December 2011

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

BROWNING NEWSLETTER

A Fraser Management Publication Vol. 36, No. 12

WEATHER POTPOURRI

IN THIS ISSUE

- The moderate to strong La Niña is expected to strengthen and last through winter into spring. A strong negative Pacific Decadal Oscillation will magnify the event's impact on the middle latitudes, on the US and China.
- * 43% of the contiguous United States is in drought and the La Niña will prolong the drought through this winter. This will have a serious impact on agriculture, particularly cotton, winter wheat and beef.
- * The drought will have a negative impact on energy production. In particular, the majority of gas shale sites lay in areas facing long-term risk of drought.
- * With a total of 19 Atlantic tropical storms, this year is the third busiest year on record, tying with 2010, 1995, and 1887. Only 2005 and 1933 had more named storms since record keeping began in 1851.
- * Recent research has shown a direct correlation of hot Atlantic waters and stalled weather systems. The same hot water that produced a busy hurricane system will prolong blizzards in the Midwest and East Coast.
- * The combination of the La Niña, the warm Atlantic and the recent polar volcanoes will produce another cold and stormy winter in the Northern Hemisphere. In North America, the West will be cold and the East will have a warm early and late winter and a frigid mid-winter.
- * Most of the US (especially northern) will have good skiing conditions.

SUMMARY

We cover the latest North American weather and climate stories – the devastating drought in the South; the heated Atlantic and the storm season; and the upcoming winter. Oh yes – also the upcoming ski season.

La Niña and the Growing U.S. Drought

The old year is ending. Nights are getting longer and days are colder. For the US and most of the Northern Hemisphere, autumn has been relatively warm. Here are a few issues to examine as we wait for the first cold blasts of winter.

The most important under-reported story is that the temperatures in the tropical and eastern Pacific dropped to 1.1˚ – 1.2˚C (2.0˚ – 2.2˚F) below average. This is cool enough to create strong La Niña conditions.

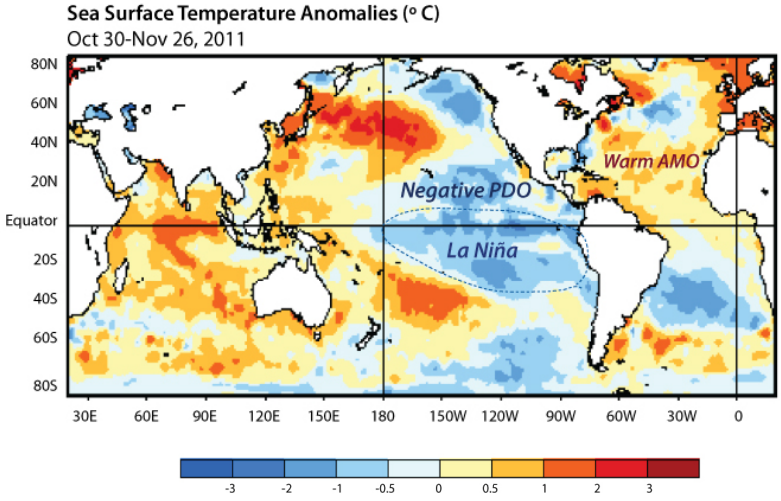


fig. 1 *http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf*

CONTENTS

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.

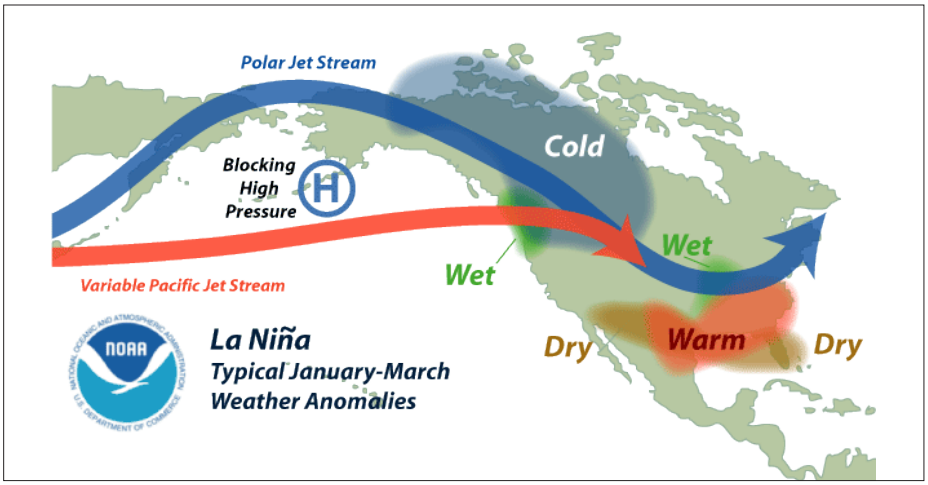


fig. 2 *data: NOAA, ©Browning Newsletter*

Most of the impact of the tropical La Niña focuses, naturally enough, in the tropics. It will bring drought to western South America during the summer growing season and heavy rains to Southeast Asia and Northern Australia. However, when over a million square miles of the Pacific's water remain abnormally cool for months, it distorts weather patterns all over the world, including in the non-tropical latitudes. Think of that cold water and the cool drier air above it as a rock in a stream. Water and air currents are going to be distorted as they flow around it.

In the higher latitudes of the US and Canada, the cooling impacts of the La Niña are going to be distorted by another, even greater climate pattern, the Pacific Decadal Oscillation (PDO). This long-lasting climate oscillation is currently in its cool stage, cooling the tropics and eastern Pacific and warming the western Pacific and polar regions. It fluctuates in intensity and is much stronger this winter than it was last year. This means the impact of a medium to strong La Niña is being enhanced by a strong PDO.

For North America, this means very turbulent weather, filled with extremes.

According to the US Climate Prediction Center **(CPC)**, La Niña episodes cause both the polar and Pacific jet stream to be more volatile. A semi-stationary blocking high tends to form in the Northeast Pacific, steering cold Arctic air into Western Canada, the Northwest US and the northern plains and prairies. The result, in the words of the CPC will be "considerable month-to-month variations in temperature, rainfall and storminess across central North America during the winter and spring seasons." In other words, even if the monthly temperature is average, it will be an average of extremes, severe cold spells balanced with periods of unusual warmth.

The most important result of a strong La Niña, however, is not the changes in temperature. It is the change in precipitation. The Pacific jet stream is veering north. It mingles with the Arctic jet stream, creating more moisture in the north. **It also creates more droughts in the southern US.**

At this point, 43% of the contiguous United States is in drought and 8.1% is facing the most extreme conditions. Almost all of this land is in the South, the regions that normally can produce winter crops. In a time of rising food prices, our lands that normally can still grow food are paralyzed by drought. This will also have profound effects on energy prices.

This La Niña drought will linger through winter into next spring. Both national and international models project that the La Niña will last at least another 4 months and US models expect the event to strengthen through December.

The center of the drought has been Texas. The 12 months from October 2010 through September 2011 were the driest for that 12-month period since 1895, when the state began keeping rainfall records. Autumn rains brought a slight respite, but did little to change the overall drought situation.

Most headlines have focused on the state's wildfires (The devastating Texas wildfire season just passed the one-year mark, and there appears to be no end in sight) and the drought's agricultural impacts. Reports indicate this historic drought has caused a stunning $5.3 billion in losses in the agricultural sector. As the economic losses pile up, they are having an impact on global commodities like cotton and beef. Texas produces about 50 percent of U.S. cotton, and the United States in turn grows between 18 and 25 percent of the world's cotton. This year, however, yields even from irrigated crops have fallen by about 60 percent on the high plains where the bulk of Texas's cotton crop grows. Farmers have given up on their "dry-land" cotton crops.

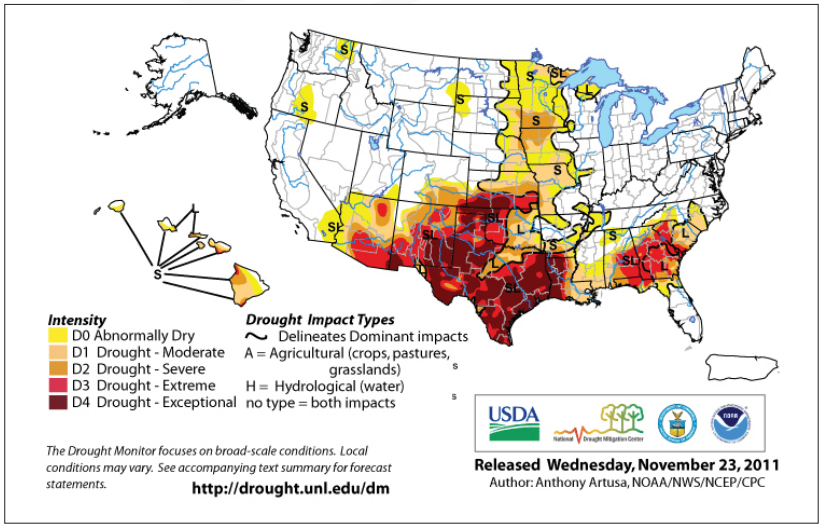
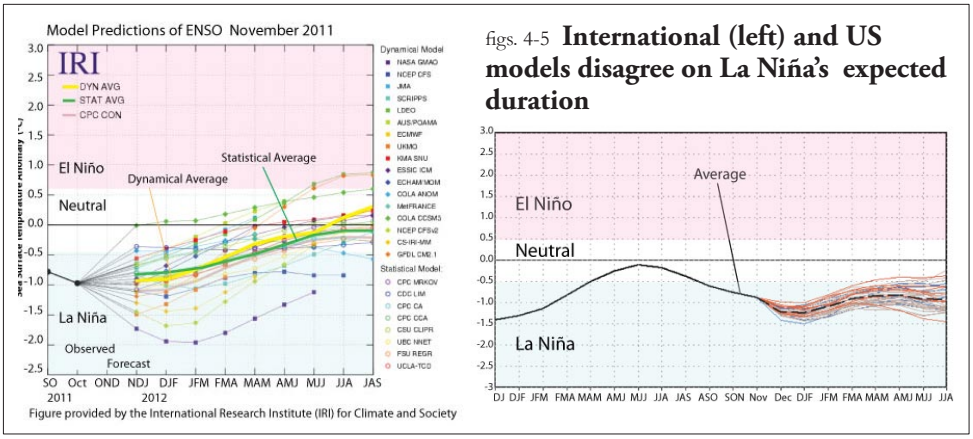
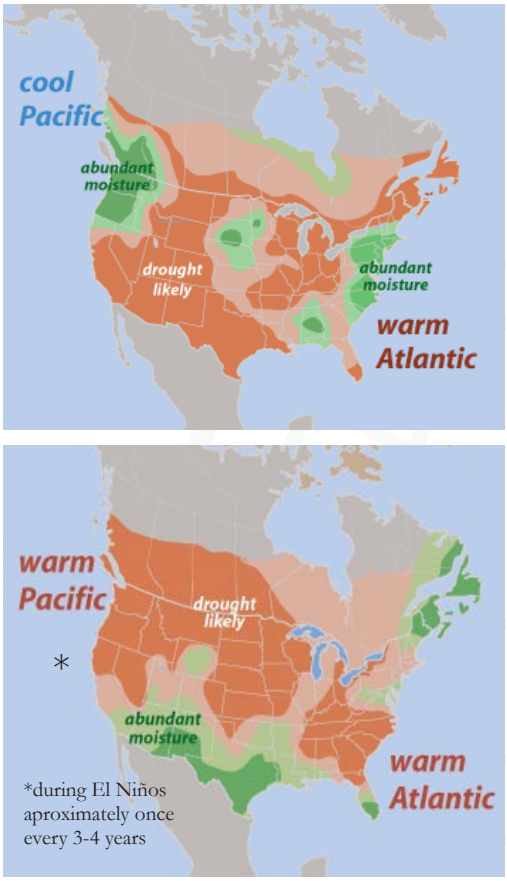


fig. 3 **US Drought Monitor** *http://droughtmonitor.unl.edu/*



figs. 4-5 **International (left) and US models disagree on La Niña's expected duration**

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



figs. 6-7 **The 15-year outlook with the current long term oscillations in the Atlantic and Pacific.**

US data USGS ©Browning Newsletter

It's not just cotton. Texas is the nation's second-largest winter-wheat grower. A terrible peanut crop has caused the price of peanut butter products to explode. The price of Halloween and Thanksgiving pumpkin have also spiked due to a shortage from Texas.

Looming over all of this will be the rise in the price of beef and the all-American hamburger. Texas is the biggest U.S. cattle producer and its ranchers continue to sell off large parts of their herds as the grass dries and water becomes scarce. Are still rising as some are buying hay from farms a thousand miles away, despite the high cost of shipping. The sell-off and slaughter of cattle because of the Southwestern drought will push already-high beef prices higher during the coming years as the cattle supply shrinks

What is not receiving attention is how this climate change is affecting energy. Part of the impact is favorable. The lack of tropical storms hitting the coastline over the past two years has been good for the offshore rigs and the coastal refineries. Unfortunately, that is where the good news ends.

Texas has historically embraced the energy industry. However, the current drought is straining that cozy relationship. From the Gulf Coast to the West Texas plains, utility companies are facing stiff opposition to proposed power plants that would serve the state's fast-growing population. Groups of ranchers, shrimpers, rice farmers and residents have banded together to oppose the plans. These groups are pressing government agencies not to approve permits for construction and in some cases, they are going to the courts.

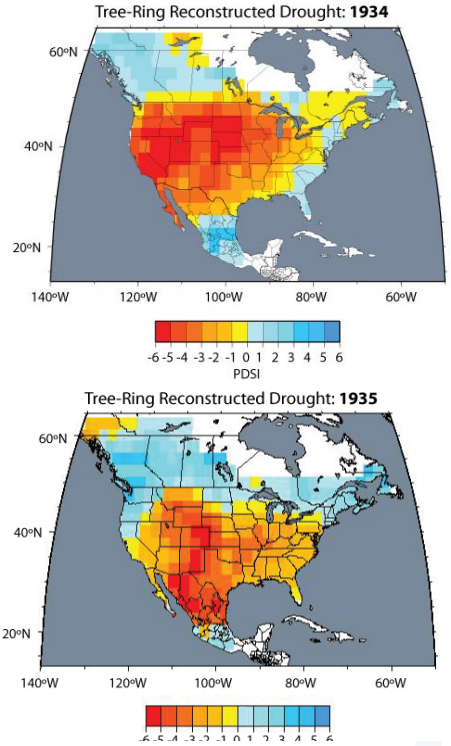
The problem is that Texas is growing at the same time that its water resources are shrinking. According to a University of Texas study, the state will need more than 287 billion gallons of water a year to generate electricity in 2020, about 100 billion gallons more than in 2000. Over the past decade, Texas' population has grown 21 percent to more than 25 million. The state is expanding its energy production, using a variety of technologies, including coal-fired plants, gas, biomass, nuclear facilities and wind energy. Unfortunately, with the exception of wind-power, all of these need large amounts of water to generate electricity.

Unfortunately, Texas is facing, not only, at least four more month of drought, but it and large portions of North America are also facing a couple of decades of reduced water supplies. A US Geological Survey published a study that shows that with the current configuration of the Atlantic Multidecadal Oscillation warming the Atlantic and the PDO cooling the Pacific, large portions of the United States face increased risk of drought.

As most Texans know, the state and the nation have undergone other dry eras. The most notorious was the "Dirty Thirties", when drought swept the US in three waves, 1934, 1936, and 1939-40. Some regions of the High Plains experienced drought conditions for as many as eight years. The 1950s drought received less publicity. The Great Plains and the southwestern U.S. withstood a five-year drought, and in three of these years, drought conditions stretched coast to coast.

The good news for Texas is that during warm El Niños, about once every 4 years, they receive good rains and can store the water. During the 1950s, Texas's political "good old boys" Lyndon Johnson and Sam Rayburn were running Congress and they persuaded the government to build an excellent reservoir system. The reservoirs need to be dredged and the population is bigger, but the water storage facilities are in exactly the right locations. The state survived, even ultimately thrived, in the Fifties by depending on using stored water rather than depending on plentiful rains.

However, this long-term outlook of more limited moisture is a game changer. It means the challenges for energy and electrical production will not go away with the La Niña. The use of water to expand



figs. 8-9 **The peak years of the 1930s and 1950s droughts**

http://iridl.ldeo.columbia.edu/SOURCES/.LDEO/.TRL/.NADA2004/.pdsi-atlas.html

electricity production is already being protested. Additionally these water shortages also have the potential to affect the extraction of energy. For example, huge areas of shale gas are in areas that are in greater risk of drought, with only the Appalachian basin located in an area that will have plentiful water. There are some technologies being mentioned that use less water, but many of them are quite new and still being studied and tested.

One of the most ominous events we are seeing is that the current drought is challenging water rights. For example, the Texas Commission on Environmental Quality this November notified certain Neches River Basin "junior" water right holders that their right to divert water was suspended. "Junior" is defined as those who acquired water rights on Aug. 13, 1913, or later!

This has enormous legal implications. Investors in energy or food production need to determine how vulnerable their water rights are. Almost a century of possessing a right now is no guarantee that the farm or facility will be able to use its allotted water.

In conclusion, the energy companies may be focused on the upcoming cold winter, but the upcoming dry winter will, in the long run, be just as important.

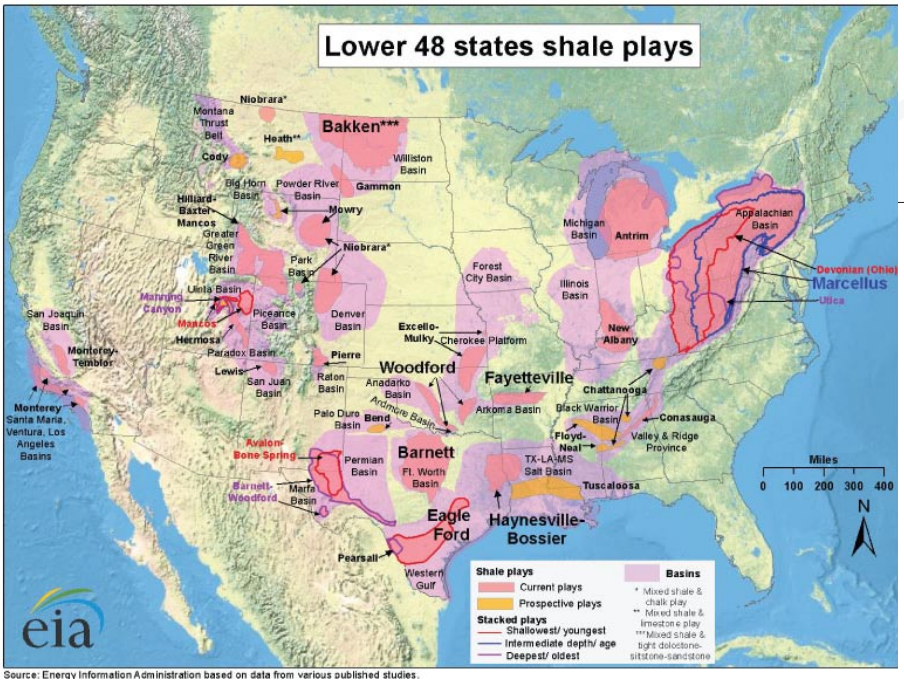
The 2011 Atlantic Hurricane Season – A Review

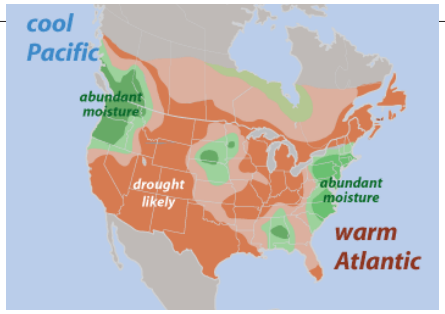
The 2011 Atlantic Hurricane Season ended with a flurry; a new hurricane and two tropical storms! Only one of those storms actually occurred in November – Sean, a North Carolina cold front that heated up to a tropical storm, danced around in the Atlantic and quickly sputtered out.

The other two storms were the result of the National Hurricane Center (NHC) reanalyzing the storms that had already formed this year. They discovered a new hurricane and a new tropical storm. Whoops! Just like that, the 2011 Atlantic season has become one of the top three busiest on record.

The new hurricane was formerly Tropical Storm Nate. The system emerged in Bay of Campeche and hit Mexico on Sept. 11. Reviewing new data from Mexico showed that for 12 hours the tropical storm reached hurricane strength. Unfortunately, these were the 12 hours that Nate was cruising through the PEMEX's oil rigs.

The other new tropical storm actually popped up on September 2, at the





figs. 10-11 **Changing climate may change the availability of water for hydraulic fracturing in many areas.**

http://www.eia.gov/oil_gas/rpd/shale_gas.jpg

same time Tropical Storm Lee was threatening Louisiana. The NHC was a bit distracted. They noted the tropical disturbance between Bermuda and Nova Scotia, but missed the very brief time that it increased in power and became a tropical storm. Gary Bell, NOAA's lead hurricane forecaster announced the finding of the new storm and stated that it will remain unnamed.

The addition of the unnamed tropical storm to the record books brings this year's tally of named storms to nineteen, tying 2011 with 2010, 1995, and 1887 as the third busiest year for tropical storms. Only 2005 and 1933 had more named storms since record keeping began in 1851.

fig. 12 **The busy Atlantic Hurricane Season gets some last minute additions**
©Browning Newsletter

The 2011 Atlantic Hurricane season officially closed on November 30. It had a total of 19 tropical storms, 7 hurricanes and 3 major hurricanes with winds over 96 mph (154 kph). This is much greater than the historical average of 9.6 tropical storms, 5.9 hurricanes and 2.3 major hurricanes. Every early season official forecaster underestimated the total number of tropical storms and tended to overestimate the number of hurricanes. (This includes our service, which projected a total of 15 – 18 tropical storms, 8 – 10 hurricanes and 3 – 5 intense storms.) All forecasters were basing their projections on (among other things):

- **THE WARM TEMPERATURES IN THE ATLANTIC –** The Atlantic is currently in the warm phase of the long-term Atlantic Multidecadal Oscillation **(AMO)**. This means the oceans' currents, including the Gulf Stream, are flowing very fast. These currents are carrying the tropical waters north, warming the entire North Atlantic.

  Tropical storms gain their energy from the ocean. With this much heat, it was obvious that there was a lot of energy available for storm development.

- **THE EBBING OF THE COOL LA NIŃA IN LATE MAY/EARLY JUNE** – Tropical storms need good wind development in order to grow. Warm El Niños in the tropical Pacific, distort the Earth's tropical wind patterns and shearing winds develop in the higher atmosphere. These winds shear off the tops of growing tropical disturbances, keeping them from becoming hurricanes. With the disappearance of the La Niña in early summer, it looked like wind conditions would be normal for the hurricane season.

What threw everyone's forecasts off is that the La Niña reappeared in early September – the peak of the Atlantic hurricane season. This strengthened the west-to-east tropical trade winds, adding more torque to start tropical rainstorms, causing more cyclones. These stronger lower winds also re-aligned the different layers of air in the atmosphere, making it slightly more difficult for the storms to grow into hurricanes, particularly strong ones.

The stronger trade winds were beneficial to the US. Historically, when the Atlantic is warmed and the East Pacific supercooled, the prevailing winds tend to steer the storms straight into Mexico and Central America or up the Atlantic. The three US landfalls, Don, Irene and Lee, did an estimated $11.1 billion US in damage. After the La Niña restarted, no more storms landed in the US.

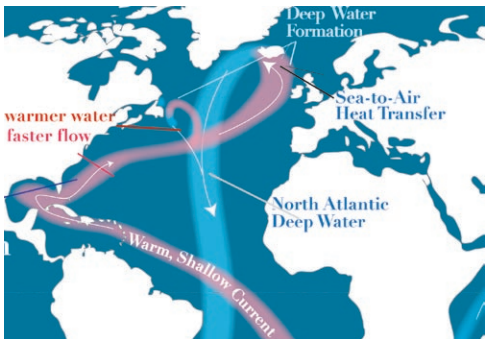


fig. 13 **The long term Atlantic Multidecadal Oscillation (AMO) turned positive in 1995. The Gulf Stream flows faster, warming the North Atlantic.**
©Browning Newsletter (left), courtesy NOAA (right)

However, the *Browning Newsletter's* warning was accurate:

> "Similar years had 3 storms enter the Gulf of Mexico oil/gas patch waters with at least two of the storms entering US oil production areas. Notice, this projection does not indicate that these will be intense storms, but under current rules, rigs have to shut down for inspection for a relatively small Category 1 storm.
>
> ***-Browning Newsletter,*** June 2011

We saw this happen –

1. **TROPICAL STORM DON** – On July 27, oil companies throughout the western Gulf of Mexico began removing non-essential personnel from their rigs and platforms in preparation for the storm. The next day, BP, Royal Dutch Shell, Anadarko and Apache announced the evacuation of some of the oil facilities in the area. By midday on July 28, 6.8% of oil production and 2.8% of natural gas production in the Gulf were shut down.

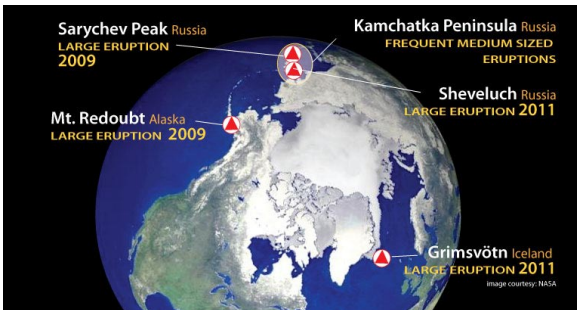


fig.14 **Polar volcanoes shape global climate for years.**
Image courtesy NASA

2. **TROPICAL STORM LEE** – When the storm initially hit, the federal Bureau of Ocean Energy Management, Regulation and Enforcement announced that it had shut down nearly half of the US gas and oil production. Two days later the numbers rose 60.2% of the Gulf's oil production and 44.3% of its natural gas production.

3. **HURRICANE NATE** – Pemex, the Mexican state oil company announced that the storm cut Mexican oil production by 178,800 barrels a day and closed two oil exporting ports.

What is important to realize is that many of the factors that made this hurricane season so stormy will shape this winter. The La Niña is lingering and the AMO is still in the warm phase. Thanks to the turbulence of the active hurricane season, most of the ocean is cooler but waters off the Northeast and Canada remain 0.5 – 2.5°C (0.9° – 4.5°F) warmer than normal. When you multiply this by over a million square miles of ocean surface – this represents a lot of energy. When cold continental air masses hit this warm Atlantic water, it produces moisture and storms. In mid-winter, this will mean some very heavy storms from the Midwest through the Northeast and Mid-Atlantic states.

Brace Yourself for Winter

The growing La Nina and lingering Atlantic warmth are two of the factors that will shape this winter's weather. When combined with the third factor – lingering volcanic debris in the polar air mass – they will produce a stormy and chaotic winter, filled with extremes.

We are already seeing the impact of the La Niña, with the drought in the southern states and the cold and wet conditions in the Western North America. Expect the cold to linger and spread eastward.

Similarly, we are seeing the impact of the warmth in the Atlantic. It not only shaped a busy hurricane season, but the Northeast and Mid-Atlantic, including New York City and Washington DC experienced record high temperatures over the holiday weekend. Typically, during La Niñas, strong westerlies (west-to-east) winds dominate the East during fall and early winter creating "average" weather. When these westerlies hit an unusually warm Atlantic, we see warm "Indian Summers." (An Indian summer is the pioneer term for an unusually warm late autumn in the East that wells up after a killing frost.) The cold storms of Halloween have been followed by warmth.

This winter's third weather factor is "volcano weather" – the effect of volcanic debris in the Arctic air mass. In 2009, Alaska's Mt. Redoubt and Russia's Sarachev Peak had huge eruptions. The debris from these volcanoes reflected incoming sunlight and weakened the circumpolar winds. This led to cold Arctic air surging south and producing the cold winters of 2009/2010 and 2010/2011. The cold weather dominated the Northern Hemisphere.

BLOCKING EVENT An impediment of the windward flow of weather patterns. Generally in North America this means the westerlies are blocked; storms stall and cold air sinks south.

This year two polar volcanoes exploded with enough force to enter the stratosphere. We will feel the impact of the eruptions of Iceland's Grimsvötn and Russia's Mt. Sheveluch. (Indeed, some may argue we have already felt the "volcano weather" during this year's unusually snowy Halloween storm.)

When the three factors are combined, history shows that this usually results in a cold, stormy, winter. Historically, when the cold air from the West and the cold air from the North hit the warm Atlantic in mid-winter, it produces severe Nor'easters.

A recent article published by NASA shows why this is happening and why big

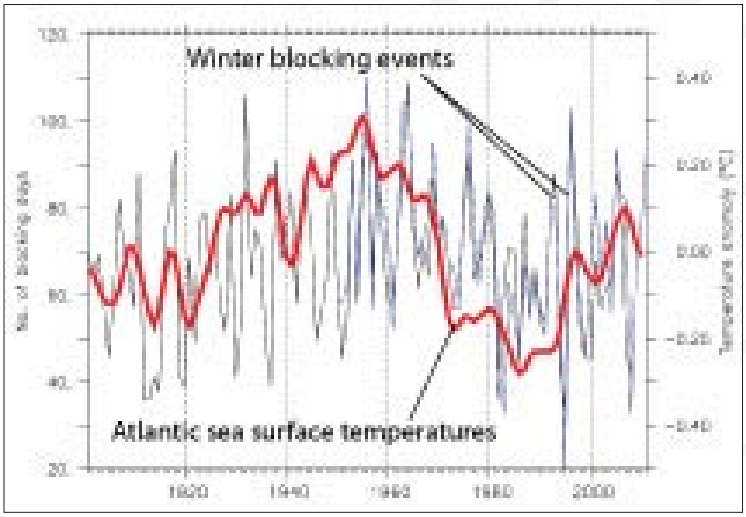


fig.15 **The number of winter blocking events** *(black and blue lines)* **correlates strongly with fluctuations in the temperature of surface waters in the North Atlantic Ocean** *(red line)*.

source: Sirpa Häkkinen (NASA GSFC), Peter Rhines (University of Washington) and Denise L. Worthen (Wyle Information Systems/NASA GSFC)

Cool	Hot	Warm	Dry	Wet
2˚C or more lower than normal temps.	5˚C or more higher than normal temps.	2-4˚C or more higher than normal temps.	75% or less of normal moisture	125% or more of normal moisture

figs. 16-18 * Moderate eruptions in the Pacific Northwest will bring more moisture to the west.

storms "linger" for many days. A team of researchers led by Sirpa Häkkinen, an oceanographer at NASA's Goddard Space Flight Center, reported that warmer waters in the Atlantic Ocean can stall weather systems over North America. This phenomenon, called blocking, freezes a weather pattern in place, an event that typically lasts at least five days and can persist for weeks. In the North Atlantic, atmospheric blocking centers generally form over Greenland and Western Europe. For example, a blocking event that took place over Greenland in the winter of late 2009 and early 2010 led to the "Snowmageddon" blizzard. The article showed that the warmer the Atlantic is, the more blocking events occur.

With the current Atlantic temperatures, we can expect several blocking events over this winter. When this tendency is added to the other factors shaping the weather, we can expect the type of stormy winter that we have seen over the past two years. Indeed, when one examines the most similar years to this year, we saw the following weather:

EARLY WINTER – Early winter is when the westerlies collide with the descending Arctic air mass. Initially the Eastern US has warmer than normal early winter weather. Then, a few weeks into winter, the cool fronts from the north and west crash into warm Southeastern weather. This creates storm after storm in the Central Plains, Midwest and Northeast. (In 60% of similar years, this happens in late.) Meanwhile in 80% of similar years, Western Canada and the Pacific Northwest have heavy snows and coastal rains. In 60% of similar years, the storm track surges further south, chilling Southern states but leaving large portions of Canada warmer than normal. There is some precipitation in the South, but not enough to break the Texas/Southern drought.

MID-WINTER – Mid-winter can be described in three words – cold and stormy. The cold from Western Canada and the Pacific Northwest will reach the Great Lakes, Midwest and, eventually, the East Coast. Normally the South is dry, but the larger this winter's La Niña is, the more likely it will be that there will be rain in the central Gulf States. Unfortunately in all 5 similar years, Texas, Georgia and parts of the Southeast suffered severe drought.

LATE WINTER – The typical pattern for La Niña winters in the eastern US is a warm early and late winter and a cold and stormy mid-winter. Late winter should have at least one Nor'easter but this cold will be balanced by early warming along the Gulf and Atlantic coastlines. The La Niña cold will retreat to Western Canada and the Pacific Northwest. When the hot and cold air meet, in the Midwest, Northeast and Eastern Provinces, it should be stormy while the Southern Plains remain dry. Normally California, especially Southern California would be extremely dry as well, but if the Kamchatka volcanoes continue to have moderate activity, the region should have one or two heavy storms.

In a number of ways, this upcoming winter will have many similarities to last winter. However, the current models show the La Niña easing earlier than last winter's event. If this happens, then the season should be cold and filled with storms, but end earlier and not be as extreme as the winter of 2010/2011.

Ski Outlook

Finally, a certain number of my readers like to slide down mountains. I regard this as a form of insanity, but if skiing is your sport, it will be a good winter.

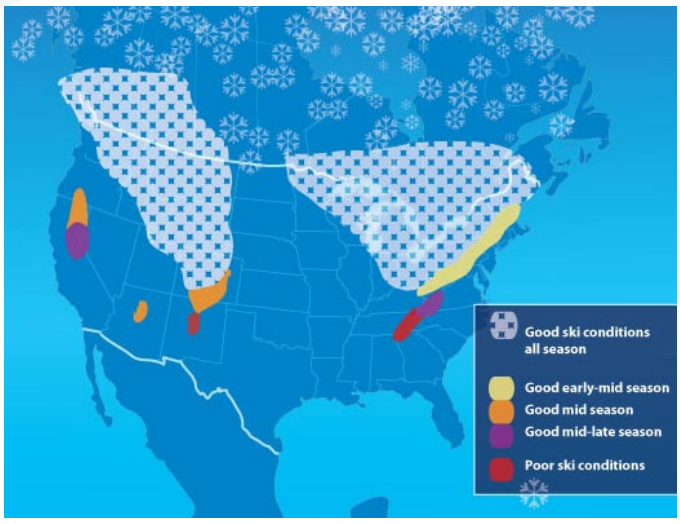


fig. 16

Ski conditions will be excellent for many area resorts. Plan accordingly.

News Notes

It's politics as usual. When scientific funding comes from political institutions, science becomes politicized. Here are the latest headlines in the climate war.

Over 5,000 hacked e-mails, dubbed Climategate 2.0, were released just in time for the Durban, South Africa, climate summit. They reveal the nasty comments of many of the main proponents of man-made global warming.

The problem is that only four major centers are collection points of climate data – the international archive of records, tree ring records, glacial data, etc. These records are in a number of different languages, formats and measurements. The four centers have to modify the data to make it compatible, so that we can use the compilation for climate research. The e-mails cast doubt on the accuracy of these modifications. Did the centers bias their modifications of the records to in order to support global warming? I sympathize with any victim of hacking – comments made off the record can be very damaging when they become known.

Two days later, the IPCC released its 2011 preliminary report on climate change. This publication – *Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change* (http://ipcc-wg2.gov/SREX/) has a clear message: more carbon emissions will mean more dangerous extreme weather events. Specifically it states that we will be seeing rising temperatures and sea levels over the next decades. They are sure that the frequency of heavy storms will increase and that economic losses from weather- and climate-related disasters will increase as well, with annual losses reaching as high as $200 billion. They acknowledge that the increases in economic losses are due not only to climate change but also to increased population movement into high-risk areas.

It should be noted that this release is a summary, not the data or findings. The IPCC will release the full report in February. Policymakers are being given conclusions, not the data that backs the conclusions.

The newest IPCC conference has just met in Durban, South Africa. It is late springtime in that nation. In the past two years, holding their conferences in the Northern Hemisphere during volcanically cooled winters made their claims of global warming seem inaccurate if not ridiculous. However, the odds of the conference updating the Kyoto Protocol are very small.

Thirty-five years of following climate research and debate has shown me that there is good science and pseudoscience on both sides of the argument. The IPCC full reports have useful information but this summary, like so much of climate research, is politicized.

A violent storm hit Durban, South Africa, a few hours before the UN climate change conference began. Eight people died in the violent storms and floods. The KwaZulu-Natal region has been drenched with floods for the last two weeks, losing hundreds of homes and 11 lives. The 20,000 delegates from more than 190 countries are seeing extreme weather at its most lethal.

Chile's Puyehue volcano, which had a huge eruption last March, is still active. It continues to have low-level eruptions that occasionally cause flight delays in Uruguay and Argentina. The big question is whether the debris from this event will change the weather impact of La Niña. Normally Argentina would have drought during its summer growing season during the La Niña. However, the volcanic dust may cause wetter conditions, just as the recent eruptions did here in the Northern Hemisphere. There is almost no research available on the subject. However, investors should prepare themselves for a potentially wetter growing season and better crop yield in South America.

As 2011 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.

The Browning Newsletter
is published by
Fraser Management Associates
a Registered Investment Advisor.

For more information or an informational brochure
call 1-802-658-0322
or e-mail us at alex@fraser.com

www.BrowningNewsletter.com

The opinions expressed are those of the writer, and although they are based on extensive studies of physical data and phenomena, many statements published here are not entitled to be regarded as rigorously proved in a scientific sense. Some decades must pass before these issues are resolved.

Meanwhile, decisions must be based on the best available information and estimates.

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.

For more details, price, and subscribing information: www.BrowningNewsletter.com/contact.html

The Browning Newsletter is published monthly at an annual subscription rate of $250 for print OR email version, $270 for both formats. Subscriptions should be directed to:

The Browning Newsletter
PO Box 1777
Burlington, VT 05402

1-802-658-0322
alex@fraser.com