neering (MAEE); others. (Mihail Garevski, Institute of Earthquake Engineering and Engineering Seismology, Skopje, Republic of Macedonia; Tel.: +389-2-3176-155; Fax: +389-2-3112-163; E-mail: secretariat@14ecee.mk; Web site: http://www.14ecee.mk/default.htm)

Conference topics will include earthquake hazard assessment, soil-structure interaction, seismic performance of buildings, earthquake-resistant engineering structures, and early warning and tsunamis.

RESEARCH SPOTLIGHT

Highlighting exciting new research from AGU journals

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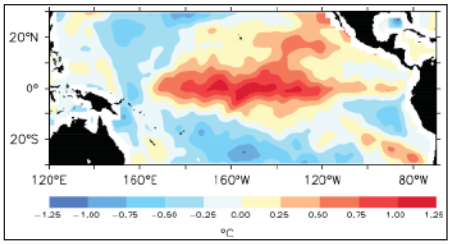
Predicting how a central Pacific El Niño will evolve

El Niño events, in which warmer than usual sea surface temperatures occur in the equatorial Pacific Ocean, are known to have a major influence on weather patterns worldwide. To help improve predictions, *Yu and Kim* categorized the ways in which certain types of El Niño events evolve. They focused on an El Niño known as the central Pacific (CP) type, in which sea surface warming occurs mainly in the central Pacific Ocean rather than in the eastern Pacific, where most common El Niño sea surface warming occurs. The two types of El Niño events have different effects on weather patterns and may respond differently to global warming. The CP type has occurred more frequently in recent decades.

On the basis of events that occurred between 1958 and 2007, the researchers identified three distinct patterns through which central Pacific El Niño events evolve. They also showed that the pattern of evolution was linked to the depth of the thermocline, the transition layer where the temperature drops sharply between surface waters and deep waters.



Jin-Li Yu

Sea surface temperature for the central Pacific El Niño event occurring in 1977.

The researchers found that, in general, during a CP-type El Niño, if the thermocline was at a shallower than normal depth, then eastern Pacific cooling was likely to occur, ending the El Niño abruptly. If the thermocline was at normal depth, the El Niño would likely decay about as quickly as it grew. If the thermocline was deeper than normal depth, then eastern Pacific warming would likely occur, slowing the ending of the El Niño. The results could be useful for predicting the duration of CP-type El Niño events. (*Geophysical Research Letters*, doi:10.1029/2010GL042810, 2010)

Simple description of atmospheric organic aerosol

Atmospheric organic aerosols consist of a variety of organic molecules that are either directly emitted into the atmosphere or formed through chemical reactions in the atmosphere. Organic aerosols can affect climate by altering the amount of sunlight that is reflected away from Earth. Because the aerosol composition changes as chemical reactions take place in the atmosphere and air masses move and mix, it is difficult and time consuming for atmospheric chemistry models to include the details of the evolution of organic aerosol composition. A new study shows that it may not be necessary for models to include all the details.

Heald et al. have found a simplified way to describe the evolution of the organic aerosol composition in the atmosphere by plotting the hydrogen to carbon atomic ratio (H:C) versus the oxygen to carbon atomic ratio (O:C). They found that in a number of laboratory and field measurements, the bulk molecular composition of organic aerosol tends to fall roughly along a single line in this diagram. As air masses mix and chemical reactions take place in the atmosphere, the mixture of molecules changes, but the overall elemental composition stays along this line.

The results suggest that the chemical evolution of organic aerosol in the atmosphere can be represented simply in atmospheric chemistry and climate models. (*Geophysical Research Letters*, doi:10.1029/2010GL042737, 2010)

MODIS, NASA/GSFC

A large, thick plume composed of sulfates and other organic aerosols over northern India and Bangladesh.

Satellites monitor air pollutant emissions in China

A new satellite study verifies that Chinese emission control efforts did reduce power plant emissions of sulfur dioxide (SO_2), a harmful gas that causes acid rain and can form sulfate aerosols; these aerosols play an important role in the climate system by affecting clouds and precipitation patterns and altering the amount of sunlight that is reflected away from Earth.

Using a satellite-based monitoring instrument, *Li et al.* observed increases in SO_2 and nitrogen dioxide (NO_2) from 2005 to 2007 over areas in China where large coal-fired power plants were built during that time period. In 2008, they found little change in NO_2, which is consistent with steady output from those power plants. However, in 2008 they observed dramatic reductions in SO_2, likely because power plants had begun to use desulfurization devices more extensively in response to government policy. The study demonstrates that satellites can be useful in monitoring air quality and air pollutant emissions. (*Geophysical Research Letters*, doi:10.1029/2010GL042594, 2010)

Russell Dickerson

Cooling towers at a coal-fired power plant near Beijing.

—Ernie Tretkoff, Staff Writer