December 2010

World Reports Covering Climate, Behavior, and Commodities Original Papers Historical Perspectives

BROWNING NEWSLETTER

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Vol. 35, No 12

This newsletter contains articles, observations and facts to support our contention that man is significantly influenced by the climate in which he exists.

Our calculations show the climate, over the next term, will cause dramatic changes in our social and economic patterns.

We feel that the reader, attuned to the changes that are occurring, may develop a competitive edge; and, by understanding his now and future environment, can use the momentum of change to his advantage.

In this issue

THE WINTER PARADOX

SUMMARY: It's a paradox - North America is coldest when the Pacific is cold and the Atlantic is warm. Unfortunately, that is what the oceans are like this year - so prepare for a cool, stormy winter.

"A paradox, a paradox,
A most ingenious paradox."

The Pirates of Penzance

The most persistent question I get, when I am giving my presentations is "Where do you stand on the current global warming/climate change debate?" The answer is "Firmly in the middle, with both sides taking pot shots at me! There is some good science on both sides and some ridiculous pseudo-scientific claims on both sides. It's time for the scientific factions to come together, resolve some issues and stop calling each other Nazis and fear mongers.

The problem is that climate change is happening – but it is very complex. Anyone who is telling you that it is caused by only one factor is trying to sell you something.

Indeed, climate change is not only complex – at times it is paradoxical.

For example – this winter we will be experiencing one of the coldest and most miserable of the climate paradoxes:

North America is coldest when the offshore Pacific waters are cold.

North America is coldest when the Northern Atlantic waters are warm.

Huh?

As contradictory as this paradox may seem - these are the major factors that will be shaping our winter. The warm and cold oceans will combine to shape a very cold and stormy winter for the US and a chilly winter for Western Canada.

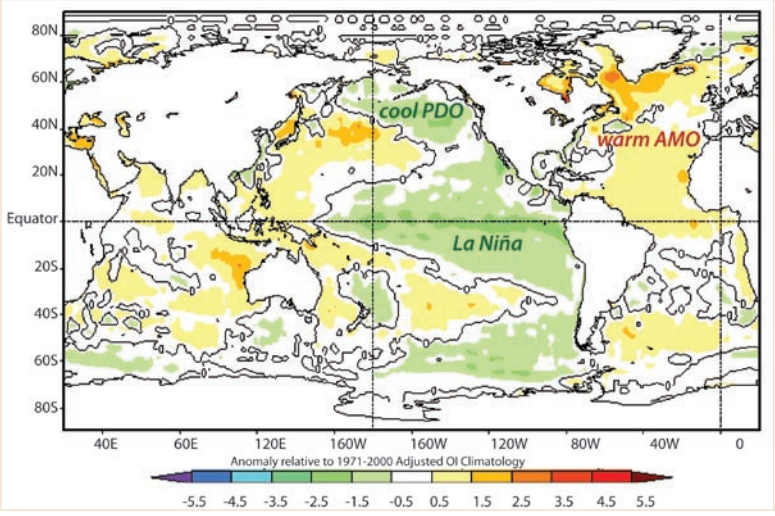


FIG. 1 **This winter's sea surface temperature anomalies** *November 29*
http://www.emc.ncep.noaa.gov/research/cmb/sst_analysis/images/monanomv2.png

A Cold Combination

It is logical that the cool Pacific would cool North America. The United States and most of Canada's population are located in the middle latitudes, where the prevailing winds are westerlies. They blow from west to east, carrying the chill from the Pacific inland.

Not only are the offshore waters cool, but the Pacific is in the middle of a La Niña. The cooler than normal tropical waters distort atmospheric pressures and, given the size of the anomaly, global wind patterns. In North America, this makes the polar jet stream more variable, so that it frequently dives abnormally far south. At the same time, the Pacific jet stream moves further north, forcing the cold off-shore Pacific air mass inland, cooling western Canada and western states from California to Montana.

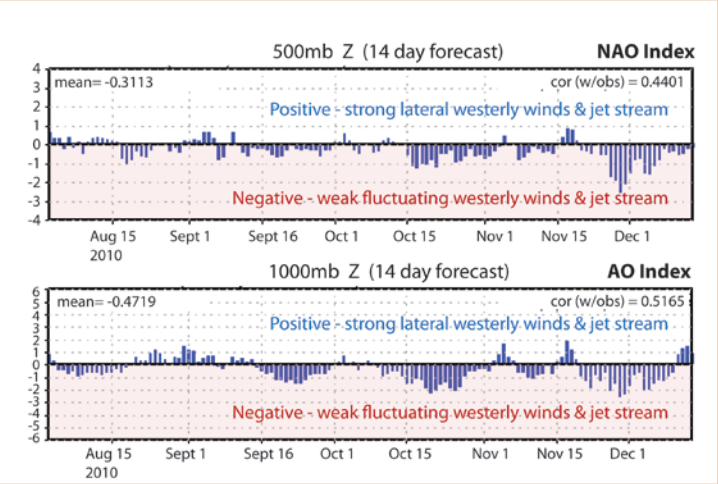
Eventually, in a La Niña, the polar jet stream carries Arctic air deep into the Midwest and Northeast, as well as parts of Eastern Canada.

In short, it is logical that a cool eastern Pacific cools North America. Given the current conditions, we can expect certain weather patterns which include colder temperatures in Western Canada, the Pacific Northwest and the Northern tier of states.

In the past, the(se) prevailing conditions have shaped a cold and stormy winter for most of the United States.

What is less logical, however, is that the Atlantic cools off North America the most when it is warm.

Since 1995, the rapid flows of the Gulf Stream and other tropical currents have created an unusually warm North Atlantic. The maritime winds off warm waters of the Atlantic heat the East Coast and Gulf of Mexico regions. However the major wind patterns of these latitudes are westerly, so the impact of these maritime winds is limited. Indeed, if we look at global temperatures, the westerly winds are carrying the cool land temperatures offshore, cooling the eastern Atlantic while the western waters remain warm.



FIGS. 2-3 **Both the NAO and AO have been negative most of this fall and winter**

http://www.cpc.noaa.gov/products/precip/CWlink/pna/nao_index_mrf.shtml & http://www.cpc.noaa.gov/products/precip/CWlink/daily_ao_index/ao_index_mrf.shtml

However, the warm Atlantic does more than merely heat the air. It changes air pressure and this in turn alters wind patterns. Historically the warm Atlantic correlates with certain global weather patterns, called teleconnections. Two of these are closely related – the North Atlantic Oscillation **(NAO)** and Arctic Oscillation **(AO)**.

The first of these is weather pattern determined by the difference of atmospheric pressure between the Icelandic low and the Azores high. This difference controls the strength and direction of westerly winds and storm tracks across the North Atlantic. When the difference between these pressures is high, the west-to-east winds are very strong in the north and Arctic air masses remain trapped in the polar latitudes. When the NAO is negative, more frequent when the Atlantic

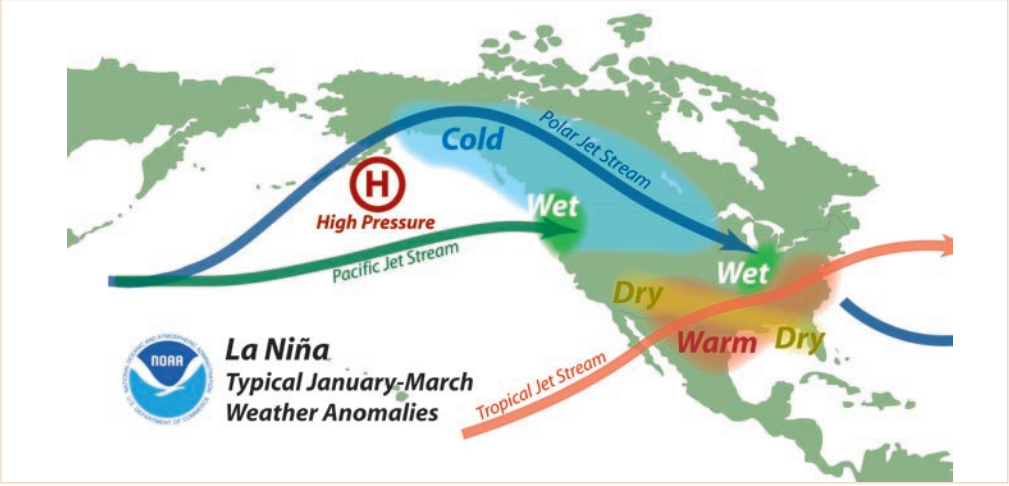


FIG. 4 *http://www.cpc.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf*

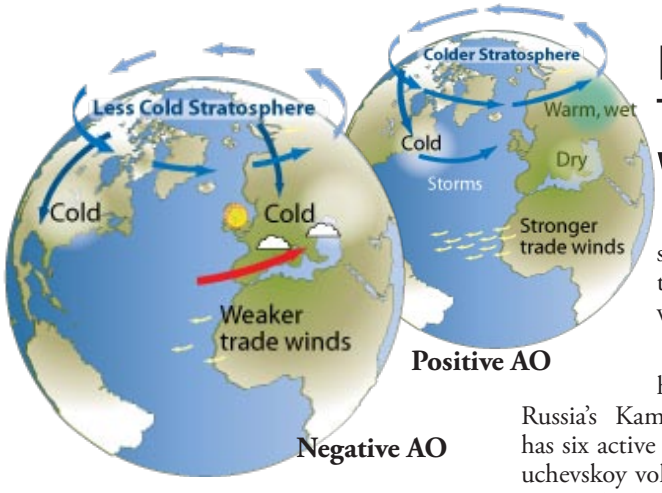


FIG. 5-6 **Negative Arctic Oscillations will be more common this year**

courtesy J.Wallace, University of Washington, source: NSIDC

is warm, the difference between these air pressures is weak and the winds, particularly the polar jet stream, are weak. The weaker winds fluctuate more, veering north and south. This allows cool northern air masses to dive deep into the Midwestern and Northeastern US, Europe and parts of Asia. This pattern may last only a few days at a time, but when the Atlantic is this warm it occurs again and again throughout the winter.

Similarly the Arctic Oscillation, the speed of the winds circling the polar air mass, is shaped by the north-south differences in air pressure. When there is not much difference between the air pressures of the polar regions and the northern mid-latitudes (which is common when the Northern Atlantic is abnormally warm all the way up to Iceland), these polar winds are weak. Cold Arctic air escapes to the south. As the air escapes south, the Arctic is left warmer than normal and the lands to the south, in North America, Europe and Asia, freeze. We saw this happen last year, when North America, which normally is warm during an El Niño, experienced record-breaking blizzards.

In short, three giant weather patterns, the La Niña, the North Atlantic Oscillation and the Arctic Oscillation, all are in position to allow the Arctic air mass to surge deep into North America. This pattern also allows the air to plunge deep into Europe and Northern China as well.

It may be a paradox – but it is a really cold one.

Looking Towards Winter

The three ocean/atmospheric teleconnections are the major factors shaping this winter.

North America has also had some volcanic cooling. Russia's Kamchatka Peninsula currently has six active volcanoes. In October, Klyuchevskoy volcano had almost daily eruptions which varied from 5.8 to 10.1 km (3.6 to 6.3 miles) while neighboring Mt. Sheveluch eruptions ranged from 5.2 – 6.5 km (3.2 to 4.0 miles) high. This November has been quieter but Klyuchevskoy, Sheveluch and Karymsky volcanoes are still having frequent eruptions averaging between 3.5 to 7 km (2.2 to 4.3 miles) high. Only the late October Klyuchevskoy eruption was large enough to enter the stratosphere and linger. (It may have been one of the factors that shaped the furious late October storm that slammed Chicago with the worst winds in 70 years and brought freezing weather as far south as Florida.) The other eruptions have cooled a number of Pacific fronts but have not been large enough to alter global weather.

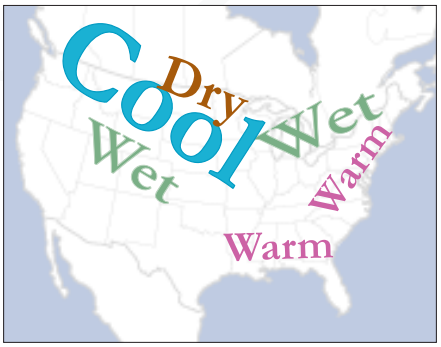
In the past, the prevailing conditions have shaped a cold and stormy winter for most of the United States. Expect warmth in the southern states, cool weather in western Canada and the Northwest and a stormy, freezing mid-winter in the Midwest, Great Lakes, Mid- Atlantic and Northeast. In 60% of similar years, the mid-winter cold surged to the South and in 80% of these years Texas and Georgia experienced extreme problems with drought. Southern California will be warm and dry.

Looking beyond winter, the La Niña is expected to linger through springtime, which usually causes the West and Midwest to have a very chilly early springtime and the western corn belt to be dry.

The wild card in this forecast will be the volcanoes in the Northwest Pacific. Last year they chilled what would have been a normally warm El Niño. If they continue with their current activity, their cooling will pile on the normal cold of a La Niña creating a truly frigid winter.

Early Winter

Mid Winter



Late Winter

Cool 2˚C or more lower than normal temp.	**Wet** 125% or more of normal moisture
Warm 2-4˚C or more higher than normal temps.	**Dry** 75% or less of normal moisture

FIGS. 7-9 *© Browning maps*

DRY AND DESPERATE

SUMMARY: The current La Niña and several long-term natural climate factors will worsen potential drought for the ten US cities that are "running out of water."

Resources like water can no longer be taken for granted because we are in a period of dramatic climate change. For water users – from the simple gardener to farmers and ranchers to urban managers – this can present horrendous problems. For investors – this can present tremendous opportunities or potential unexpected losses.

Increasingly, water issues have been in the news. The La Niña of 2007 – 2008 triggered widespread water shortages, ranging from a severe and multi-year drought in California to a legal "water-war" between Georgia and its neighbors. The current developing La Niña may force the US to revisit these problems.

The 10 Most Vulnerable Cities

On October 29, this year, Charles B. Stockdale, Michael B. Sauter, and Douglas A. McIntyre, editors of 24/7 Wall St. published an article "The Ten Biggest American Cities That Are Running Out Of Water" on the internet. It reports how vulnerable some of America's major cities are to water shortages.

The ten city/metropolitan areas mentioned in the article are Orlando, Atlanta, Tucson, Las Vegas, Fort Worth, the San Francisco Bay Area, San Antonio, Phoenix, Houston, and Los Angeles. Notice – all ten cities are in regions that experience drought during La Niñas. Both warm El Niños and cool La Niñas create precipitation extremes, droughts and flooding. However, none to the cities are in areas that are dry during the warm events. In other words, every one of these already troubled cities has the potential to be stressed by this upcoming winter's event.

The authors got their information for selecting the cities from Sharlene Leurig's October 2010 report, *The Ripple Effect: Water Risk in the Municipal Bond Market* for Ceres and Theo Spencer's July, 2010 report *Climate Change, Water, and Risk: Current Water Demands Are Not Sustainable* for the National Resources Defense Council (NRDC). They also examined geographic areas which have already been plagued by drought and water shortages.

Both Ceres (formerly the Coalition for Environmentally Responsible Economies) and the NRDC are biased; the first an investor/environmentalist group and the second an environmentalist legal organization. This doesn't mean their information is incorrect, but it needs to be assessed. Some of their information is based on the IPCC speculation while other information comes from historical and/or scientific studies. Stockdale, Sauter, and McIntyre appear to have intelligently examined the evidence.

They adopted the NRDC's criteria for assessing the likelihood of metropolitan water shortages:

- "Projected water demand as a share of available precipitation;
- Groundwater use as a share of projected available precipitation;
- Susceptibility to drought;
- Projected increase in freshwater withdrawals; and
- Projected increase in summer water deficit."

The most common feature of these cities is that, with the exception of Los Angeles, the nation's second largest metropolitan area, they are all growing rapidly. From to the San Francisco Bay area (20%) to Fort Worth (36.1%) to Atlanta (29.9%), all of these cities have shown enormous growth over the past ten years. As populations and demand have grown, however, water supplies have remained static or even decreased.

One of the problems has been that many of these cities are depending on underground water sources (aquifers) for their water supplies. As populations grow, the annual groundwater extraction grows, becoming larger than the annual recharge. The aquifer continues to be drained, extracting fossil water. In Orlando, for example, which depends on the Floridian Aquifer, the mayor stated "Orlando Utilities Commission water usage trends show Orlando water demand exceeding the supply by approximately 2014 if no action is taken."

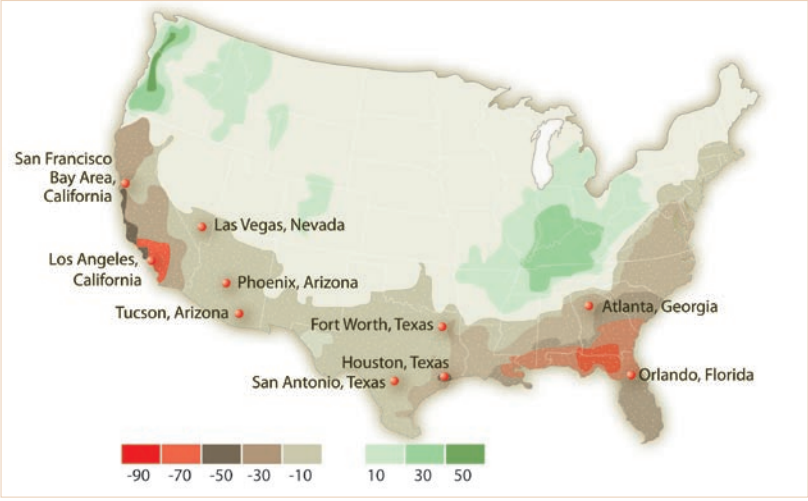


FIG. 10 **The ten biggest cities that are running out of water all lay in La Niña drought areas.**

© Browning Maps data: http://www.cpc.noaa.gov/products/precip/CWlink/ENSO/composites/lanina.djf.precip.gif

Half of the 10 cities, Orlando, Tucson, Fort Worth, San Antonio and Houston depend on ground water. Texas cities are growing and the surface water from lakes and rivers have already been claimed by varying districts across the state. Now most counties are looking at groundwater to meet future demand. Increasingly the available sources are being engulfed in legal battles.

Houston is facing another obstacle, one shared by coastal cities around the world. Most of Houston is located on the Gulf coastal plain. The city originally relied on groundwater for its needs. However, over the past 30 years the city saw dramatic rises in sea level of nearly an inch a year. Scientific studies showed that this was due, not to rising Gulf waters but to the city's withdrawals from the underground aquifer causing the land to sink. The city was literally undermining itself. In order to stop the sinking, the city has been forced to turn to other sources of water such as Lake Houston and Lake Conroe.

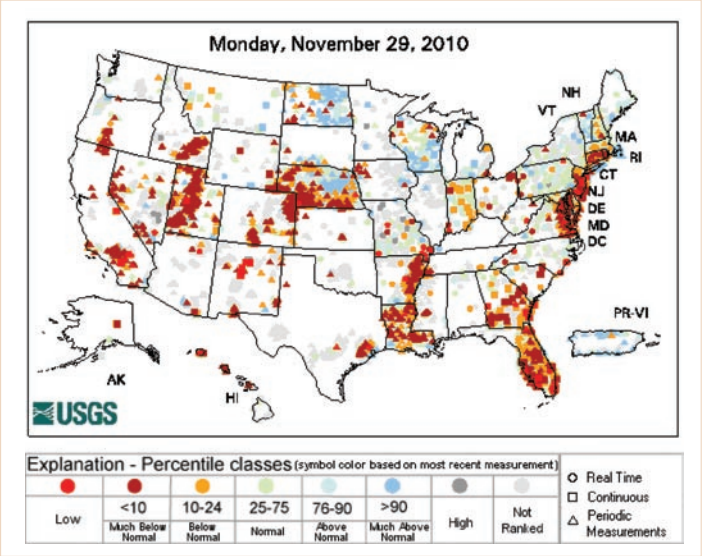


FIG. 11 **The USA's vanishing groundwater supplies**
http://groundwaterwatch.usgs.gov/Net/OGWNetwork.asp?ncd=lwl

The Impact of Long-Term Cycles

All ten urban areas face difficulties if water supplies remain static while populations continue to grow. Unfortunately, climate never remains static. Besides the relentless swing from El Niño warmth to La Niña cooling and back again, there are long-term cycles. These are trends that will continue for decades.

The one that seems to be affecting the largest number of these vulnerable cities is the Pacific Decadal Oscillation **(PDO)**, a long-term shift in the Pacific's currents that moves warm waters east and west across the ocean. Through most of the 1970s, 1980s and 1990s, the PDO was in its positive phase and the tropical and eastern Pacific was abnormally warm. Then in the late 1990s, the oscillation began to turn negative and the Pacific waters shifted. Now the polar and western ocean waters are relatively warmer and the waters off the coasts of the Americas are cooler. Less warm, moisture-bearing air is being blown inland and western precipitation is dropping.

Fortunately the PDO is only one Pacific oscillation, so occasionally El Niños breaks the pattern. However, it is an overall trend that typically lasts about thirty years. We face around 2 decades of reduced precipitation in large portions of North America. In particular, a 2006 study by Rosanne D'arrigo, and Rob Wilson shows the Southwestern United States, from Southern California to Central Texas and most of the Florida Panhandle are facing severe drying. This means eight of the ten cities - Orlando, Tucson, Las Vegas, Fort Worth, San Antonio, Phoenix, Los Angeles and possibly Houston - face decades of reduced water supplies. Indeed, the Colorado River in the American Southwest is in its eleventh year of drought! Since this is a major source of water and hydroelectricity for Southern California and the entire southern desert, the economic consequences are profound.

However, the Pacific is not the only ocean with long-term cycles that last for decades. The Atlantic Ocean also has one, the Atlantic Multidecadal Oscillation **(AMO).** In the positive phase of this pattern, the Atlantic has years when the Gulf Stream and other tropical currents flow slowly and the overall North Atlantic is cooler. We saw this pattern in the 1970s, 1980s and first half of the 1990s. Then, in 1995, the flows sped up and the Atlantic turned warm. This phase of the AMO typically lasts 30 – 35 years, so it should continue for the next fifteen to twenty years.

Two scientists from Germany's Max Planck Institute, Hans F. Graf and Katrin Walter, published a 2002 article that showed an inverse relationship between the AMO water temperatures and a wide-spread weather pattern called the North Atlantic Oscillation **(NAO)**. When the AMO is negative and the Atlantic is cool, the NAO is positive most of the time. This is a very strong correlation. When the AMO is positive, as it has been since 1995, there is a tendency to have a negative NAO. This weather pattern, which is strongest in winter, brings cold temperatures into the interior of North America and typically leaves the East Coast dry.

Notice, two of the cities, Atlanta and Orlando are drier when the NAO is negative. This means they will be under more stress from droughts until the AMO switches back to cool and negative NAOs become less frequent.

In short, nine out of the ten cities are in areas that face decades of reduced precipitation. Some scientists claim that these are areas that will get drier due to man-made global warming. However, no matter what mankind does, natural factors will be drying these regions for another couple of decades.

The Legal Issues

These climate issues are made even more complicated by the jumble of US laws, court rulings and bureaucratic regulations. Last year, for example, a federal judge declared Atlanta's withdrawals from its primary source of water, Lake Lanier, to be illegal. If the ruling stands, the city will lose roughly 40% of its water supply by 2012. Fort Worth is trying to expand its access to water from Oklahoma's Red River and Oklahoma legally limits its water sales. The issue is pending in the U.S. Court of Appeals. San Francisco is legally fighting with Sacramento for waters from the Sacramento Delta area. (Since Sacramento is the state capital, they have an edge.)

English vs. Spanish water law - The US was originally a hodgepodge of European colonies. Different states have different laws governing their water resources. Eastern states, formerly English colonies, use regulations based on English law and precedents. Many of the Western states, formerly Spanish colonies, have their regulations based on Spanish law. England always had plentiful rain so English law treats water as a bountiful resource making it easy for newcomers to get a share of already allotted waters. This is more difficult under Spanish law. Spain was ruled by the Moors (Muslim Arabs and North Africans) for seven centuries and it treats water as a scarce resource. Both laws serve their country of origin well but do not necessarily meet the needs of the vast and complicated North American landscape.

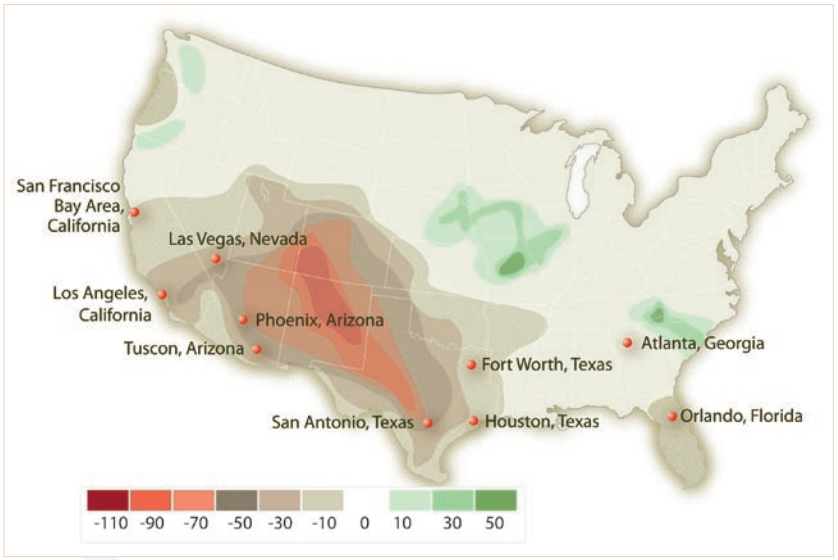
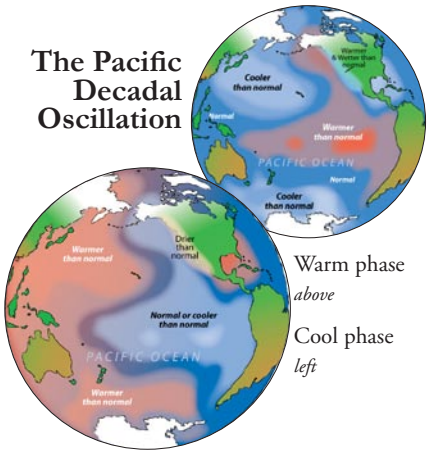


FIG. 14 **The Impact of the Negative Pacific Decadal Oscillation**

© Browinng Maps based on: D'arrigo, Rosanne and Rob Wilson, "On the Asian Expression of the PDO", International Journal of Climatology, *Vol. 26: 1607-1617 (March 29, 2006)*



FIGS. 12-13
The cool phase of the PDO started in 2006

© Browning maps

Historically, most of the desert states use laws and regulations based on Spanish precedence. However, if there is a dispute, especially between states, the cases go to federal jurisdiction. Federal laws are based on English precedence. Therefore, if a state attempts to conserve water and the case goes to the federal level, the federal judges typically treat the water as an endless resource. While cynics observe "water flows towards the money", historically federal courts tend to rule in favor of urban interests over rural and large states over small.

Interstate waters are governed by old treaties that usually don't reflect current realities – Many of the interstate waters were divided in the late 1800s and early 1900s – a much cooler and wetter time. Most western river contracts legally allot more water than is currently available to the different states. For example, recent studies show the 1922 Colorado River Compact between seven states, including California, assigns 3 million acre-feet (798 billion gallons or 3.7 trillion liters) more river water than exists. To make the situation even more tangled, some of these divisions involve international treaties with Mexico and Canada. According to the Supreme Court, these treaties supersede the Constitution.

The result is a litigator's dream. Almost all water supplies, from lakes to rivers to underground aquifers are already allotted. For cities to grow, they need access to these allotted waters. The problem is particularly acute in the Colorado River Basin (California, Arizona, Nevada, Utah, Colorado, New Mexico and Wyoming); the Apalachicola-Chattahoochee-Flint River Basin (Alabama, Florida, and Georgia) and the Red River Basin (Oklahoma and north Texas).

The Federal government is claiming more of the limited water for environmental and Native American concerns. The old river contracts did not provide for Native American reservations or protecting the environment. Currently the federal courts and bureaucracies are trying to correct this oversight and assigning more water for these concerns. For example, under the Endangered Species Act **(ESA)**, the Bush administration cut the San Francisco Bay Area water use in order to protect the delta smelt. At least one economic study estimated the impact of these reductions average more than $500 million annually, and can exceed $3 billion. The current administration is continuing this trend.

The California case is just the most notorious example. In Florida, a federal judge has ruled that unless it can negotiate an agreement that allots sufficient water to support threatened species in Florida's Apalachicola Bay, Atlanta and northern Georgia will lose 40% of its Lake Lanier allotment. This ruling will cost Georgia tens of billions of dollars a year. Central New Mexico and Albuquerque are facing severe water cuts to support the silvery minnow.

These new rulings are increasing federal water claims at the same time that the West and large parts of the South have increasing populations and decreasing amounts of water. If cities don't like the restrictions, they can always sue. The case will be decided – by a federal court.

The Outlook

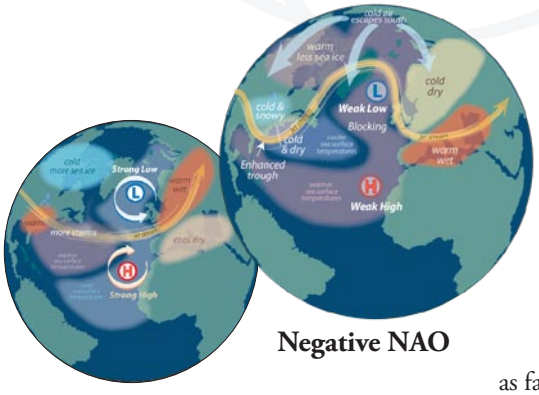
Municipal water shortages can have enormous economic impacts. As most Southwestern cities are learning, the first cutbacks are typically on landscaping and golf courses – lowering property values in an already poor real estate market. A number of industries including chemicals, milling, semi-conductors, iron and steel, and pulp and paper rely on regular access to water. Some people would be out of work if these industries had poor prospects for continued operation.

As Leurig's study for Ceres reports, when a region "runs out of water," it has a particularly heavy impact on utilities and municipal bonds. Not only are water utilities affected but so are power utilities. The electric power sector is enormously water-intensive; it accounts for 41% of America' freshwater withdrawals. Some of the water is used for hydro-electricity, but fresh water is also vital for cooling nuclear, coal and gas generators.

The current climate changes are delivering a one-two punch for electrical generation. Not only is the increased frequency of drought limiting the availability of water for generation, but the La Niñas and warmer Atlantic are creating heat waves and higher demand. In August 2010, for example, the Tennessee Valley Authority (TVA) was forced to reduce generation at three of its facilities in Alabama and Tennessee when a heat wave pushed water temperatures to the permitted maximum temperature of 90°F (32.2°C). Since the PDO began turning in the late 1990s. summer heat waves have forced electrical generators as far north as Ontario to cut their production.

The economic consequences of these shortfalls are huge. They include rationing, black-outs and higher utility costs. Water for landscaping, both public and private, is usually limited. Costs, particularly the higher energy costs are passed on to customers.

Municipal utilities, exempt from the Securities and Exchange Commission's (SEC) new guidelines, do not have to disclose how climate change is affecting their water or power supplies. However, numerous utilities are being affected by reduced water availability and their returns will reflect this. The current La Niña will affect most of the 10 most vulnerable cities and many of their problems will be spotlighted in next year's headlines.



Negative NAO

Positive NAO

FIGS. 15-16 **The Negative NAO has been more common since 1995** *© Browning Maps*

Potential Water Supply Conflicts by 2025

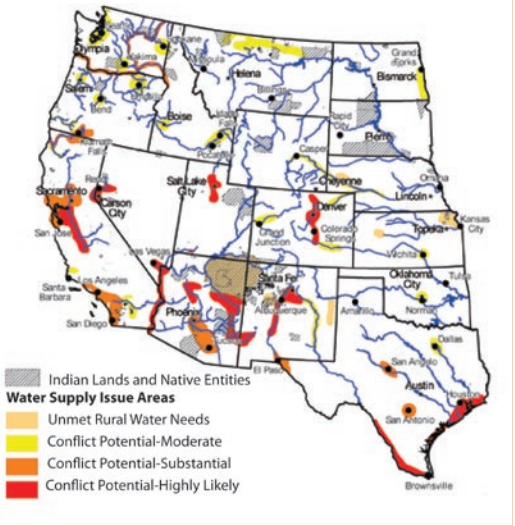


FIG.17 **NOTE – This map does not factor in changing climate.**

http://www.globalchange.gov/images/cir/pdf/water.pdf

News Notes

Although San Francisco and Los Angeles are two of the ten cities "running out of water", this year has actually been a good water year in California. Last year at this time 91.6% of the state was experiencing drought conditions, now only 9.9% of the state is dry. The combination of intense conservation efforts, a cooler-than-normal summer and average rainfall after several dry years meant Southern Californians received more water and used significantly less in 2010. As a result, while many California lakes are still at record low levels, the region was able to put water into storage for the first time in four years.

The Metropolitan Water District of Southern California, the region's water wholesaler, had imposed a mandatory conservation plan back in July 1, 2009. The agency had imposed a 10% cut to local water agencies that resell water to residents and businesses, but those customers actually used significantly less water. Long Beach's usage was down close to 25% and Los Angeles and Pasadena reduced their consumption by 20%. The district was able to put 500,000 acre feet (163 billion gallons or 617 billion liters)of water into storage. The agency had ruled that they would impose heavy fines for over usage but no water agencies used more than their allocated amount and no one paid MWD penalties for overuse.

The District is considering lifting the regulations but continues to plan for long-term programs to manage Southern California's water problems. So much is going wrong in California nowadays – it's nice to see the Golden State actually do something right.

A new study published in Geophysical Research Letters magazine shows that large volcanic eruptions affect rainfall over the Asian monsoon region, where seasonal storms water crops for nearly half of Earth's population. A team of Columbia University tree-ring researchers, led by Kevin Anchukaitis has been examining an 800 year record of yearly tree growth from 300 sites across Asia. What their records showed was surprising. When they matched yearly tree rings with years that had large volcano eruptions, they discovered that large tropical eruptions typically dry up much of Central Asia. At the same time southeast Asian countries including Vietnam, Laos, Cambodia, Thailand and Myanmar have more rainfall. This is the opposite of what many climate models had predicted.

The scientists studied several eruptions, including one in 1258 from an unknown tropical site, thought to be the largest of the last millennium; the 1600-1601 eruption of Peru's Huaynaputina; Tambora in 1815; the 1883 explosion of Indonesia's Krakatau; Mexico's El Chichón in 1982; and Pinatubo. Tree rings showed that huge swaths of southern China, Mongolia and surrounding areas consistently dried up in the year or two following big events, while mainland southeast Asia received increased rain.

This fits the pattern we saw last year, when Southern China had severe drought while Southeast Asia went through an El Niño winter without experiencing its normal El Niño drought. Fortunately, the research shows that the recent eruptions of Indonesia's Mt Merapi this fall, which has killed dozens, was not big enough by itself to effect any future monsoons.

People who worry about greenhouse gases should find great cheer in the fact that, according to the Global Carbon Project, the world's emissions of carbon dioxide dropped 1.3%. Of course, most of this was due to the economic downturn cutting energy use in developed nations. However, one bright spot in this report is that global CO2 emissions associated with deforestation have dropped by 25% since 2000. As satellite data over the Brazilian Amazon and Indonesia shows, there has been a major reduction in tropical deforestation. For the first time, forest expansion in temperate latitudes is greater than deforestation emissions and this caused a small net sink of CO2 in the tropics.

Russia had a horrendous heat wave this summer. Now they are having a relatively balmy autumn and . . . pink pelicans! Siberia has been enjoying record-breaking warmth with temperatures in Altai, southwestern Siberia reaching a toasty 41°F (5°C). The temperatures have been warm enough that a confused flock of African pink pelicans, which normally winter in Africa migrated to the small Siberian village of Suslovo. The locals captured over half the flock and are housing them in a zoo in the nearby city of Barnaul. They will most likely be kept there for the winter out of fear for their safety. When migrating birds mistake Siberia for Africa, you know it has been a truly wacky weather year.

As 2010 draws to a close, we at the Browning Newsletter wish our readers, old and new, the happiest of holiday seasons. May you find peace, goodwill and a joyous New Year.

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This newsletter will **not** contain:

- *Analysis of, or recommendations concerning, any investment possibilities.*
- *Recommendations on any particular course of action.*

VOLCANO UPDATES

Evelyn Garriss now offers an e-mail update service to notify subscribers when eruptions happen, and how they are likely to affect the weather.

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