

The Association of Pacific Rim Universities and The New York Times Asia-Pacific Case Competition 2017

Topic:

The Future of The Pacific Ocean

Task:

You are a policy adviser - (s)he may be at national or city level - to a respected political leader who can influence public opinion and change policy. In 800 words, provide her/him with a policy brief on climate change and the future of the Pacific Ocean, which will be the 'wake-up call' described in the article. Include specific recommendations for your geographical location, supported by evidence, on what should be done and by whom.

Questions for Discussion:

How could extreme weather conditions affect natural or biological ecosystems, economic conditions, and governance structure on a society? What could be done to mitigate any of the negative effects, both on an international collaboration aspect and a national policy level? What might be the key parameters that a government need to consider before implementing any remedies?

Criteria for Assessment

- **Accuracy** (20%): on the fact/data used or cited to support the arguments
- **Relevance** (30%): on the use of theories, concepts, external data or research applied to support the arguments
- **Clarity** (20%): of the presentation and organization of ideas, reasons, and actions
- **Originality** (30%): of actions, solutions, and decisions proposed

Regulations & Guidelines

TOPIC	The Future of the Pacific Ocean
ELIGIBILITY	The team must be comprised of currently enrolled Asia-Pacific university students (as of May 2017). Students of all disciplines and stages in their studies are welcome including undergraduate and postgraduate students.
SUBMISSION	<ul style="list-style-type: none"> • Original writing piece • Individual OR maximum 4 teammates in a group • Please provide <i>name, email, university name</i> and <i>Student ID</i>
ARTICLE	The Pacific Ocean Becomes a Caldron, By JOHN SCHWARTZ, NOV. 2, 2015
TASK	800 words policy brief on climate change and the future of the Pacific Ocean, which will be the ‘wake-up call’ described in the article.
IMAGES	Maximum two images may be included with the submission (JPEG or PNG format).
FORMAT	<ul style="list-style-type: none"> • Original photos • Length: Maximum 800 words, single spaced • Save file name in the following format: <i>Names_Universityname_APRUNYT2017</i> • Submit your work as a Word (.doc, .docx) or PDF file
JUDGING CRITERIA	<ul style="list-style-type: none"> • Accuracy • Relevance • Clarity • Originality
SUBMISSION DEADLINE	31 March 2017 (Fri)
SUBMISSION EMAIL	aprunyt_2017@apru.org
FREE NYTIMES ACCESS FOR PARTICIPANTS	Free 4-week subscription to NYTimes.com, please request at angel.leung@nytimes.com

PRIZE (CHAMPION)	<ul style="list-style-type: none"> • Article will be published in the International Edition of the NYT • Vouchers with a total value of US\$500 • NYT Trophy + Certificate
PRIZE (RUNNER-UP)	<ul style="list-style-type: none"> • Article will be published in the International Edition of the NYT • Vouchers with a total value of US\$300 • NYT Trophy + Certificate

The Pacific Ocean Becomes a Caldron

By JOHN SCHWARTZ NOV. 2, 2015

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[Hurricane Patricia](#) was a surprise. The eastern Pacific hurricane strengthened explosively before hitting the coast of Mexico, far exceeding projections of scientists who study such storms.

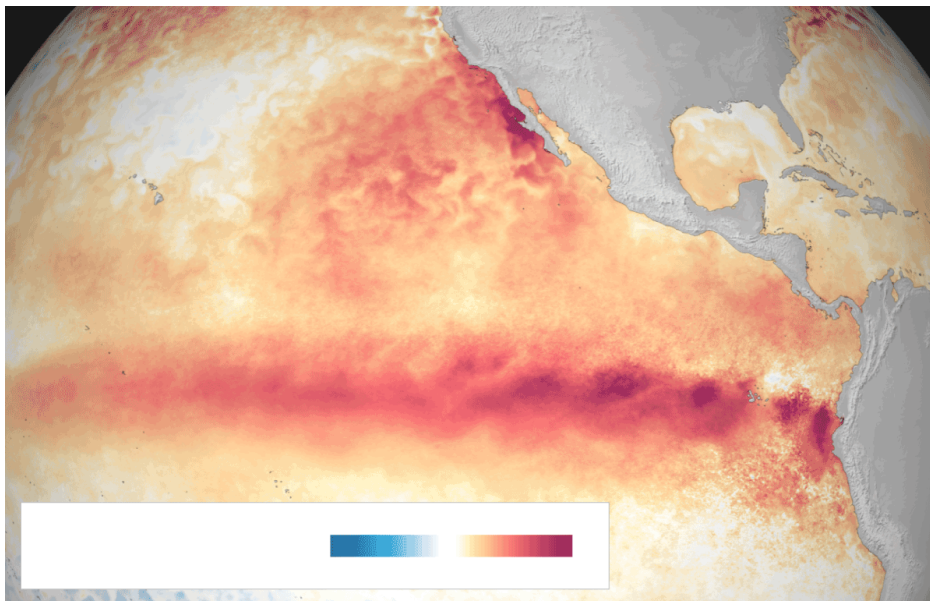
And while the storm's strength [dissipated quickly when it struck land](#), a question remained. What made it such a monster?

Explanations were all over the map, with theories that included [climate change](#) (or not), and [El Niño](#).

But the answer is more complicated. The interplay of all the different kinds of warming going on in the Pacific at the moment can be difficult to sort out and, as with the recent hurricane, attributing a weather event to a single cause is unrealistic.

Gabriel Vecchi, head of the climate variations and predictability group at the geophysical fluid dynamics laboratory of the National Oceanic and Atmospheric Administration in Princeton, N.J., likened the challenge to the board game Clue.

“There's all these suspects, and we have them all in the room right now,” he said. “The key is to go and systematically figure out who was where and when, so we can exclude people or phenomena.” Extending the metaphor, he noted that criminal suspects could work together as accomplices, and there could be a character not yet known. And, as in all mysteries, “You can have a twist ending.”



By The New York Times; Image by NOAA

At the moment, the world's largest ocean is a troublesome place, creating storms and causing problems for people and marine life across the Pacific Rim and beyond. A partial list includes the strong El Niño system that has formed along the Equator, and another unusually persistent zone of warm water that has been sitting off the North American coast, wryly called "[the Blob](#)."

And a longer-term cycle of heating and cooling known as the Pacific Decadal Oscillation may be switching from a cooling phase to a warming phase. On top of all that is the grinding progress of [climate change](#), caused by accumulation of greenhouse gases generated by human activity.

Each of these phenomena operates on a different time scale, but for now they appear to be synchronized, a little like the way the second hand, minute hand and hour hand line up at the stroke of midnight. And the collective effects could be very powerful.

Although they interact with one another, each of these warming events is being blamed for specific problems.

"The Blob" has been associated, among other effects, with the unusually dry and warm weather in the western United States. Out in the ocean, the nutrient-poor warmer waters of the Blob — about four degrees Fahrenheit higher than average — are disrupting the food web of marine life. Some species of fish are [showing up where they are not expected](#), including tropical sunfish off the Alaska coast, and an unusual number of [emaciated sea lion pups](#) and [Guadalupe fur seals](#) are being found stranded on California shores.

The warm water has also been linked to unprecedented [harmful algal blooms](#) along the coasts that have rendered shellfish toxic and shut down shellfish fisheries in Washington, Oregon and California. "A single clam can have enough toxins to kill a person," said Vera L. Trainer, the manager of the marine biotoxin program at NOAA's Northwest Fisheries Science Center in Seattle. Officials also ordered the largest closure of the state's Dungeness crab fishing.

"It's really worrisome," Dr. Trainer added. "If this is a single event that then goes away and we can forget about it down the road, it's O.K. If it's a window into the future, it's not a good future."

The [unusually strong El Niño weather pattern, in which the ocean's surface warms and releases immense amounts of heat into the atmosphere](#), has drawn more attention — in part because it tends to bring heavy rain to Southern California, which is amid an intense drought, and cooler temperatures and rain across the southern United States during the winter and potentially into the spring. (The northern band of the country tends to have somewhat warmer and drier conditions.) But El Niño's effects are felt across the planet, and this one has been linked to [drought in Australia](#) and [enormous peat fires in Indonesia](#).

The other large force at work, the Pacific decadal oscillation, is a long period — sometimes, as the name implies, spanning decades — of relatively cooler or warmer water. Since about the year 2000, the oscillation has been in a cool state, which many climate scientists say has allowed the ocean to soak up a great deal of the heat generated by greenhouse gases as part of climate change.

This, in turn, may have kept global average surface temperatures from rising. Climate scientists have called that condition the warming hiatus, and those who deny the overwhelming scientific consensus on warming have used the hiatus to raise doubts about whether climate change exists.

Now, however, the oscillation appears to be entering a warming phase, said Gerald A. Meehl, a senior scientist at the National Center for Atmospheric Research, and strong El Niños tend to nudge the cycle into a new phase. So the oscillation and El Niño “can all add together to give you a really big shift” toward warming over all.

“That’s going to provide a bigger boost to a global warming system,” he said. “These things will add together.” Already, [2015 is on track to be the hottest year in the historical record](#).

Climate change could nudge all of the interacting cycles of ocean heat and cold. Scientists are still trying to determine its effect on hurricanes, though it is widely believed that because warm ocean water provides the energy for hurricanes, [the more powerful storms will grow even more potent over time](#).

Whether there is a clear and detectable human-caused component to today’s cyclone activity is harder to prove, said Thomas R. Knutson, a research meteorologist with NOAA’s geophysical fluid dynamics laboratory at Princeton. “We don’t expect to necessarily be able to detect these changes at this time,” he said.

While no individual weather event can be linked to climate change, the continued warming already [appears to be increasing the potential strength of storms](#), said Kerry Emanuel, a hurricane expert at the Massachusetts Institute of Technology. Whether the storms reach their full potential depends on other factors, he said. Statistically, however, there are too few storms to show that the stronger hurricanes are being caused by climate change yet.

One phenomenon appears to be the result of a combination of El Niño, the Blob and climate change. NOAA this year announced that the world was in the midst of only the third [global coral bleaching event](#) ever recorded. Severe bleaching can lead to the death of reefs, and the loss of habitat for marine life and shoreline protection from storms. The current event began in 2014 in the Pacific and has persisted into this year, with the Blob’s effects being felt most keenly near Hawaii, where the western tail of that large patch of warmed water extends.

“This is absolutely the worst that they have ever seen,” said C. Mark Eakin, the coordinator of NOAA’s Coral Reef Watch. “It’s only the third time they’ve seen mass coral bleaching in Hawaii; the last time was last year.” And because El Niño events stretch from one year’s winter into the next spring, “we’re very likely to see the bleaching that’s going on this year go on into 2016 and even be worse in 2016,” he said.

A warmer Pacific also means higher seas at the United States coastline, because warm water expands and the general winds that flow from west to east will push water against the shore. That can add to an increase in what William Sweet, a NOAA oceanographer based in Maryland, calls nuisance flooding in low-lying coastal areas.

Even a general increase of a half a foot from El Niño can, when combined with storms, cause a pronounced increase in such flooding, he said, adding that San Francisco could go from an average 12 days of nuisance flooding to 21 this year, and La Jolla, Calif., from six to 10.

Nicholas A. Bond, a research meteorologist at NOAA's cooperative institute at the University of Washington [who gave the Blob its name](#), said that climate change could make El Niño conditions more common. "That would just have monstrous implications," he said. And though developed-world nations like the United States could take measures to adapt to the changing conditions, "It is going to be a different place," he said.

Despite all the current dark clouds over the Pacific, literal and metaphorical, Dr. Bond managed to spot a silver lining.

The confluence of problems can serve as a "wake-up call," and a harbinger of climate change, he said. "We have a real chance with this kind of event to see what's going to happen, and show folks, 'Hey, this is the consequence of messing around with the climate.' "

A version of this article appears in print on November 3, 2015, on page D1 of the New York edition with the headline: Pacific Ocean Becomes a Caldron.