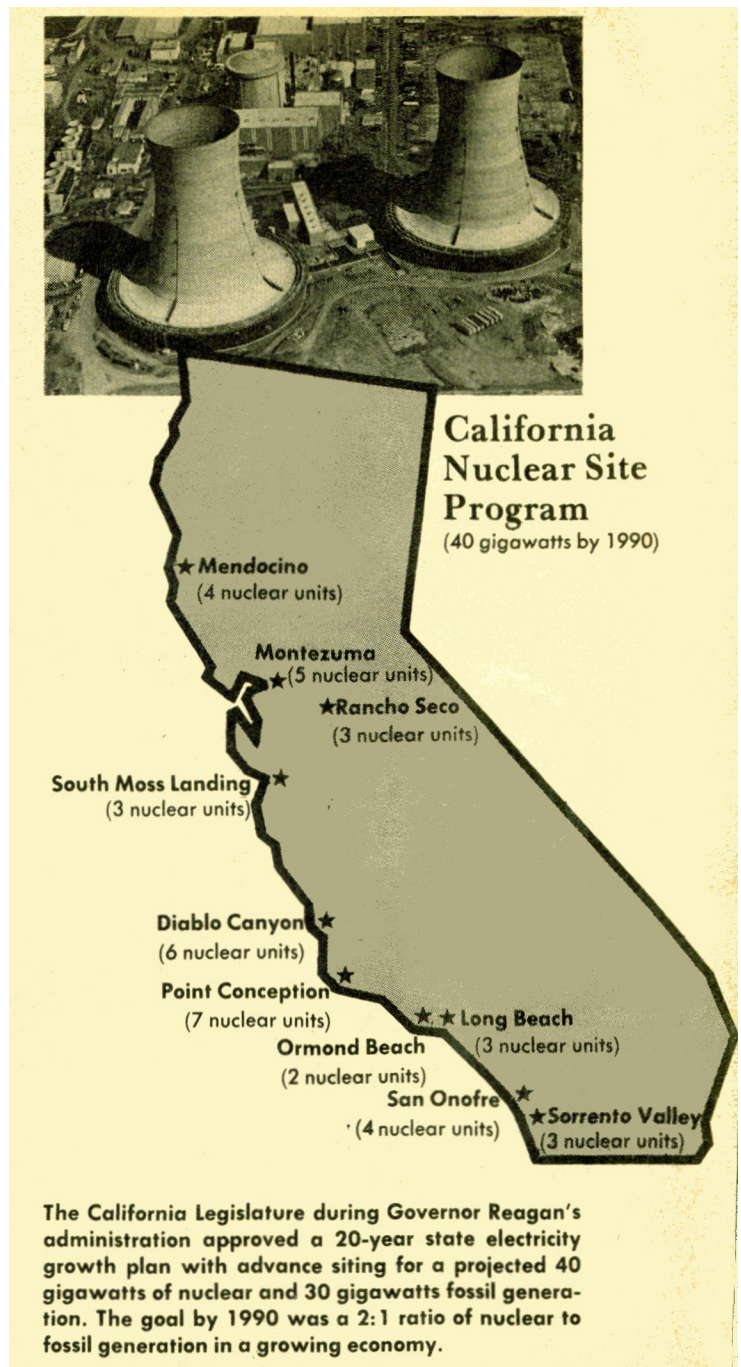
In 1981, Brown intervened with a legal action which later contributed to the suspension of the license of the Diablo Canyon nuclear plant by the Nuclear Regulatory Commission.

Lyndon LaRouche on Brown's Fascism

In his 1982 campaign for the Democratic nomination for U.S. Senate against Brown, Wertz published two pamphlets. The first was entitled: "Tom Hayden's CED; Brownshirts of the 1980s," which included a preface written by Lyndon H. LaRouche, Jr. The second was an eight-page programmatic pamphlet entitled "Restore the American System."

In the former, in his preface entitled "Tom Hayden & Adolf Hitler," LaRouche argued, "Yet, less than four decades after the gruesome horrors of the Hitler regime, there is a world-wide, mass-based movement dedicated to global genocide against up to a hundred times as many victims as the Hitler regime murdered."

LaRouche wrote that the issue in the 1982 Senate campaign "is whether or not the California Democrats have the moral fiber to repudiate Malthusian policies efficiently designed to murder a hundred times more



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Legislature-approved electrical power generation sites, by the Wertz for Senate campaign in 1982.

people than the Austrian hippy succeeded in slaughtering. . . . You cannot look in the mirror and call yourself a human being, unless you effectively oppose Tom Hayden's candidate, Governor Brown."

In that same preface, LaRouche raised the issue of water, over three decades before the current crisis,

stressing the need both for nuclear desalination and the North American Water and Power Alliance (NAWAPA).

“The cheapest way to clean up the waters of our rivers and lakes is to place nuclear plants along them. A one thousand megawatt plant cleans approximately 1,410 acre-feet of water a day. . . . If we use the warmed effluent water of the plants wisely, we can use this for various purposes, including increase of agricultural production in the vicinity, for promoting fish farming and so forth. If the nuclear plant is on an ocean coast, we need our heads examined if we don’t consider the potential for ocean fish-farming which may exist as a result.”

LaRouche continued: “The two leading projects on which the government must act are nuclear-energy development and large-scale water-development projects, including the North American Water and Power Alliance (NAWAPA). On both of these classes of projects we face a showdown political fight with the forces behind the candidacy of Governor Edmund [Jerry] Brown.”

Nuclear Desalination

In the second pamphlet, Wertz called for implementing not only NAWAPA but also for immediately proceeding with two major planned nuclear desalination projects which had been sabotaged by Brown and his allies Hayden and Fonda.

The first of these was called the Bolsa Island nuplex, off the coast of Orange County. This plan, which was initiated in the mid-1960s, called for a dual-purpose nuclear desalting plant located on a man-made island. The complex was to have been built in two phases. In the first phase, the desalination plant would produce 50 million gallons of water per day. Within 4-5 years, an additional 100 million gallons per day capacity would be added, for a total of 150 million gallons per day.

In May 1967, a bill authorizing the project was signed by President Lyndon Johnson. In August 1967, then California Governor Ronald Reagan signed Assembly Bill 1782, authorizing the plan to proceed.

The other plan which Wertz proposed implementing was the construction of six nuclear-powered desalting projects on the U.S.-Mexican border by the year 2000. Each of the projects, comprising 2 to 3 nuclear reactors, would have produced 1 billion gallons of freshwater per day. The projects would thus have provided more than 6 billion gallons of water per day to Southern Cal-

ifornia and Arizona in the United States and Sonora and Baja California in Mexico.

Climate change as Jerry Brown conceives it is a hoax. The real crisis is not climate change due to human activity, but rather a failure to address a change in the climate caused by solar, cosmic, and galactic factors, a failure resulting from the deliberate activity of green-fascists like Jerry Brown.

Ultimately, the choice is to grow or die. If Brown is not thrown out of office and his policies are not rejected, then the population of California may very well be reduced to 300,000 or 400,000 people in the short term.

But the alternative to that exists: By mastering scientific principles—Keplerian principles—we can harness water resources that would allow for an increasing population at an even higher standard of living than currently experienced, including in California.

Two immediate sources of water identified by Ben Deniston of the LaRouchePAC Science Team are nuclear desalination of ocean water, which Brown has adamantly opposed, and ionization-based weather modification. Anyone who wants to prevent human extinction should deal with this, and take this damn seriously.

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Restore Agriculture for People, Not Wall Street

by Marcia Merry Baker

April 10—The California and Southwestern states drought, a water supply crisis of varying danger for some 100 million people in 22 states, is also an automatic national and international food crisis. Large shares of U.S. food consumption and exports originate in California, and west of the Mississippi River. The extent and severity of the Western dryness are shown in **Figure 1**, a weekly snapshot compiled by Federal agencies. California stands out, with 44% of the state in the category of “exceptional” conditions or worse, while 98% of the state is suffering some form of drought. Likewise, the High Plains region of parts of Texas and western Oklahoma and Kansas is desiccated.

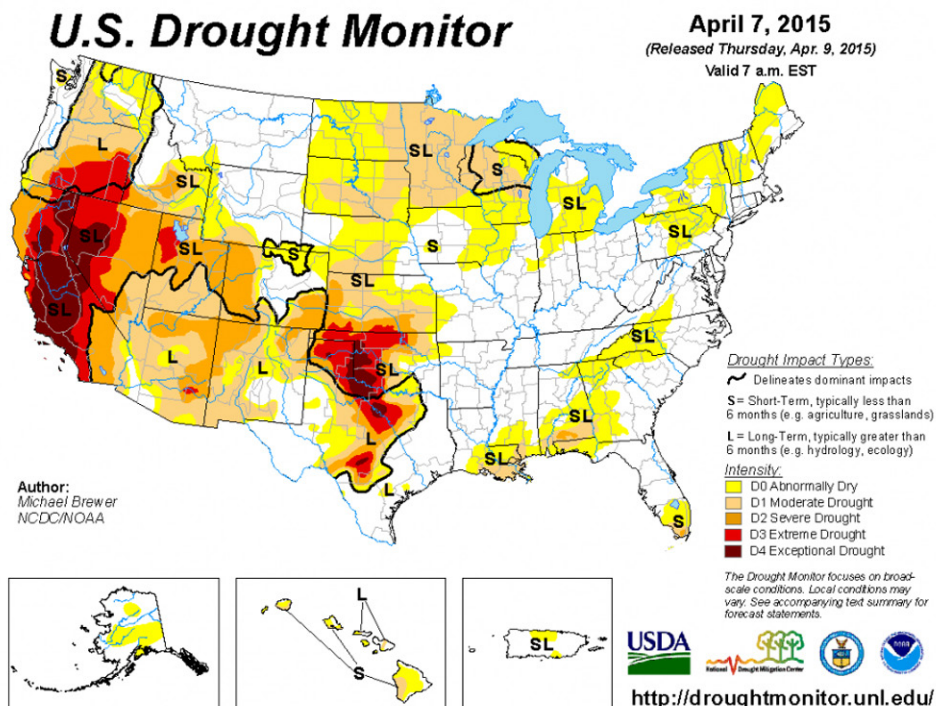
The dire impact of this water crisis for the entire U.S. agriculture base is manifest and understandable, once the physical dimensions are reviewed, as we summarize below. What is less evident, but crucial to understand, in order to take emergency actions, is that the drought is a call to action to restore a Federal agriculture policy to provide for the national and international food supply, and not for feeding the destructive practices of Wall Street. Decades of allowing the Wall Street/City of London factor in the physical economy are what have created the man-made vulnerability to drought to begin with.

No Water, No Farming

Make no mistake. When Gov. Jerry Brown announced that agriculture in California was “exempt” from the 25% mandatory cut in water usage he decreed April 1 for 38 million state residents, this *did not mean that California farms currently have sufficient water*. The governor’s executive order was just back-handed recognition that the state’s agriculture sector is already reeling from lack of water.

Beginning last year, for the first time ever, allocations to California farm operations for the 2014 water season were set at zero, from the two major water management systems serving much of the state’s agricul-

FIGURE 1



ture—the California State Water Project and the Federal Bureau of Reclamation’s San Joaquin system. This comes on top of the low annual water allocations—20% of recent levels—made by these agencies in the past few years of this drought episode. The California Water Project, for example, has in the past provided water for 750,000 acres, and for 20 million people. Now, the water isn’t there. The reservoir levels in these water-management systems, and other impoundments, are way below danger levels.

In recent decades, about 30% of the water used by people in the state has depended on snowpack melt, filling the reservoirs in late Spring and Summer. But as of April 2014, the snowpack level was only 16% of recent average; and this month, it is down to 6%. State-wide, the current snowpack holds only 1.4 inches of water content, instead of the historical (over the last century) 28.3 inches. There is next-to-nothing to melt and run off into reservoirs.

Last year, because of the water shortage, a huge area—1.7 million acres—was not planted in California’s Central Valley. NASA’s remote sensing system verified this, estimating that, as of July 27, 2014, there were 1,706,038 acres idled—which is about 20% of the total irrigated area of 9 million acres throughout the state. Irrigated farmland in the Central Valley and the Imperial Valley—also hit by water shortage from the Colorado River run-off contraction—is among the highest-yield in the world.

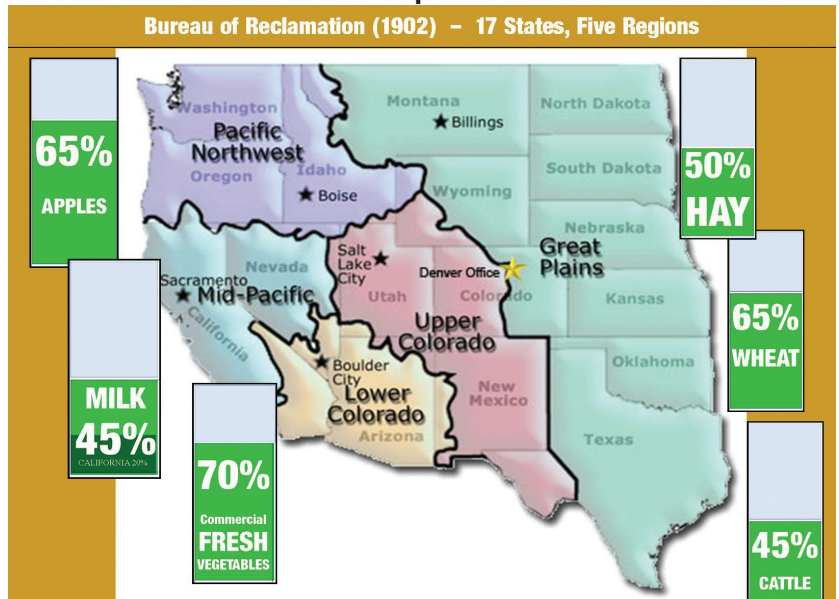
As of the 2015 crop year, prospects are even worse, and farmers have few remaining contingencies. Central Valley growers, for example, have dug or deepened wells, sought to buy water at exorbitant prices, triaged parts of orchards and groves, etc. Farmers have put in subsurface and drip irrigation systems, and other technologies for efficiency and conservation. There are no “last resorts” left.

No Farming, No Food

This adds up to an unprecedented food crisis, not only because of the extreme physical challenges as such, but even more, because of the continued toleration of the drought “responses” declared by the Obama

FIGURE 2

Percent of National Food Output



Administration and Wall Street as “solutions,” namely: cutbacks, water market-pricing and greenie depopulation.

Figure 2 illustrates that large parts of U.S. food production—wheat, dairy and beef, fresh fruits and vegetables—come from Western states, many of which are now in severe drought. The map shows the 17 states originally in the five Bureau of Reclamation districts, where certain water infrastructure development projects (dams, irrigation channels, etc.) were built—but only up to a point. The 1950s and ’60s plans for continued development through the proposed NAWAPA (North American Water and Power Alliance), nuclear desalination, and even the full build-out of the Missouri River management system, were thwarted.

In the Great Plains, a high percentage of the nation’s hay, wheat, and cattle are produced. The current High Plains drought region (Figure 1) in northern Texas and western Oklahoma and Kansas, is the heart of the U.S. Wheat Belt, where 65% of the national wheat output is produced. The U.S. is one of the top wheat exporting nations in the world.

Texas, long the leading cattle state, has seen its beef cattle inventory drop from 5.35 million head in 2005, down to 3.91 million in 2014, under drought conditions. Nationally, the U.S. cattle herd (all types) has fallen to the same level as 1951.

California is a world-class farming disaster across the board. The state alone accounts for 20% of U.S. milk output, and the baseline water requirement for dairy husbandry cannot be cut. Cow herds and numbers are being triaged.

California and Arizona account for 70% of total U.S. fresh fruit and vegetable production, threatened for lack of water. By food type, California ranks first in the nation of production of many crops: apricots

(88%); avocados (88%), raspberries (74%), fresh strawberries (91%), grapes (91%), kiwi fruit (87%), lemons (92%), nectarines (95%), olives (96%), peaches (73%), plums (97%).

California also ranks nationally for significant grain production, which is falling drastically in the state. Look at the harvest for 2014: The rice crop was down 25% from the year before, and for the third year running. Most of the U.S. medium-grain rice is grown

FDR: Do What Works!

Figure 3 shows the 436 U.S. counties now officially designated to be drought disasters, as of April 1, by the U.S. Department of Agriculture. Under the Obama Administration, that's as far as it goes. The designation means only the possibility that farmers and ranchers may squeak by for a little while, by qualifying for certain loans, grants, and waivers, to try to stay on the land.

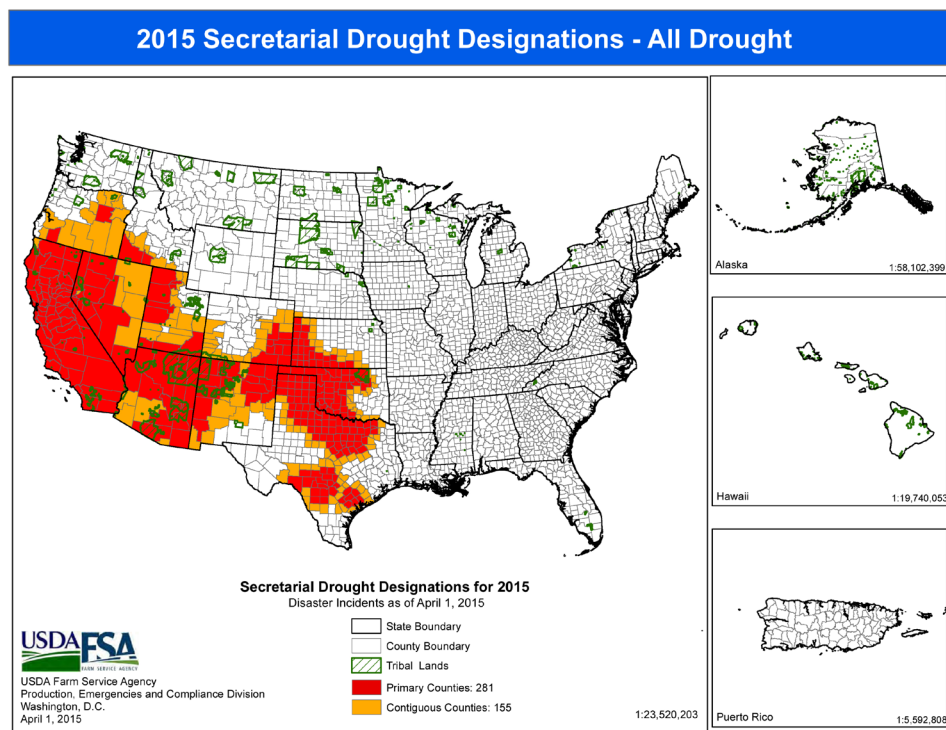
Contrast this to the very active map of Federal action on the drought under the Franklin Delano Roosevelt administrations in the 1930s and war years. The entire productive base of the nation was upgraded. During the Dust Bowl, measures were deployed ranging from building wind-breaks, to initiating contour ploughing. The Civil Conservation Corps (CCC) planted hundreds of thousands of trees, against water and wind erosion on the High Plains. In 1935, the national Soil Conservation District system was launched, enlisting citizens to work together in a local, state, and Fed-

eral partnership to enhance resources. Millions of people were given jobs and hope.

At the same time, the Roosevelt Administration conducted breakthrough work in atomic research, plant genetics, and other branches of science. There is no conflict between long-term commitment to the most advanced knowledge, and taking short-term emergency measures. Only if we pursue the frontiers of progress, can we succeed in taking the actions for the immediate crisis.

—*Marcia Merry Baker*

FIGURE 3



in California; about half of the crop has been exported in recent years, mostly to Asia.

Wheat production in California was down in 2014 by over half from the year before. The 2014 winter wheat harvest, in the range of 430 thousand tons, is the lowest since 1968; durum wheat, at 78 thousand tons, the lowest since 1977. (USDA National Agricultural Statistics Service)

Dry Up Wall Street

There are several areas of emergency action required to shore up U.S. agriculture and the food supply. These go along with the fundamental actions required to shift the nation into a re-commitment to scientific understanding of the broadest processes affecting the biosphere, to enhance and protect necessary economic activity. How can we cause and augment rainfall? How can we forecast and defend against disasters—earthquakes, tsunamis? Consider four interrelated categories:

1. Take action to achieve the necessary national volume of food production and supply. Bring together the right “wheat people,” “citrus people,” “orchard fruits people,” dairymen, and so on, to determine where and how to foster expanded production in non-drought areas of the country, while preserving and compensating growers and producers in California and other drought regions, during the crisis period, until relief can come.

There are precedents for this, especially in the FDR war-time mobilization, when substitute crops, as well as compensating areas of production were brought into play. All necessary financial measures can be activated, including moratoria on debt payments and on foreclosures for farm operations in drought areas, and grants to boost production in non-drought regions.

For example, citrus production in Florida and parts of Texas (depending on water), can be increased. Doing this will require such tasks as defeating the citrus plant “greening” disease in Florida.

2. Take action on urgent financial measures. Enact all necessary farm-commodity price-control measures, to stabilize agriculture. Price ranges must be set, to guarantee covering farm costs of production. The principle of parity pricing worked well in the past and can do so now. Outlaw speculation in farm commodities on the Chicago and other exchanges. And outlaw the practices based on commoditization of

water, whether such violations of the public good be mega-farms selling water rights, or privateer water speculators, bilking farms for access to water.

The lead-in to all this, is to restore the Glass-Steagall Act, to separate commercial banking from speculative, so-called investment banking, and federally back only the former. In turn, this is the lead-in to establishing nation-serving national banking, the issuance of credit, and initiation of the needed infrastructure (water, transportation, and other) upgrades to support vast expansion in agriculture potential. This is spelled out as the “Four Laws” of Lyndon LaRouche.¹

Enlist the United States with the BRICS international development drive, especially joining the Asian Infrastructure Investment Bank (AIIB).

3. Work with trade partner nations for mutually assured food supplies. The U.S. already—prior to the California and Western drought disaster—is heavily food-import dependent, and selectively, a big farm commodity supplier. While this is almost entirely a legacy of the era of mega-multinationals using “free” (rigged) trade as a weapon, it now must be re-sorted out according to the principle of mutual benefit. The drought has called the question.

Collaboration on food flows is actively underway among the BRICS nations and friends. For example, Argentina is orienting to vastly increase meat shipments to Russia. China, which relies on imports for some 60% of domestic soy consumption, works closely with its supplier nations, to collaborate on infrastructure development for farming, shipping, and handling.

4. Reinstate anti-trust policies in agriculture science and the food chain. At present, Wall Street—in the form of hedge funds, billionaires, investment syndicates—are all over food-processing and mega-farm operations, as well as doing hyper-speculation on farm commodities. The most recent example, is the pending takeover of Kraft Foods Group by Warren Buffett’s H.J. Heinz, a \$45 billion deal. The most sinister of all, is the takeover of plant genetics research by Monsanto and cohorts as of the 1970s, through subversion of U.S. patent law. Bust this up.

Patrick Ruckert contributed to this article.

Contact the author at: marciabaker@larouchepub.com.

1. Lyndon H. LaRouche, Jr., “The Four New Laws To Save the U.S.A. Now! Not an Option: An Immediate Necessity,” *EIR*, June 13, 2014.

Great Projects To Fix The Water Crisis

Since the very inception of his political movement, Lyndon LaRouche has placed a primary emphasis on the high-technology development of the Earth's water resources—notably through nuclear-powered desalination—as vital for continued human life on this planet. Here are a few of the major interventions.

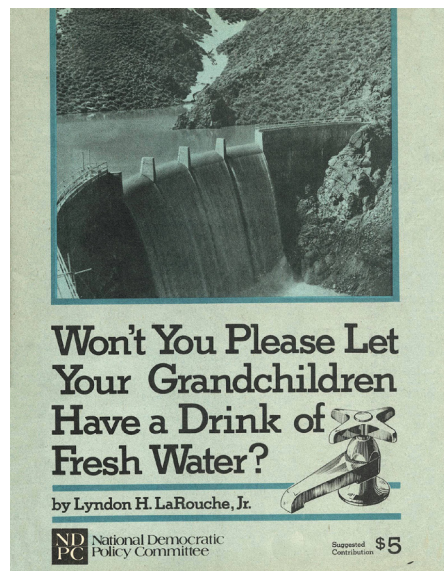
1978: Lyndon H. LaRouche, Jr., “The Grand Design for World Development: The Nuplex and U.S. Vital Interests,” *Fusion*, August 1978:

This article focused on the creation of nuplexes, as the best means for using nuclear power to deal with problems of power generation and water supply in the developing world, including water desalination. He wrote:

“A nuplex is a new agroindustrial city built around paired nuclear energy plants, each in the 0.5-gigawatt to 1.5-gigawatt range (by present standards). To economize on distribution costs, and to exploit the waste heat produced, industrial consumers of output will huddle around the plants, creating a new sort of ‘clean’ industrial (and employment) center. With the growing importance of the ‘clean water’ problem, and with the opportunity to replicate California’s Imperial Valley in many parts of the world, desalination and other water-purification exploiting waste heat will make nuplexes key in meeting agricultural and population clean-water requirements. . . .”

1979: The Fusion Energy Foundation, co-founded by LaRouche, produced a study outlining a 40-year development program for India, which specified water development as a major component of the plan.

1982: Lyndon H. LaRouche, Jr., “Won’t You Please Let Your Grandchildren Have a Drink of Fresh Water?” National Democratic Policy Committee (NDPC) pamphlet:



“Preface—Our Greatest Environmental Danger

“Next to a general thermonuclear war, the greatest single environmental danger to the American people over the coming two decades is the danger that whole regions of our nation will simply run out of usable freshwater supplies. This is an acute danger in a region within a hundred-mile radius of New York City. The greatest area of present danger lies in the area west of the Mississippi.

“This problem has been seen coming, at least by more far-sighted people, for most of the post-war period. Unfortunately, the general public has been kept in ignorance of this policy issue, and certain among influential political circles have sabotaged sound policies and programs, each for one of a variety of reasons.

“Now, unless we act quickly, the Great American West is going to die, suffocated by a swirl of dust and sewage. Already much of our agriculture is in danger, as the drought of 1980 ought to warn us. A few more years ahead, the water shortage will grow to become the most acute environmental danger to many facets of our life, as well as our nation’s supplies of food and fiber.

“There are three basic approaches which must be combined to overcome this problem.

“First, there is the approach which Texas Congressman Jim Wright supported in a book he published back during the middle of the 1960s, the so-called North American Water and Power Alliance (NAWAPA). That is the immediate action on which this NDPC policy outline concentrates. Better management of the available

freshwater supplies of the North American continent will not only solve this particular problem over the decades ahead, but will become the foundation for an explosion in wealth throughout a region west of the line of the Mississippi River, in Canada, the United States, and northern Mexico.

“Second, by creating the conditions for growing denser populations of crops, shrubbery, and trees in presently arid regions, the vapor transpiration from plant-life will recycle freshwater through improved rainfall patterns. This would

occur largely as a by-product of implementing NAWAPA and related regional and local freshwater management actions.

“Third, over the longer period, nuclear-energy technologies will provide us unlimited freshwater supplies, as improvements in technology lower the costs of desalinating seawater on a large scale, and aid us in turning polluted waste water into pure fresh water for re-use many times over on the way to the sea. With such technologies, the vast Sahara region can be transformed into a rich, habitable region, together with the Gobi desert in Asia.

“As the NAWAPA example shows, the investment in improvement of freshwater supplies is a highly profitable investment. Every dollar wisely spent on NAWAPA will increase the production of wealth in our Western states many times over during the course of the coming decades. It is the same with nuclear-energy technologies.”

1984: *The Independent Democrats’ 1984 Platform: Five Crises Facing the Next President, Presidential Campaign Platform of the LaRouche-Davis Ticket*, September 1984:

“Crisis 4—The World-Wide Food Shortage Now Erupting

“...5. Immediate action to develop freshwater management systems in areas suffering or threatened by major water shortages.

“Candidate LaRouche has co-sponsored revival of proposals to develop a continental water-management system, to include bringing water now flowing into the Arctic Ocean down through the Western states: one line running in the arid region between California and the Rocky Mountains, and the second to the east of the Rockies, across the river-systems flowing eastward into the Mississippi. . . .

“The indicated, immediate measures of emergency action would give priority to those parts of the proposed system whose existing agricultural potentials require prompt remedies for a serious and worsening subsidence of water-tables. . . .”

July 1990: LaRouche’s “Oasis Plan” for the Middle East.

In the context of the buildup to the First Gulf War, LaRouche spoke of an “Oasis Plan” approach for the Southwest Asian region. He stated on July 12, 1990: “To avoid a conflict which would be ruinous for all peoples and nations of the Middle East, an effective series of common interest proposals must be made in accord

with the rights of all parties. Debate around such proposals is inherently healthy and confidence-building. Although to some, an Oasis Plan seems an unlikely proposition under the present circumstances, the price of failing to implement such a program will be staggering. Therefore, there is no obstacle so great, nor so difficult, that we should not seek to overcome it in order to further economic cooperation.”

Aug. 6, 2000: LaRouche wrote a policy document, “Water as a Strategic Flank: Wherein Clinton Failed,” on the necessity of a “desalination-based economic development program we first presented to relevant Arabs, Israelis, and others a quarter-century ago”—the “Oasis Plan.” He warned, “In most of the region, and especially for the largest portions of the area, there simply do not exist sources of supply of usable water sufficient to meet the elementary needs of the population. Hence, without large-scale desalination programs being put immediately into operation, there is no hope for durable peaceful relations among the populations of this region.”

2003: The LaRouche-in-2004 Presidential campaign released a pamphlet entitled “The Sovereign States of the Americas: Great Infrastructure Projects,” which delineated the great water-transfer projects required to deal with the increasing blight of the “Great American Desert,” which runs from the American West into Mexico. Leading elements of the program were reviving NAWAPA, and implementing two major water projects in Mexico, the PHLINO and PHLIGON. (See *EIR*, Sept. 26, 2013.)

2012: Based on extensive further work on updating NAWAPA, to include the use of nuclear energy, the LaRouche Political Action Committee released the proposed NAWAPA XXI Act, which called for establishing “a Congressionally authorized body, North American Power and Water Alliance XXI Authority, with the authority to design the most efficient means of utilizing excess rainfall in Alaska, British Columbia, and Yukon, through a Rocky Mountain Reservoir system, for the primary purpose of agricultural use in the U.S. Southwest and Northern Mexico, and for the additional purposes of improving the navigability and providing for the flood control of River Basins involved in a continental water management plan; to provide for greening and forestation of arid regions of the Great American Desert, and the proper use of marginal lands in all lands encompassed by the NAWAPA XXI continental water-management plan.”

V. The Same Nazis Are Running The Government in Ukraine

LYNDON LAROUCHE, HELGA ZEPP-LAROUCHE

Attack on Ukraine's Vitrenko Stinks of Nuland's Banderist Nazis

This press release was issued by EIR, under the title "LaRouche, Zepp-LaRouche: Despicable Attempt to Frame Dr. Natalia Vitrenko Stinks of Nazism in the Bandera Tradition—Victoria Nuland's Favorite Ideology."

April 9—American statesman Lyndon LaRouche and his wife Schiller Institute founder Helga Zepp-LaRouche, today forcefully denounced a Nazi-led campaign being carried out by the Security Service of Ukraine (SBU) to defame and threaten the prominent Ukrainian economist and former Member of Parliament Dr. Natalia Vitrenko, a heroine and leading intellectual leader of that country.

"There has to be a high suspicion that this is being orchestrated by U.S. Assistant Secretary of State Victoria Nuland," said Lyndon LaRouche, "or by someone else with an affinity for Nazis in the Bandera tradition, such as Nuland is notorious for."

Zepp-LaRouche, who in February 1997 co-initiated with Vitrenko the "Appeal To Convoke a New Bretton Woods Conference," as a pro-development reorganization of the world economic system, responded to news of the escalated attacks on the Ukrainian economist and politician: "These slanders are all the more despicable,



Dr. Natalia Vitrenko

in that they occur one month before the 70th anniversary of the defeat of Nazism in Europe, in May 1945. The nations said after the end of that war, 'Never again!,' but the Western governments have forgotten about that pledge. Natalia Vitrenko has had the integrity to expose the neo-Nazi revival, and to give evidence of Banderite atrocities, both historically and in our day, while Victoria Nuland's chosen Prime Minister Arseniy 'Yats' Yatsenyuk, on the contrary, had the

nerve to say on German television that the Nazi invasion never occurred—that it was only the Soviet Union that occupied Ukraine."

Dr. Vitrenko has twice been interrogated by the SBU for supposedly receiving Russian funds for the purpose of engaging in what some media have maliciously depicted as "propaganda work to discredit the Ukrainian government authorities, to provoke armed conflict between different layers of the population of Ukraine, to incite ethnic hatred, and to provide information support for conducting 'referenda' in Ukraine's eastern regions." A statement issued yesterday by Vitrenko's Progressive Socialist Party of Ukraine (PSPU) pointed to stories published this week by the Glavcom news agency (glavcom.ua) and other media, which

cited SBU “suspicions” about Vitrenko’s receiving money from the Russian Foreign Ministry-run Fund for the Support and Defense of the Rights of Compatriots Residing Abroad.

Pro-Nazi Stench

The allegations date to May 2014, when the accounts of Dar Zhizni (Gift of Life), a women’s NGO headed by Vitrenko, were frozen. According to Ukrainian media, this was done “in the framework of an SBU investigation of funds transfers through Ukrinbank, intended for persons suspected of infringement of the territorial integrity and inviolability of Ukraine.”

Headlines in the current flood of media coverage name Vitrenko as a major sponsor of separatists and terrorists, which are broad categories being used by the current Ukrainian authorities against their political opponents. Alexander Bondarchuk, head of the small Ukrainian Labor Party, and a colleague of Vitrenko both in the Parliament and as a co-signer on her statements against the violent, neo-Nazi-spearheaded February 2014 coup d’état in Kiev and its aftermath, was arrested March 18 on charges of “infringing the territorial integrity of Ukraine.”

Translations of the PSPU statement on the renewed threat to Vitrenko, as well as one on the Bondarchuk case, are available at http://larouchepub.com/pr/2015/150409_vitrenko_threatened.html

SBU head Valentyn Nalyvaychenko announced in an April 1 interview that the model for his agency is Stepan Bandera’s Organization of Ukrainian Nationalists-Ukrainian Insurgent Army (OUN-UPA), which collaborated with the Nazis during their invasion of the Soviet Union. In view of Vitrenko’s biography and her courage in continuing to speak out on the economic and political devastation of Ukraine since last year’s coup, the attacks have the pro-Nazi stench, typical of U.S. Assistant Secretary of State Victoria Nuland’s projects in Ukraine. Nalyvaychenko, long associated with the Bandera Trident (Tryzub) organization, a core component of the coup’s Right Sector shock troops, boasted in a May 2014 Atlantic Council conference call of his “intensive” intelligence-sharing and other cooperation with “U.S. colleagues.”

Political Figures Must Speak Out

Zepp-LaRouche noted that Vitrenko has spoken frequently in Europe, on both the harm done to Ukraine’s

economy by IMF and free-trade policies, and the threat of the revival of fascist ideology in Ukraine, encouraged from the West. “Dr. Vitrenko is well-known and highly respected in Europe,” said Zepp-LaRouche, “and she has had high-level meetings both there and, in earlier years, in the United States. It is important for political figures worldwide to condemn these ludicrous attacks on Natalia Vitrenko, and identify where they are coming from.”

The LaRouches were Vitrenko’s guests in Kiev in 1995, when she was an MP. An economist specializing on Ukraine’s social services sector and the impact of International Monetary Fund (IMF) conditionalities, she ran a strong campaign for the Presidency of Ukraine in 1999, polling 11%, even after her campaign was disrupted by an assassination attempt, in which she and 40 others were injured by grenades thrown at a rally. In recent years, Dr. Vitrenko spoke at conferences of the Schiller Institute in Frankfurt, Germany, in April 2013 and October 2014.

In a [speech](#) video-recorded for the March 28-29, 2015 conference of the Citizens Electoral Council of Australia, Vitrenko herself recalled that, “From Feb. 23 to March 5, 2014, our delegation of leading representatives of some Ukrainian leftist parties was able to tour Europe, visiting France, Germany, and Italy,” where they held “dozens of meetings, press conferences, and interviews. Thanks to Members of the European Parliament, . . . I was able on 26 February 2014 to hold a press conference at the European Parliament. . . . Already then, we warned about the threat of civil war and the disintegration of the country, which could lead to World War III. And at that time, I called on Berlin, Moscow, and Paris to unite efforts: specifically these three centers—Berlin, Moscow, Paris—to unite their efforts and prevent the Nazis from taking over in Ukraine, and to help institute a ban on all neo-Nazi parties and movements in Ukraine.”

Natalia Vitrenko’s latest video address, posted today on her website, www.vitrenko.org, is titled “A Military Junta Instead of European Values.” She analyzes the law introduced into Parliament April 3 by President Petro Poroshenko, which provides for declaring martial law in Ukraine, either in the face of an armed invasion, or “the threat of attack.” The latter formulation, Vitrenko alleges, provides for acting on the basis of fabricated threats—just like the SBU’s “bluff, that Vitrenko is threatening the territorial integrity of Ukraine.”

LaRouche: ‘If anything happens to Vitrenko, Nuland must be held responsible’

April 14—Lyndon LaRouche stated today: “If anything happens to prominent Ukrainian economist and former Member of the Ukrainian Parliament Natalia Vitrenko, U.S. Assistant Secretary of State Victoria Nuland must be held responsible. With the full backing of President Barack Obama, Nuland has knowingly installed a Nazi government in Ukraine. That government, through the Security Service of Ukraine (SBU), with the knowing support of Nuland, is now carrying out a Nazi campaign of defamation against Vitrenko, which is setting her up for possible assassination, because she has criticized the Nazi takeover of her own nation.”

The evidence is overwhelming that Nuland, on behalf of Obama, has imposed a Nazi regime in Ukraine, beginning with the installation Prime Minister Arseniy ‘Yats’ Yatsenyuk, who said on German television that the World War II Nazi invasion never occurred—that it was only the Soviet Union that occupied Ukraine.

Since then, SBU head Valentyn Nalyvaychenko announced on April 1 that the model for his agency is Stepan Bandera’s Organization of Ukrainian Nationalists-Ukrainian Insurgent Army (OUN-UPA), which collaborated with the Nazis during their invasion of the Soviet Union. Nalyvaychenko is associated with the Banderite Trident (Tryzub) organization, a core component of the Right Sector.

On April 6, Dmytro Yarosh, the Nazi leader of the Ukrainian Right Sector, was named as an advisor to the Commander-in-Chief of the Ukrainian Army.

On April 9, the Ukrainian Parliament passed a bill identifying members of the Ukrainian Insur-

gent Army and the OUN as “independence fighters.”

Ukrainian President Petro Poroshenko also stated falsely on April 9 that “Stalin, together with Hitler, initiated the bloody fighting of World War II.”

This is the government which Victoria Nuland installed in Ukraine with the full backing of Barack Obama.

There can be no mistake about this.

The U.S. military is now being deployed to Ukraine by Obama to provide military training to the Ukrainian National Guard, which consists primarily of the Nazi Right Sector.

The Ukraine Crisis Media Center (UCMC), one of Victoria Nuland’s pet Nazi operations, funded by the National Endowment for Democracy and the U.S. Embassy, is circulating flyers calling on people to inform on anyone who opposes the Kiev regime. They are encouraged to call a hotline of the SBU.

When you back Nazis, as Nuland does with Obama’s backing, that makes you a Nazi.

As LaRouche stated: “The present government of Ukraine is dominated by Nazis. The current plot against Natalia Vitrenko is a murder plot. Anyone in the U.S. Congress or in Europe who does not deal with this is complicit.

“As a veteran of World War II, I have committed my entire adult life to defeating fascism. On the 70th anniversary of the defeat of fascism, Obama and his assistant, Nuland, are deliberately betraying our sacrifice by backing Nazis.

“Where are the other patriots who once said ‘Never Again’?”

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