

Farmland

IN PERSPECTIVE

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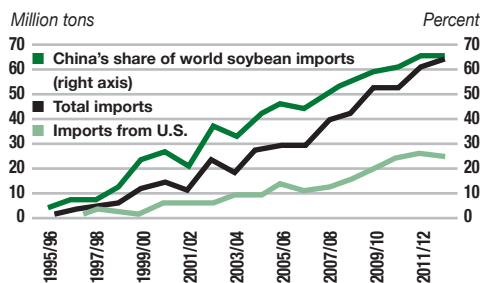
China emerges as world's dominant soybean importer Bolsters demand for U.S. exports

Rising incomes in China have led to a major shift in Chinese diets to include more livestock products. This dietary change, along with policy measures to spur growth in the industrialized feed industry and modern livestock production, has supported remarkable growth of soybean imports to feed livestock. Chinese soybean production has been declining in favor of corn and rice production.

The elimination of raw soybean import quotas and a surge in foreign investment in the Chinese soybean processing sector following China's accession to the World Trade Organization (WTO) in 2001 facilitated soybean imports from the United States and other world suppliers.

The bulk of soybeans produced in China are for human consumption, while soybeans from the United States and South America, China's two primary import sources, are crushed for feed and commercial oil uses. China has more than a 60% share of global soybean imports.

China's soybean imports



Is Climate Change Cyclical?

By Drew Lerner
Senior Agricultural Meteorologist
Founder and President
World Weather, Inc.

Weather patterns in the past few years have seemed to become more volatile and extreme relative to those of a decade or two ago. The changes in weather have spurred much debate as to whether climate is changing and whether or not man has had an impact on that change. The speculation has run rampant in recent years, because most everyone will agree that the weather was much different when we were all growing up.

Perceptions

The knee-jerk reaction is that something is wrong with the weather machine, and our planet is in tailspin of disaster that will begin with our inability to farm land that was once considered paradise and end with global flooding because of melted polar ice caps. The biggest reality of all – from a scientific perspective – is that we simply do not have enough data to make sweeping generalizations about climate change.

The ever-expanding information age has contributed to the hype over climate change. Stories about floods, heat waves, hurricanes and other natural disasters flood the Internet every day as people from all over the world share their stories. The daily open forum of news and weather information over the Internet and other communication services leaves the impression that each of us is sitting on a time bomb for a weather disaster to hit right here at home.

In an effort to try to keep extreme weather events in perspective, the U.S. National Oceanic and Atmospheric Administration (NOAA) has attempted to create a weather index of all extreme events since weather recordkeeping began in the late 1880s. Their idea was a good one, but in order to create the index they had to gather all of the weather extreme data from the beginning of recorded time and rank events in such a manner that each new extreme event could be judged by using the same parameters as with each of the past events. The first attempt at creating an index (see page 2) helps clarify that perhaps the weather today is not as unusual as everyone once thought.

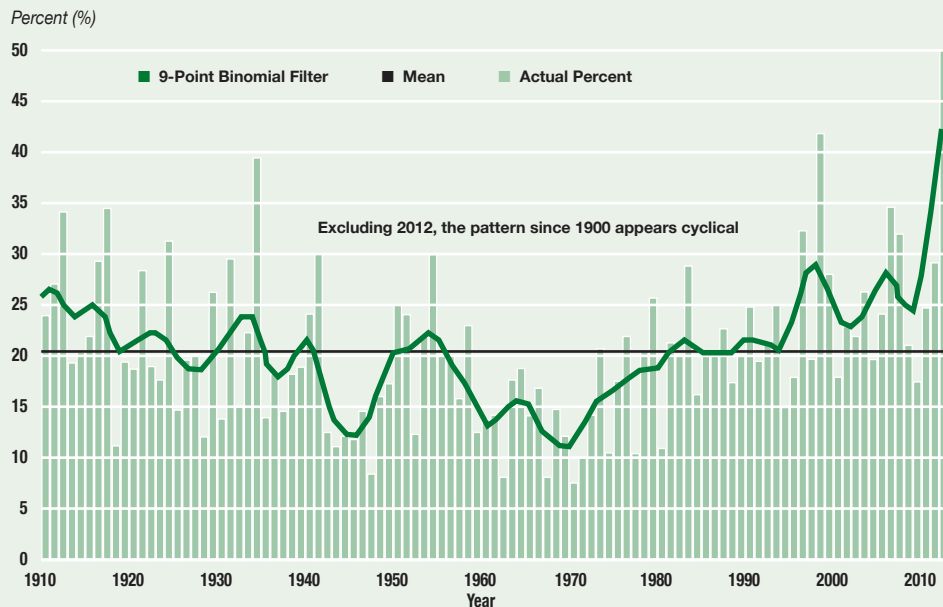
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The climatic record from here in the United States has revealed that, yes, we have seen weather extremes in the past that were perhaps as outrageous as those of recent years. The problem is that many of us were not born when weather extremes occurred at a frequency similar to that of today. Communication in the late 1800s, when the U.S. Weather Bureau had its roots, was nothing like it is today. The amount of information available from around the world about extreme conditions was minimal. Only news of the biggest events that occurred would be heard around the world. Today many of the smallest and most localized weather events are heard about within minutes of their occurrence.

Technology

Weather data collection has become more sophisticated in recent years, and the mere volume of information, while seemingly overwhelming, has actually been studied and assessed over and over again. Each new study has revealed greater amounts of information. As computer systems become larger and quicker at analyzing data, patterns have been revealed. In the 34 years that this meteorologist has been covering international weather, many patterns have been revealed. These were unheard of in the

Contiguous U.S. without tropical cyclone indicator Annual (January – December) 1920–2012



late 1970s because computer systems were not available and the information age had not matured enough to reveal all of the information we have today.

In recent years, meteorologists and climatologists have learned about the importance of how ocean temperatures interact with atmospheric conditions to create weather changes. Those relationships have been further studied showing that

changes in ocean temperatures have a huge impact on weather trends. Also, the changes of ocean temperatures are hinged on the sun and how warm or cool it is relative to that of previous years. Suddenly what seemed like a simple bout of unusual weather is now related to some pattern that has been repeating since way back in time. The results seem to be similar with each time similar conditions are set up in the atmosphere.

China's agricultural productivity growth: Strong but uneven

Each of China's 25 regions has experienced strong growth in agricultural production since the mid-1980s. The growth is fueled by both input and total factor productivity (TFP) growth, i.e. the ability to produce more output from each unit of input. The relative contribution of these two growth factors differs by region, though. Annual TFP growth peaked during 1996–2000 at 5.1% before slowing to 3.2% in 2000–2005. It then declined by 3.7% per year in 2005–07. The significance of this slowdown remains unclear.

Average annual total factor productivity growth was strong across China's agricultural sector, 1985–2007

TFP growth

- 3 – 4%
- 2 – 3%
- <2%
- Not included in estimates



Note: Total factor productivity (TFP) is the ratio of total output over total input, thereby taking into account the use of all inputs in the production process.

Source: USDA, Economic Research Service calculations as reported in Wang et al. (2013).

Cycles

One of the longest-studied patterns influencing weather is the solar cycle. This pattern reveals that the sun is not a constant burner. There are lengthy periods when the sun is hotter and emits greater amounts of energy to earth, and there are periods of a less active or cooler sun. These changing cycles have been monitored since the 1700s through the counting of sunspots. A sunspot is an area of magnetic field change that appears as a darkened spot above the surface of the sun. The hotter the sun gets the more sunspots appear over a 10- to 12-year "solar cycle."

The sunspot data was collected and saved almost by accident, and it was frequently speculated that the data was of great importance. It was later learned that the number of sunspots counted were directly related to how hot or cold the sun was. That led to the discovery that the earth's climate tends to change as the sun heats and cools.

Not only does the earth's atmosphere change with the hotter and cooler sun, but so does the earth's oceans, which are huge storehouses of heat energy. While the sun heats and cools the atmosphere rapidly, the oceans are slower to change. The slow-changing water temperatures then influence atmospheric

conditions. Suddenly changes in sun temperatures have an influence on earth's weather but with a lagging amount of time. Since the earth's atmosphere is in constant flux or change, the influence of the ocean temperatures on the weather becomes more cyclical. The longer we collect and assess weather and ocean data, the more we understand our climate, and the more convinced earth scientists will get that all that occurs here on earth is cyclical.

Man does interfere with the cyclical patterns, but man has only become industrialized in the past 150 years. Influences by the sun and ocean on atmospheric cycles have been playing out for a much longer period of time. In time it will be learned that the larger cycles from the sun and oceans have a greater influence on weather and climate than man's burning of fossil fuels. We certainly have some influence, but the climate extremes index clearly shows that long before man became industrialized there was a pattern of repeating weather extremes. The wild weather of the late 1800s and early 1900s is comparable to the weather extremes of the early 2000s, and we did not have nearly the polluted atmosphere then as we do today.

As more data is collected and assessed in coming years, it will become

more obvious in time that weather is in constant flux with some occasional repeating patterns revealed. Eventually, when these patterns repeat it will become more obvious that weather has been this extreme before. What we believe is climate change today may be more adequately described as climate flux. This realization will help reduce fears from doomsday predictions ending civilization as we know it today because of what may not be climate change at all, but just another cycle.



Drew Lerner, President and Senior Agricultural Meteorologist of World Weather, Inc., has been forecasting international weather for 34 years. He began his meteorology career in 1978 while participating in an international effort

to collect data and improve weather forecasting for the Asian Monsoon.

Since then, Drew has been providing detailed short- and long-range weather predictions for each major crop area in the world. His daily assessments of crop and weather expectations supports commodity market trade and helps many companies make better agricultural business decisions.

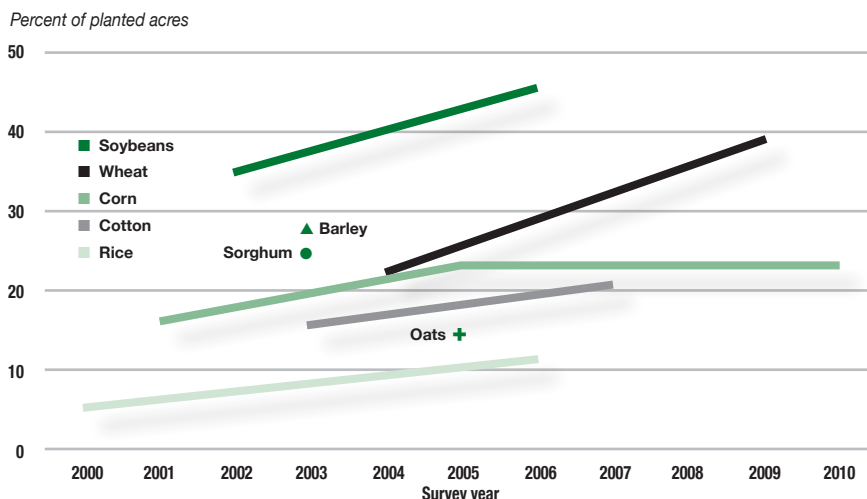
Drew started World Weather, Inc. in 2001 after leading Global Weather Services in the late 1990s. World Weather, Inc. is based in the Kansas City area and supports an expanding group of clientele residing in North and South America, India, Europe, Africa and Australia.

Use of no-till practices

No-till is generally the least intensive form of tillage. Approximately 35% of U.S. cropland, 88 million acres, planted to eight major crops had no-till operations in 2009, according to researchers with the Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA) who estimated tillage trends based on 2000–2007 data from USDA's Agricultural Resource Management Survey (ARMS).

Furthermore, the use of no-till increased over time for corn, cotton, soybeans, rice and wheat, the crops for which the ARMS data were sufficient to calculate a trend. While a more recent estimate of nationwide use of no-till by all major crop producers is not available, based on the results of recent surveys of wheat producers in 2009 and corn producers in 2010, it seems likely that no-till's use continues to spread, albeit at a much reduced pace among corn producers.

Percent of planted acres under no-till system for selected crops, 2000–2010 (crop surveyed varies by year)



Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service. Agricultural Resource Management Survey, Phase 2, 2000–2010.

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