THIS WEEK

EDITORIALS

Support our buoys

An international effort is needed to restore an early-warning system for the vast warming of the Pacific Ocean that leads to extreme weather worldwide.

The numbers don't add up. When, in 2012, the US National Oceanic and Atmospheric Administration (NOAA) retired the *Ka'imimoana*, a former US Navy ship dedicated to maintaining an array of moored buoys that monitors the equatorial Pacific Ocean, administrators were able to chop roughly US$6 million from the annual NOAA budget. In 2013, the agency says, it spent up to $3 million chartering boats for the same purpose. Those charters have failed to keep pace with the rigorous maintenance requirements, however, and the Tropical Atmosphere Ocean (TAO) array has partially collapsed as a result (see *Nature* http://doi.org/q72; 2014). The upshot is that, to save a few million dollars, NOAA has left the world partially blind to a phenomenon that can cause tens of billions of dollars in damage.

The TAO array exists as a direct result of that phenomenon: an intense warming of surface waters in the eastern equatorial Pacific, known as El Niño. In 1982–83, scientists did not see it coming, and could only watch as its effects rippled through the global weather system to wreak havoc around the world. NOAA researchers responded with a moored array that could be used to monitor both the upper layer of the ocean and the atmosphere above. The agency partnered with the international community to test and deploy the instruments in the 1980s, and by 1994 nearly 70 moorings were in place. That helped scientists to give advance warning several months before the epic El Niño of 1997–98, which nonetheless contributed to extreme weather that killed thousands of people and caused massive amounts of damage.

Working in concert with computer models and satellite observations, the TAO array remains an integral component of a system to give early warning of events in the tropical Pacific. It has also helped researchers to advance the science surrounding El Niño and its sister effect La Niña, which is defined by a cooling in the same region. Progress in this field has laid the foundation for long-range forecasts, and the array provides crucial data for seasonal weather models released by the United States and other governments.

Those are reasons enough to maintain a viable monitoring system in the equatorial Pacific, but the array's value extends well beyond weather forecasting and into basic climate research. It also provides baseline data for researchers studying the effects of global warming on El Niño cycles. For instance, an analysis published this month suggests that the frequency of major El Niño events — such as those in 1982–83 and 1997–98 — are likely to double this century (W. Cai *et al. Nature Clim. Change* http://doi.org/q4c; 2014). And as discussed two weeks ago in these pages, the equatorial Pacific is also a focal point of research into the current global-warming hiatus (see *Nature* **505,** 261–262; 2014).

Budget pressures are understandable, and difficult funding decisions are made every day at agencies such as NOAA. But there can be no doubt that the decision to cut the costs of array maintenance was a mistake. The question now is what to do about it.

To discuss potential solutions, a group of researchers from around the world is meeting this week at the Scripps Institution of Oceanography in La Jolla, California. Although few seem to expect an immediate fix for the array, NOAA promised extra resources for it last week, and all involved must hope that the agency delivers. Further afield, and keeping fiscal constraints in mind, researchers must look at all the available technologies and identify what they need to maintain a viable monitoring system in the Pacific. The burden of implementation need not fall solely on NOAA, and could be shared among government agencies in other countries that benefit from these data, from South Korea to the United Kingdom.

"The benefits of this system are truly global."

Also on the agenda in La Jolla are the bureaucratic barriers hindering the international cooperation that would ensure scientists have the funds and ships they need to maintain the array. These obstacles must be overcome, and a look at the array's own past provides reason for hope. Six countries took part in its initial testing and deployment, and since 2000, Japan has maintained a dozen of the original moorings in the western Pacific, called the TRITON array. The benefits of this system are truly global. It makes sense for the international community to come together on a long-term solution. ■

Open invitation

Europe's proposed climate targets fire the starting gun on the long build-up to Paris 2015.

When European leaders agreed on three climate and energy targets in 2008, and established a set of policies by which to achieve them, the European Union (EU) was widely acknowledged as the world's first major economic power to tackle the climate-change problem in earnest.

Those landmark '20-20-20 targets' for 2020 aimed for a 20% reduction in greenhouse-gas emissions below 1990 levels while setting a mandatory 20% target for the share of electricity consumption coming from renewable energy sources and a 20% improvement in energy efficiency by that time.

With EU emissions now down by some 18% relative to levels in 1990, Europe is well on its way to exceeding the first and crucial goal. Against that background, the new mid-term emissions target — a 40% reduction on 1990 levels by 2030 — proposed by the European Commission last week has received a lukewarm response from environmental groups, scientists and green-minded politicians (see page 597).