

The Pacific Tradewinds Quarterly

PACRAIN/SPaRCE at the Regional Meteorological Services Directors' Meeting

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By Mike Klatt

I recently attended the 13th Regional Meteorological Services Directors' Meeting (RMSD), held May 5-8 in Nadi, Fiji. The RMSD events are organized by the South Pacific Regional Environment Programme (SPREP) in Samoa, and this year's meeting was hosted by the Fiji Meteorological Service. The purpose of the RMSD is for the directors of the Pacific Island meteorological services to get together and discuss a wide variety of shared

issues and concerns. In addition to the local meteorological services, there are representatives from other agencies such as the World Meteorological Organization (WMO) and the Australia, Japan, New Zealand, and United States governments. This year's meeting included delegates from American Samoa, Australia, Cook Islands, Fiji, Finland, French Caledonia, Guam, Japan, Marshall Islands, New Zealand, Palau, Papua New Guinea, Solomon Islands, Switzerland, Tonga, Tuvalu, United States, and Vanuatu.



The 13th Regional Meteorological Service Directors' Meeting attendees.

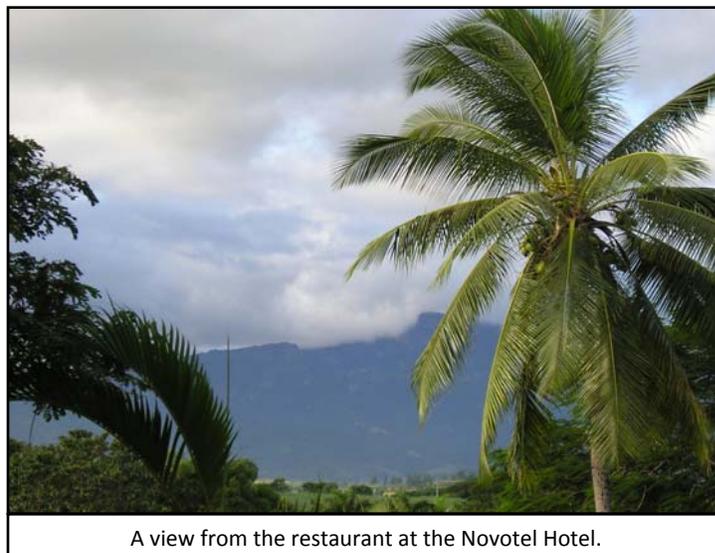


Mark Morrissey and Susan Postawko normally represent PACRAIN/SPaRCE at these meetings, but they were unable to attend this year due to their university teaching commitments. That was very fortunate for me, though, because I was able to go in their place. Even though I have worked with PACRAIN and SPaRCE for a number of years now, this was my first RMSD and my first visit to the Pacific Islands in general. I was excited to visit Fiji, and to finally meet the Pacific Islanders that we regularly work with. I gave a presentation entitled “The Pacific Rainfall Program”, which detailed our work with the Comprehensive Pacific Rainfall Database, the SPaRCE program, and the tipping bucket rain gauge network we are helping to establish in the region. The discussion that took place after the presentation underscored the local enthusiasm for the SPaRCE program. We will be looking for ways for the meteorological services to work more closely with the SPaRCE participants in their countries.

The RMSD presentations covered a number of diverse topics, but one of

the common themes was the effects of climate change in the Pacific and how to deal with them. Due to many factors, the Pacific Islands are particularly vulnerable to climate change. With very few major rivers or reservoirs to store water, they are very dependent on regular rainfall for their water supplies. Even slight changes in the positions of the Equatorial and South Pacific Convergence Zones or variations in seasonal monsoon patterns can cause severe droughts. Too much rainfall can be just as harmful as not enough. In January, Nadi and the western side of Viti Levu, Fiji’s largest island, experienced devastating, unprecedented flooding. One of the predicted effects of climate change is more extreme rainfall events, and there is evidence that this is indeed occurring in the Pacific and other places around the world. Sea level rise—another predicted effect of climate change that is now being observed—is a grave threat to the Pacific Islands, particularly the many low-lying atolls. Ocean acidification is yet another consequence of climate change, and as the oceans become

“We will be looking for ways for the meteorological services to work more closely with the SPaRCE participants in their countries.” - Mike Klatt



A view from the restaurant at the Novotel Hotel.



Back on the ground after a sightseeing flight.

more acidic there are harmful effects on the delicate ecosystems that Pacific Islanders depend on for their sustenance and livelihoods.

Another major theme of the meeting was getting more resources to the local meteorological services. An entire Pacific Island national meteorological service typically has fewer resources than even a single local weather service office in the United States, for example. Yet, these meteorological services must adhere to many of the same international standards as the meteorological services of large nations. WMO, Australia, Japan, New Zealand, and the United States have all been very active in supporting the local meteorological services. Unfortunately, there are a large number of projects that need funding, but a finite amount of funding to go around. The Finnish Meteorological Institute recently declared its interest in the region, and is funding a three-year €500,000 pilot project to assist the Pacific Island meteorological services.

After the RMSD concluded on Friday

afternoon, the Fiji Meteorological Service (FMS) hosted a party at their headquarters near the Nadi airport, and we were able to tour their facilities and meet some of their forecasters. The FMS office at Nadi is one of six Regional Specialized Meteorological Centers (RSMC) that operate as a Tropical Cyclone Center. RSMC Nadi is responsible for naming and providing forecast and advisory information for all tropical cyclones in that part of the Pacific Ocean from 160°E to 120°W and from the Equator to 25°S. As one of the larger meteorological services in the region, FMS also provides assistance to the meteorological services of neighboring countries.

The RMSD has been an annual event in the past, but due to the expense of the meeting and the time required to plan it, it is now held every two years. Vanuatu and Marshall Islands both offered to host the next meeting, but it was decided that Marshall Islands will host the 14th RMSD in 2011. Vanuatu will be the backup site for 2011, and is in line to host the 15th RMSD in 2013.



Woman Rows Off on Solo Sea Journey

By Rob Shikina

Monday, May 25, 2009

Roz Savage knows her biggest challenge to completing a 2,600-mile solo row from Honolulu to Tuvalu in the South Pacific will be crossing the equator.

"There's a really tricky current there," Savage said on the dock yesterday before stepping into her carbon fiber rowboat at Waikiki Yacht Club.

She said another rower had difficulty crossing that current and ended up in Papua New Guinea, about 1,700 miles away from his target, Australia.

Savage, 41, departed yesterday on the second leg of her three-part journey to become the first woman to row solo across the Pacific Ocean. She plans to reach Tuvalu, east of the Solomon Islands, in about 100 days.

The purpose of the voyage is to draw attention to environmental issues,

with this leg focusing on climate change.

The area of concern is a tropical convergence zone of the northern and southern weather patterns that varies in size each year. She hopes to cross it sharply, reducing the period she is inside.

"The strategy is kind of make it up as I go along because nobody's ever crossed it in a boat exactly like mine before," she said.

But after completing a row across the Atlantic in 2005, when her oars broke, and last year, when her water maker failed while crossing the Pacific, she has learned to trust herself.

"There's so many unknowns out there," she said. "I've got to take what comes and deal with it. I've learned that I can cope with most things. I've always struggled in the past, but I've always managed to keep going."

The purpose of the voyage is to draw attention to environmental issues, with this leg focusing on climate change.



Roz Savage - Ocean rower

Photo Courtesy of rozsavage.com



Last September Savage completed the first leg of the trip, a 99-day trip from California to Hawaii. It was her second try after being rescued in rough seas.

Equipped with two pairs of solid ash oars more durable than the carbon fiber oars that broke on her Atlantic voyage, Savage sat on her sliding seat and strapped her feet into her foot straps.

She appeared healthy with an extra 30 pounds, which she expects to lose during this trip, eating only energy bars, crackers and lentils, some of them grown in a bean sprouter.

A former office worker in England, Savage shed her husband and routine lifestyle to embark on what she felt was her true vocation: to live according to her values. She wanted to do something that would help the environment and push herself at the same time.

She plans to complete 10,000 oar

strokes a day, and launched a new program, pulltogether09.org, to get others to reduce carbon production by taking 10,000 footsteps a day.

Later this year she will walk 600 miles from London to Copenhagen, Denmark, to show that people are willing to make an effort to protect the environment.

A helicopter, outrigger canoes and motor vessels escorted Savage in her 23-foot rowboat, the Brocade, out to sea.

She will use her computer, satellite phone and solar panels for electricity to post blogs and tweets from the ocean. She has audio books jammed onto her iPod to keep herself company.

Her third leg will be next year and end in Australia.

Reprinted From:

http://www.starbulletin.com/news/20090525_woman_rows_off_on_solo_sea_journey.html



Roz Savage passing Diamond Head just before arriving in Honolulu Hawaii after rowing across the Pacific Ocean from San Francisco .

Photo and Caption: www.rozsavage.com

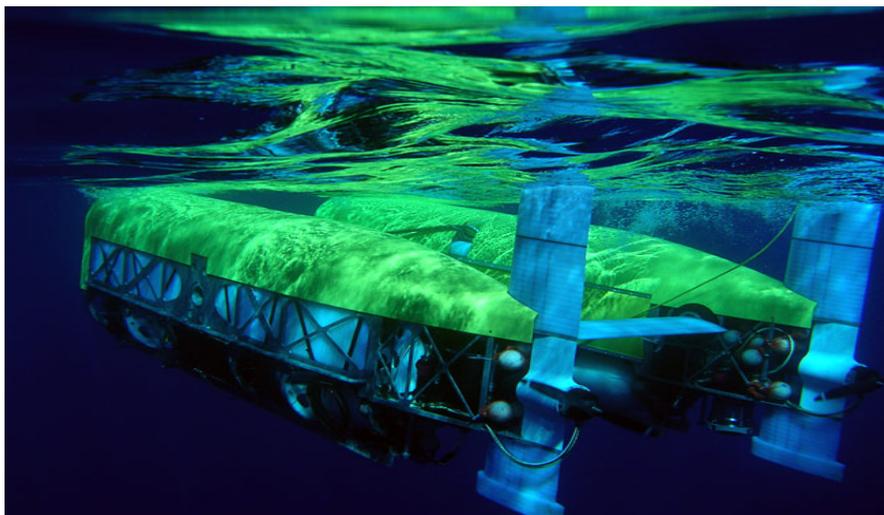
Robotic Sub Explores Marianas Trench

By Haidee V. Eugenio

Wednesday, June 3, 2009

Nereus, a robotic submarine, has started exploring the deepest-known part of the world's oceans called the Challenger Deep, located in the Marianas Trench near the CNMI [Commonwealth of the Northern Mariana Islands] and Guam.

On Sunday, the hybrid remotely operated vehicle Nereus passed the 10,000-meter mark.



The new deep-sea vehicle Nereus successfully reached the deepest part of the ocean on May 31, 2009—more than 4,000 meters farther than any other current deep-sea vehicle can go. First conceived in 2000 by engineers at Woods Hole Oceanographic Institution, it took nine years to design and build.

Photo by Tom Kleindinst, Woods Hole Oceanographic Institution, Photo and Caption:
<http://www.whoi.edu/oceanus/viewImage.do?id=89977&aid=57606>

Challenger Deep is reported to be 11,000 meters deep, more than 1.2 miles deeper than Mount Everest is high.

At that depth, pressure reaches 1,100 times the pressure at the surface.

After a six-hour journey to the bottom on Sunday, Nereus reached 10,600 meters deep, according to the Woods

Hole Oceanographic Institution, which is conducting the May 23 to June 6, 2009 expedition.

WHOI (www.whoi.edu), the world's largest private, nonprofit ocean research, engineering and education organization, is using the free social networking and micro-blogging service Twitter to help document the progress of the Nereus exploration of Challenger Deep.

For the latest update on the WHOI exploration, go to <http://twitter.com/WHOIExpeditions>.

The WHOI-led team aboard the research vessel Kilo Moana is conducting a series of sea trials with Nereus, taking the vehicle to ever-greater depths from 1,000 meters to 4,000 meters, then 8,000 meters and ultimately 11,000 meters.

WHOI's goal is to take Nereus to the deepest abyss on Earth, the Challenger Deep.

At 4am on Monday, Nereus was recovered and brought back to the surface before launching dive No. 12 yesterday morning.

Early yesterday afternoon or at about 1pm, Nereus was again nearing the 10,000-meter mark after over six hours, and was still descending, according to WHOI's latest entry on Twitter.

The Nereus project is led by Andy Bowen and Dana Yoerger of WHOI and Louis Whitcomb of Johns Hopkins University.

The science team includes Patty Fryer, a geologist at the University of Hawaii,

and WHOI biologist Tim Shank, Biologist.

Nereus is the first unmanned vehicle to explore the Marianas Trench since 1995, when the Japan Agency for Marine-Earth Science and Technology brought its ROV Kaiko there. Kaiko was lost in 2003 after the cable it was suspended from snapped.

The first and only manned expedition to the Mariana Trench occurred in 1960, when Jacques Piccard and Don Walsh traveled there in the U.S. Navy-owned bathyscaphe Trieste.

Reprinted From:

Saipan Tribune: www.saipantribune.com
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<http://pidp.eastwestcenter.org/pireport/2009/June/06-03-17.htm>

French Polynesia Group Works to Save Endangered Bird

Barely two dozen Tahiti Monarchs remain on earth

Sunday, April 19, 2009

There are only 23 Tahiti Monarchs left on earth, all in French Polynesia. "This rare and beautiful bird remains under constant threat from rats that attack their nests even though rescue efforts have been underway since the 1990's," James Millett, Senior Technical Advisor of BirdLife International, said.

Mr. Millett was recently in French Polynesia to help a Species Guardian project, a BirdLife International initiative, where a local organization commits to the protection of a threatened bird.

La Société d'Ornithologie de Polynésie "MANU", the BirdLife Partner in French Polynesia, has been designated as the Species Guardian to the Tahiti Monarch. MANU has already achieved success by preventing the immediate extinction of the Tahiti monarch and is working on the conservation of several more critically endangered birds.

"MANU has focused on three main activities to protect the Tahiti Monarch: surveying for additional birds to the twenty-three already counted, improving rat baiting and banding the Tahiti Monarch's leg with coloured rings to monitor its movements," according to MANU Director, Anne Gouni,

Mr. Millett said that conservation efforts would continue to secure the fragile population and ensure that young birds survive to adulthood and boost the population.

"But the best long term solution would be to move some birds to a rat-free islands and establish new populations," Mr. Millett said.

He added that the project is supported by the French Polynesian Government and will get a further boost through a BirdLife International Species Guardian Grant.

"we can show that conservation efforts are making a difference." - Don Stewart, BirdLife Regional Director for the South Pacific



Tahiti Monarch *Pomarea nigra* benefiting from support from the BirdLife Preventing Extinctions Programme

Photo by MANU, Photo and Caption: <http://www.birdlife.org/>

The Tahiti Monarch joins a list of 44 birds in the Pacific Region (including Australia, New Zealand and the South Pacific island countries) that are on the critical list facing extinction (25% of the world's total).

Based in Suva, Fiji, Don Stewart, BirdLife Regional Director for the South Pacific said, "we can show that conservation efforts are making a difference."

"We are working with our regional

Partners as well traditional landowners in the South Pacific and we hope to be able to develop more Species Guardians projects and support local organisations to protect the endangered species," he said.

Last year NatureFiji/MareqetiViti became the Species Guardian for the Fiji Petrel and started conservation work to protect this threatened seabird.

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Tahitipresse: www.tahitipresse.pf

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More Than 1000 Endangered Turtles Hatch in Solomons

Record setting hatch of leatherbacks and green sea turtles

Monday, May 4, 2009

The Tetepare Descendants' Association (TDA) is celebrating a record-breaking turtle hatching season on Tetepare Island in the Western Province.

At the close of the turtle-hatching season on Tetepare last week, the TDA announced that more than 800 critically endangered leatherback turtles hatched on Tetepare beaches during this season.

And almost 300 endangered green turtles hatched on Tetepare, where rangers have been working to save these endangered turtle species.

TDA Conservation Advisor Anthony Plummer, an Australian marine biologist working with the TDA through Australian Volunteers International, said the record number of hatchlings on Tetepare was thanks to the hard

work of the TDA rangers.

"We've seen a huge increase in hatching numbers this year," Mr. Plummer said. "We have never had this many hatchlings on Tetepare in the history of our turtle program."

"It's a great result for these endangered species, and we hope to build on this success next season," said Mr. Plummer.

TDA rangers have been stationed on Tetepare beaches since October last year, keeping watch over nesting leatherback and green turtle mothers, relocating nests in danger of inundation from rising tides, and protecting nests from predators such as monitor lizards.

"TDA rangers work incredibly hard to protect the turtle nests and hatchlings," Plummer said.

"They work from dusk to dawn, patrolling the beaches on foot by the light of the moon, relocating nests

"At the close of the turtle-hatching season on Tetepare...it was announced that more than 800 critically endangered leatherback turtles hatched..." - Tetepare Descendants' Association



and tagging turtles in the middle of the night, and keeping watch over hatchlings to protect them from predators as they dig out of their nests and crawl to the sea.

"They do all this to give this species a better chance of survival, so it's extremely gratifying for them to see their hard work rewarded by these terrific hatchling numbers.

"And none of this would be possible without the support of the Sustainable Forestry Conservation Project of the European Union, and the WWF," he said.

Tetepare, the largest uninhabited island in the South Pacific, is a globally important breeding ground for leatherback and green turtles, which nest on the island's volcanic black-sand beaches. The 120-square-kilometre island is a conservation area of international significance, and is managed by the TDA.

Plummer said communities on the neighbouring island of Rendova were also getting involved in the TDA's turtle conservation project, and were recording and protecting leatherback nests on their beaches.

"We're still getting final hatchling numbers from the villages we are working with on Rendova, but we believe this has been a particularly successful year for our community turtle conservation program too," he said.

"These communities are showing the world that everyone can play an important role in helping leatherback turtles survive."

Plummer said eco-tourists visiting the TDA-run ecolodge on Tetepare were

also helping to save the species by supporting the TDA and local communities working to conserve turtles.

"The nesting leatherbacks and hatchlings have been a hit with ecotourists this year," he said.

"And our turtle-tagging program, which we run all year round, is also proving popular with visitors who are keen to in see our conservation program in action."

Leatherback numbers in the Western Pacific have declined by more than 90 per cent since the 1980s. Mr Plummer said leatherbacks were facing many threats, including too much harvesting of their eggs and rising sea levels destroying nests.

"It is very important that people don't disturb leatherback nests because there are so few breeding turtles left," he said. "Leatherback turtles could disappear within our lifetime and future generations of children in the Solomons and around the world may never get the chance to see them," he said.

Named for the smooth leathery skin on its back, the leatherback is the largest sea turtle in the world. They can grow to more than 1.75 metres long and weigh more than 500 kilograms. They have been recorded diving more than one kilometre deep.

Reprinted from:

Solomon Times

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<http://archives.pireport.org/archive/2009/may/05-04-21.htm>



A baby Leatherback Turtle.

Photo: <http://elyunque.com/activ/babyturtle.jpg>



What's Going on With SPaRCE

Greetings friends! I am happy to announce that over the last few months we have had six new schools join SPaRCE. Over the summer we will be working on updating and reorganizing the SPaRCE workbooks, and hopefully by the end of the year each school will have a new workbook.



Send in Your Questions!

If you or your students have any questions relating to science please send them to us here at SPaRCE. Once we receive a question we will publish the question and an answer in the next newsletter.

Call for Newsletter Contributions

In order to get to know our schools and participants a bit better, please send us items to be published in the SPaRCE newsletter.

Here is a list of ideas:

- Accounts of extreme weather events
- School history
- Pictures of students taking measurements
- Activities using SPaRCE data
- Songs or poems about weather
- Any other interesting facts about your school or culture.

Welcome to SPaRCE!

Bamboo Heights Campus—Papua New Guinea

Lokobou Adventist High School—Papua New Guinea

Dalipebinaw Community School—Federated States of Micronesia

Wapar Elementary School—Federated States of Micronesia

Pahala Elementary School—Hawaii

Ka'u High School—Hawaii

Welcome to the SPaRCE family!
We look forward to working with you!



Classroom Science Focus

Humidity

Ever had a bad hair day? No matter what you do, your mop won't stay in place. On humid days, it's guaranteed to pop, frizz, and spring out of control. Bad hair days have a meteorological connection. It's the humidity in the air that produces the uncontrolled *boing*. Consider this: a strand of hair that's about a foot long can vary about 1/2 inch (1.3 cm) in length depending on the humidity of the air. This stretching property of hair was put to use in the first hygrometer back in 1783. It was so reliable that hair hygrometers were used by weather stations into the 1960s. They were eventually replaced by more reliable electric hygrometers.

How to make a hair hygrometer

Supplies:

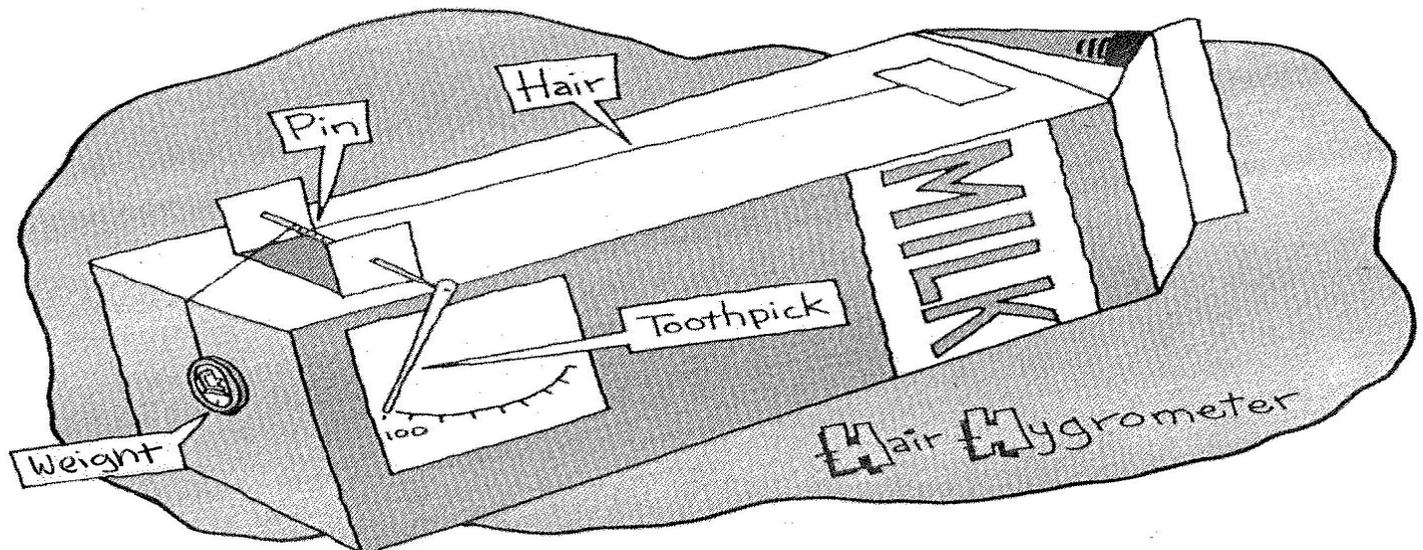
- A milk carton (or other long box)
- Scissors
- Pin
- Tape
- Toothpick
- A long strand of hair
- Two damp paper towels
- A small weight



Directions:

1. Have an adult cut an "H" pattern near one end of the carton. Bend up the cuts into two small flaps. Have an adult push a pin through the center of both flaps.
2. Stick a toothpick on the pin's point. Beneath the toothpick, draw a scale. Although the scale won't measure specific values, it can be used to compare different levels of humidity. So feel free to make up your own numbers.
3. Place a strand of hair between two damp paper towels. Let the hair remain in this high-humidity sandwich for 10 minutes.
4. Tape one end of a strand to the far end of the container. Wrap the hair several times around the pin and then attach this end of the strand to the weight. Let the penny hang off the side of the container. Its weight should pull the hair tight.

Position the toothpick so that it points to 100% humidity. Over time, the hair will dry out and shrink. As it does this, it will turn the pin and the toothpick will show lower humidity levels.



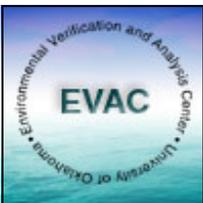
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ENSO Diagnostic Discussion

Synopsis: Conditions are favorable for a transition from ENSO-neutral to El Niño conditions during June - August 2009.

ENSO-neutral conditions persisted across the equatorial Pacific Ocean during May 2009. However, sea surface temperature (SST) anomalies increased for the fifth consecutive month, with above-average temperatures extending across the equatorial Pacific Ocean by the end of May. Accordingly, the latest weekly SST indices ranged between +0.4° to +0.5°C in all four Niño regions. Subsurface oceanic heat content anomalies (average temperatures in the upper 300m of the ocean) also continued to increase in response to a large area of above-average temperatures (+2° to +4°C) near thermocline depth. These surface and subsurface oceanic anomalies typically precede the development of El Niño.

From early 2007 through April 2009, enhanced low-level easterly winds persisted near the Date Line, interrupted only briefly by Madden-Julian Oscillation (MJO) activity. However, during May 2009, both the lower-level equatorial winds were near-average in that region despite the absence of the MJO. Also, suppressed convection expanded westward along the equator from the Date Line to Indonesia. The recent oceanic and atmospheric anomalies are consistent with ENSO-neutral conditions, but also reflect the evolution towards a potential El Niño.

There continues to be considerable spread in the model forecasts for the Niño-3.4 region. All statistical models predict ENSO-neutral conditions will continue for the remainder of 2009. However, most dynamical models, including the NCEP Climate Forecast System, predict the onset of El Niño during June - August 2009. Current observations, recent trends, and the dynamical model forecasts indicate that conditions are favorable for a transition from ENSO-neutral to El Niño conditions during June - August 2009.

NOAA Climate Prediction Center

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.html

Get to Know: Sara Johnson

Hello, I'm Sara Johnson, a student worker with Oklahoma Wind Power Initiative [in the same office as SPaRCE]. I started here back in January. While learning different aspects of this department, I am also working on a research project that deals with wind trends in the state of Oklahoma.

For the past few years I have been taking classes in Meteorology and Geography. I plan to complete a degree or two here, and then would like to go for a Ph.D. in Climatology. I have also completed an undergraduate degree in Psychology from a college in New Jersey.

I am not originally from the Oklahoma area. I was born and raised outside of Chicago and spent several years on the east coast. When I'm not studying or working, I like to run, go hiking, read, write short stories, take road trips and just explore.



SPaRCE would like to thank those of you who have made this program possible: NOAA Office of Global Programs, NOAA PI-GCOS and especially Howard Diamond. Thank you!