Would You Believe La Ninas Often Hurt the Economy More Than El Ninos?

There have been great extremes of weather in the last few years. Many environmentalists and their supporting cast in the media want to blame green house gas related climate change. Climate is changing…always has and always will. The only constant in nature is change.

The kind of extremes we have experienced are related to a cooling planet after a warming period, both associated with 60 year cycles in weather related to multidecadal cycles on the sun and in the oceans.

The last time we underwent such a cooling from the 1950s to 1970s, we had a similar combination barrage of extreme weather with drought, snowstorms, bitter winters, spring tornadoes and floods and hurricanes.

Some of you may remember, in the 1980s and 1990s, before the media's favorite weather topic was climate change or global warming, it was all El Nino. It was blamed for virtually any weather event that occurred in El Nino years. It is true that El Ninos when strong are capable of producing losses that can total in the billions of dollars. El Ninos are feared in places like Indonesia, Australia, India, Brazil, Mexico, and parts of Africa where devastating droughts are possible. In the United States, southern states from California to Florida are vulnerable to damage from a barrage of strong winter storms.

Here in the United States, the El Nino of 1997/98 played a role in 18 President declared disasters with a total damage exceeding $4 billion.

However, the patterns of weather associated with strong El Nino events also produce many very positive effects and benefits.

For example, the milder temperatures of most strong El Nino winters in the interior northern United States reduce heating costs for both homes and industry and the operating costs for transportation both by air and on land. Less snowfall in the north lowers the costs of snow removal for government and industry, and enables the construction industry to work more during the winter months. Shoppers are able to get to and from stores more easily and often and retail sales benefit. El Nino also typically results in less flooding during the spring and fewer hurricanes in the summer.

Stan Changnon, former head of the Illinois State Water Survey in the Bulletin of the American Meteorological Society in September, 1999 estimated the economic gains and losses during the great El Nino of 1997/98. He showed that the benefits were much greater than the losses.

ECONOMIC IMPACT	LOSSES	BENEFITS
Property Losses	$2,800,000,000	
Federal Government Relief	$400,000,000	
State Assistance	$125,000,000	
Agricultural Effects	$675,000,000	
Reduced sales of Snow Removal Equipment	$70,000,000	
Tourism, Recreation	$190,000,000	
Savings Heating Costs		$6,700,000,000
Increased sales – homes, goods		$5,600,000,000
Reduction in costs of street, highway removal of ice and snow		$375,000,000
Reduction in losses due to the absence of snowmelt floods and no hurricanes		$6,900,000,000
Income from increased construction and related employment		$475,000,000
Reduced operating costs to airlines and trucking		$167,500,000
TOTAL	$4,350,000,000	$19,750,000,000

LA NINAS ON THE OTHER HAND...

In La Nina, the picture is very different from that of El Nino. When periodic outbreaks of extreme cold weather and snow occur across the northern states, the costs of heating, snow removal, fuel for airline and trucking industries can become at least regionally significant. As snowstorms hit northern areas and snow and ice storms occur across the south or east, business may be shut down for days with major effects on commerce. Retail sales may be down due to travel difficulties. Construction work will be hampered with delays and loss of employment.

Also in La Ninas, losses from springtime flooding and from droughts and hurricanes typically are much greater than normal. Flooding in La Nina years averages nearly $4.5 billion compared to an average of $2.4 billion. We have already seen examples of that in 2008 and 2009 in Missouri and Arkansas and in 2011 in the Ohio, Mississippi (worst since 1927), Champlain and now Missouri River Valleys.

Major tornado outbreaks occurred in January 1999 in Arkansas and Tennessee and in May in Oklahoma and Kansas with $2.3 billion in damages. And of course the super tornado outbreakof April 1974 with its 148 tornadoes that left 315 dead and 500 injured occurred during a very strong La Nina. In 2008, we set a record for tornadoes in May, this year in April. The outbreaks this year focused more on the major urban centers with greater resulting damage and death toll.

A major heat wave and drought in the strong La Nina of 1988 caused an estimated $40 billion in damage or losses (mostly agricultural) in the central and eastern United States. 2010's summer La Nina brought record heat like 1988 but not the drought because the winter had been so snowy and wet and the soils saturated. This winter and spring drought in the southern plains is very costly. In Texas it was the third worst May drought behind only 1918 and 1956 (more tommorrow).

Hurricane related losses in La Nina years, averages $5.9 billion compared to an all year average of $3 billion. In fact, most all the major east coast hurricanes have been in La Nina years especially those with a warm Atlantic as we have currently. We had Irene hit the northeast last summer.

Table 1 **Global deaths and death rates for various types of events, 1900–1989 and 1990–2006**

	Deaths per year		*Death Rates per year (per million people)*	
	1900–1989	*1990–2006*	*1900–1989*	*1990–2006*
Droughts	130,042	185	57.99	0.03
Floods	75,212	7,637	31.95	1.29
Windstorms	10,856	13,650	3.96	2.45
Slides	469	868	0.16	0.15
Waves/Surges	128	207	0.06	0.03
Extreme Temperatures	110	5,671	0.03	0.91
Wild Fires	21	47	0.01	0.01
TOTAL	216,839	28,266	94.16	4.87

Sources: EM-DAT (2007); McEvedy and Jones (1978); WRI (2007)

US deaths due to weather-related events, 1979–2002. Sources: for extreme events, see text; for total all-cause mortality, USCB (2004).

	Cumulative deaths	*Deaths per year*	*Percent of annual all-cause deaths*
Extreme cold (XC)	16,313	680	0.031%
Extreme heat (XH)	8,589	358	0.016%
Flood (F)	2,395	100	0.005%
Lightning (L)	1,512	63	0.003%
Tornado (T)	1,321	55	0.003%
Hurricane (Hu)	460	19	0.001%
Sum	30,590	1,275	0.058%
Total deaths, all causes, 1979–2002 average		2,189,000	100.000%

SOME BENEFITS TOO

On the other hand, the winter sports industry may benefit in the west and north from increased snowfall. The last three La Nina years have been boon years Though the northern tier pays more for energy costs with cold winters and the occasional hot summer, many others save on

their energy bills. This past winter was unusually cold in Florida in December into January but spring warmth followed early.

Warmer than normal temperatures in the big cities of the east and south in most La Ninas may save consumers there billions through reduced heating costs. Tourism in 'escape' destinations like Florida and California is usually up. Sales of snow removal equipment and winter clothing are also higher in the north and west.

But unlike El Ninos, the benefits are often dwarfed by the losses.

TIES TO THE PACIFIC DECADAL OSCILLATION

The frequency of both El Ninos and La Ninas is tied to the PDO. When the PDO is warm (positive) more El Ninos are favored and when negative La Ninas. The PDO phases average about 25-30 years in length. Though the PDO is a measure of conditions from 20N to the North Pacific, it turns out that warm water is favored in the tropics during the warm phase and cool water in the cool phase. La Ninas occur twice as often and also last twice (21 months) as long in the cold PDO than El Ninos (12 months). The opposite happens in the warm PDO. In the last 5 years we have had four 2 year La Ninas and one 1 year El Nino.

It appears the PDO which flirted with a change to negative in the late 1990s has returned solidly to a negative cold regime state**.** This is consistent with the 25-30 year phase length as the last shift called the Great Pacific Climate Shift occurred around 1977. If indeed it stays there this time, we can expect more La Ninas like this one in the years ahead just as we found in the last cold phase from 1947 to 1977. If that is the case, look for

(1) More La Ninas than El Ninos, declining global temperatures

(2) More cold and snow across the northern tier from the Pacific Northwest and Northern plains to the Great Lakes and Northern New York and New England

(3) More winters with below normal snow Mid-Atlantic south

(4) More late winter and spring floods from spring storms and snowmelt

(5) Dry winters and early springs in Texas and Florida with spring brush fires

(6) More tornado outbreaks sand stronger tornadoes in the spring months.

(7) More Atlantic hurricanes threatening the east coast from Florida north, especially as long as the Atlantic stays warm (Atlantic usually lags up to a decade or so after the Pacific in its multidecadal cycles).

(8) Greater chances of growing season heat and drought in the major growing areas when La Ninas come on after an El Nino winter

Given the PDO negative state and more La Ninas look for more of the same years of extremes then a break as we should see this year later with El Nino. Whent he AMO turns cold as it should in a few years (see recent post) and the sun goes into its Eddy Minimum, temperatures should plummet. It is as Glokany showed the real killer.

Just to be sure that if the extremes diminish, there is another story to hype, the media is taking about the arctic ice. [Weather Runs Hot and Cold, So Scientists Look to the Ice] in the New York Times. Amid seesawing temperatures, suspicion is focused on the decline of sea ice in the Arctic, believed to be a consequence of the human release of greenhouse gases. Arctic ice in yellow is currently in the middle of the pack of years since 1979.