



The Pacific Tradewinds Quarterly

The official newsletter of the Schools of the Pacific Rainfall Climate Experiment

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Welcoming the New SPaRCE Coordinator

By Maegan Rowlison

Greetings everyone!

I am Maegan Rowlison and am extremely excited to be your new SPaRCE coordinator! My predecessors Jonathan Moore, Nikki Acton, and Melissa Koeka have all performed amazing work within this program and set a great example for me to follow. Being inspired by the work they have done, I hope to bring the same energy, intelligence, enthusiasm, creativity, and compassion they have shown. I look forward to this position and all the wonderful opportunities it brings, especially for me to get to know all of you.

Currently, I am a sophomore at the University of Oklahoma earning my bachelor's degree in Geographic Information Systems with a Minor in Meteorology, Weather, and Climate. A little about myself—I was born in Chicago, Illinois, where the area is frequently exposed to snow storms, windy conditions, hot summers, cold bitter winters, and occasionally mild conditions.



At seven, my family moved to Dallas, Texas, where we observed what it meant to live in tornado alley, a region in the United States known for its severe weather and tornadoes. Thunderstorms, hail, extreme winds, lightning and even snow were common weather phenomenon in the city where I spent 10 years of my life.

Despite my previous contact with extreme weather, my family and I moved to Phoenix, Arizona, when I was 17. Phoenix, Arizona is located in the Southwestern United

States in the Sonoran Desert. In this region, it is hot and dry for most of the year; January is the coldest month with an average temperature of 12.2 °C (54 °F) and July is the warmest month with an average temperature of 34.2 °C (93.6 °F). The average amount of rainfall a year is averaging about 195.57 millimeters! Most of this rainfall is due to the monsoon that occurs during June to September when the winds shift and moist air from the Gulf of California comes up into the Southwest Region of the United States and causes large, and sometimes severe, thunder-

Continued on next page

Welcoming the New SPaRCE Coordinator

storms to occur. The vegetation in this region is sparse due to the high temperatures and the hard soil that hold very little moisture. Therefore the main plants are a multitude of cacti species, the creosote bush, white thorn, sand paperbush, and lots of dry desert shrubbery.

I was drawn to Oklahoma due to its weather extremes. Tornadoes, hail, winter weather, and earthquakes are all occurrences that happen annually in Oklahoma. My passion lies in the weather, but for fun I like to read, hang out with my friends at the Weather Center, play with electronics, watch classic films, listen to various types of music, and talk to my 16 year old sister, Daena, who lives in Phoenix.

Once again, I would like to thank Dr. Susan

Postawko, Dr. Mark Morrissey, and Dr. Scott Greene for this amazing opportunity to be able to work with all of you and I look forward to hearing from all of you soon! Be happy and be safe! If you have any questions or would like to know more please contact me at

sparcecoordinator@gmail.com.



Hawaiian Air First to Earn Carbon Credits



Image from: www.talanci.com

February 14, 2012

Hawaiian Airlines has earned the first-ever aviation based carbon credits, for reducing its carbon dioxide (CO₂) emissions by nearly 22,000 metric tons over the past six years. The reductions were made possible by an eco-friendly engine washing technology developed by Pratt & Whitney. A carbon credit is a verified means of measuring the reduction of industrial CO₂ emissions from

the environment, with one credit equal to the removal of one ton of CO₂. The airline said its reduction of CO₂ emissions using Pratt & Whitney's patented EcoPower engine washing system has had the equivalent effect of taking 700 cars off the road annually.

In addition, since launching the program in 2005, Hawaiian's commitment to the engine-washing system has saved the company more than 2.5 million gallons of fuel, along with an estimated 26,000 gallons of water that would have been used with traditional washing methods. Mark Dunkerley, president and CEO of Hawaiian Airlines said the airline is proud to be the first to receive verified carbon credits for reducing emissions.

He said engine washing with EcoPower® is helping the airline mitigate rising fuel costs and significantly reduce Hawaiian's carbon footprint at the same time.

Reprinted From: [Talanci.com](http://www.talanci.com)
<http://www.talanci.com/viewNews.php?storyID=6296>)
 Source: South Seas Broadcasting, Inc. Copyright © 2010

Unexplained Bird Deaths in Samoa Raise Concern

Mynahs 'falling from sky,' public warned not to handle birds

February 14, 2012

By Jeff Hayner



Image from: www.factzoo.com

There is a strange phenomena happening in the territory, as Myna birds, (also known as Mynah birds) – an invasive species in American Samoa – have been reported falling from the sky recently in the Nu'uuli area, with around twenty birds found dead.

Eight of the dead birds have been sent off to the United States Geological Survey (USGS) in Hawaii by the local Department of Marine and Wildlife Resources (DMWR), according to Alden Tagarino, the Wildlife Biologist at DMWR investigating the mystery of the unusual occurrence.

"I responded to a call we received about a weird event of birds falling from the sky and dying," said Tagarino, in response to Samoa News questions.

"We collected more than twenty of these dead Myna birds and this is a real concern," he said. "Although these are 'common' Myna birds, they are not native here and they are considered an invasive species – in an event like this, where there are ten or more falling dead at the same time, it is of great concern to us, and that is why our office responds very quickly to something like this."

Tagarino said, "This is being processed through the USGS with Dr. Thierry Work."

He also wants to stress the fact that it is better to call the Wildlife Emergency Hotline than to handle the situation yourself.

"If you see a dead bird, or even a sick bird, please do

not touch the birds." the DMWR biologist said. "We have the right training and equipment for responding to this and collecting samples. We want to follow protocol for the safety of the people here in American Samoa."

He noted that we have all heard of Avian Influenza (bird flu) but there have been no reported cases of Avian Influenza in the territory. "We are not saying that this is what it is, we don't know what is causing this, and there is no need for panic... We will find out soon the cause of death of these birds," he added.

According to an information booklet for the "National Control of the Myna," the Common Myna has been exported from their land of origin, the Indian sub continent, to many parts of the world by people who like their jaunty attitude, clear and striking calls, and also to control insect pests.

According to Wikipedia, the "Common Myna" or "Indian Myna" (*Acridotheres tristis*) – sometimes spelled Mynah – is a member of family Sturnidae (starlings), which are native to Asia. Calling the Myna "an omnivorous open woodland bird with a strong territorial instinct" it says the bird has been introduced in many parts of the world and its distribution range is on the increase. "It is a serious threat to the ecosystems of Australia." says Wikipedia.

"National Control of the Myna" booklet states that the birds are firmly established in South Africa, Australia, New Zealand, the Solomons, New Caledonia, Fiji, Cook Islands, Hawaii, Samoa and American Samoa. Also according to the booklet, in the year 2000, the International Union for the Conservation of Nature declared the Mynah Bird among 100 of the world's most invasive species.

Article Adapted From: Pacific Islands Report

(<http://pidp.eastwestcenter.org/pireport/2012/February/02-15-17.htm>)

Source: [The Samoa News](#)

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Curtin research discovers Fijian Rainforest on brink of Biodiversity Loss

By Hope Holborow

February 15, 2012

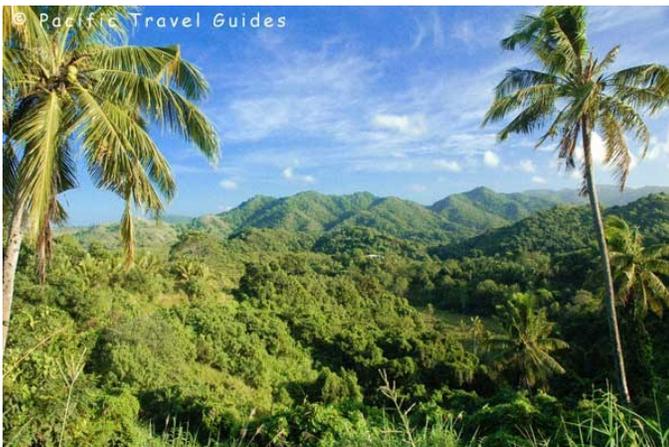


Image: <http://www.viti-levu.hotel-pictures.com>

Rare and endangered plants endemic to Fiji are being seriously threatened by four invasive plant species accidentally discovered by a Curtin University researcher.

Curtin research fellow Dr. Gunner Keppel came across the invasive species whilst researching rare and endangered tree species native to Fiji.

“When I began working at Curtin, I consulted colleagues both in Fiji and here in Australia about setting up a project which we decided on as looking for rare and endangered tree species found only in Fiji. All four of these species are on the International Union for Conservation of Nature (IUCN) Red List, which lists threatened species throughout the world,” Dr Keppel says.

During this project, we stumbled upon four invasive species— *Pinanga coronata* (Arecaceae), *Shefflera actinophylla* (Endl.) Harms (Araliaceae), *Spathodea campanulata* P. Beauv. (Bignoniaceae), and *Swietenia macrophylla* King in Hook. (Meliaceae). This was reported for the first time in primary lowland rainforest in Fiji’s south-east Viti Levu.

“We noted [in particular] the presence of an inva-

sive palm, *Pinanga coronata*, covering most of the understory of the rainforest. This posed many concerns regarding regeneration of the rare species and other native species in Fiji,” Dr. Keppel says.

“I found this discovery scary in the sense that, especially with the palm species, it covered the whole ground floor in the understory of the rainforest and there was nothing else, nothing native, growing in that lower layer of the rainforest. I found this to be very concerning and also very important,” he says.

News of the discovery was published late last year in *The South Pacific Journal of Natural and Applied Sciences* with the intention of raising awareness and funds for action and eradication of the invasive plants.

“Left undiscovered, the invasive species would have continued silently spreading through the rainforest—which they still will do unless something is done about their eradication. If left, there will be too many seeds and too many populations,” Dr. Keppel says.

“The exciting part about the discovery is that removal—before it causes major damage to the native biodiversity—is still possible,” he says.

The palm *Pinanga coronata* poses the biggest threat to the native biodiversity of Fijian rainforests and immediate eradication is suggested.

“I very strongly hope that this discovery will lead to the eradication of these species in Fiji, especially seeing as we managed to find and report about their invasion while they still had a very limited distribution,” Dr. Keppel says.

Reprinted From: Science Network in Western Australia

(<http://www.sciencewa.net.au/3892-curtin-research-discovers-fijian-rainforest-on-brink-of-biodiversity-loss.html>)

Source: [ScienceNetwork WA](http://www.sciencewa.net.au)

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Tonga mops up after Cyclone Jasmine

February 16, 2012



Cyclone Jasmine brought heavy rain to Tonga.
Image from: australianetworknews.com/

More than 400 people in Tonga have been displaced by severe flooding caused by Cyclone Jasmine, a disaster according to officials.

Authorities said 71 families on the main island of Tongatapu were forced to evacuate their homes, while most schools and businesses in Nuku'alofa were closed due to flooding.

Leveni Aho, from Tonga's Disaster Relief Activities, said families staying in temporary shelters started to return home after weather eased on Thursday morning.

"We have been moving people to evacuation centers, but I think maybe in a day or two we will start to get them back to normality if the weather continues to be fine," he told Pacific Beat.

Mr. Aho said the Ministry of Health was monitoring the situation closely to prevent any outbreak of disease.

"In the low-lying areas, septic tank leakages will become a problem. But I think today we will start working very closely with our communities to address these areas."

Tourism officials said, "Eua, Ha'apai, the Vava'u group and off-shore island resorts in Tongatapu were not affected."

The Royal Sunset Resort, on Atata Island, said it would be closed for two weeks due to damage caused by the cyclone.

International and domestic flights services resumed on Thursday, following disruptions the previous two days.



Cyclone Jasmine parked in the Pacific Ocean.

Image from: www.nasa.gov

Reprinted from: **The Pacific Beat** (<http://australianetworknews.com/stories/201202/3432706.htm?desktop>)
Source: [Australia Network News](http://www.australianetworknews.com) Australian Broadcasting Corporation
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Extraordinary pictures of solar 'tornado' as large as the Earth moving at 300,000mph

By Daily Mail Reporter

February 20, 2012



Twister: This tornado, which is as large as the Earth, is moving at 300,000mph across the Sun

Image from: www.nasa.gov

These amazing pictures, captured by a NASA satellite, show a gigantic tornado moving across the sun.

The tornado is larger than it might look—in fact, it is probably bigger than the Earth, and could extend hundreds of thousands of miles out into space. And while its progress over the sun's surface seems almost stately, it is moving at 300,000 miles per hour.

The extraordinary phenomenon - which cannot yet be fully explained by scientists - was filmed by NASA's Solar Dynamics Observatory over a 30-hour period earlier this month.

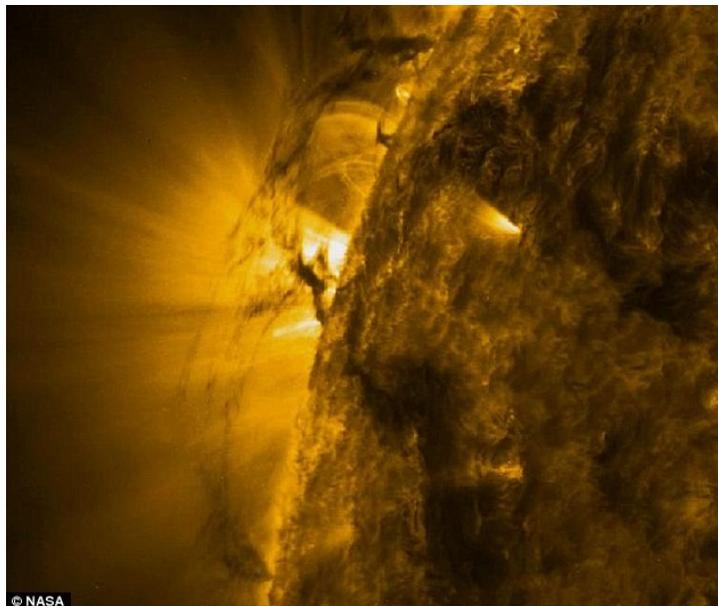
That satellite, known as the SDO, is in the middle of a five-year mission to monitor how solar activity affects the Earth, particularly changes in the sun's magnetic field. While the tornado—called a “solar prominence” by scientists - looks very similar to twisters here on Earth, its origins are completely different.

Rather than being the result of atmospheric pressure, the solar activity comes from fluctuations in the sun's magnetism.

However, researchers cannot explain much more than that - NASA's Terry Kucera told Fox News that she and her colleagues were 'still looking to understand what's happening with these things'.

The tornado, at 15,000 degrees Fahrenheit (8,000C), is much cooler than its surroundings, which are around 2 million degrees.

The phenomenon was not caught on camera until 1996.



Powerful: But scientists have not yet cracked all the mysteries of this unusual magnetic phenomenon

Image from: www.nasa.gov

Reprinted from: Mail Online

(<http://www.dailymail.co.uk/sciencetech/article-2103543/Extraordinary-pictures-solar-tornado-large-Earth-moving-300-000mph.html>)

Source: Associated Newspapers Ltd

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What's New with SPaRCE

I am happy to announce that SPaRCE will be introducing a couple of new projects that need your participation! Firstly, SPaRCE will now have an Ask a Meteorologist Section of the newsletter. So, please send in your weather related questions about anything meteorologically related, and we will get an expert to answer them for you. And your question and answer will be featured in the next newsletter.

Secondly, we are hosting a Science Fair for all the participating school and their students! All that is required is a report on the experiment and a picture of the experiment. The Science Fair submissions can be anything science related and the submissions will be judged based on grade level so everyone has a chance to succeed and be a winner! The best Science Fair submission and certain honorable mentions will be announced in the October/November/December newsletter and will receive a Pet Tornado! Please send us your submissions as soon as possible. And remember to have fun and be creative.

Lastly, students from the University of Oklahoma are excited to get to know all of you so they will begin writing letters to the active SPaRCE schools in an effort to communicate the importance of collecting rainfall data and to inspire young minds to enjoy science and weather. We hope you enjoy hearing from all the different students here at the University of Oklahoma, and we look forward to hearing back from all of you soon!

Sincerely,
Your New SPaRCE Coordinator
Maegan Rowilson

Contribute to the Newsletter!

Put Your Story in the SPaRCE Newsletter!

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.

Ask A Meteorologist!

Do You Have Questions?
We Want To Answer Them!

If you or your students have any questions relating to science or weather 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.



Activities Page

Word Search



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<http://sunniebunniezz.com/puzzles/wetdws.htm>

Temperature

- Humidity
- Degrees
- Frost
- Cumulus
- Warm
- Earthquake
- Drizzled
- Drought
- Flood
- Current
- Fog
- Fahrenheit
- Light
- Lightning
- Monsoon
- Front
- Freezing

Thunder

- Tornado
- Sleet
- Storm
- Dew
- Barometer
- Sunshine
- Pressure
- Cold
- Blizzard
- Hail
- Gulf Stream
- Snow
- Cloud
- Chill
- Rainfall
- Wind
- Ice

Joke Section

How do Hurricanes or Cyclones see?

With one eye!

What type of cloud is so lazy that it will never get up?

Fog!

What did one lightning bolt say to the other lightning bolt?

You're shocking!

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www.weatherwizkids.com

Sudoku

Complete the grid such that every row, every column, and the nine 3x3 blocks contain the digits from 1 to 9.

	4			8			7	
6	3						8	9
			3		6			
		7		3		9		
4			1		2			6
		6		5		8		
			9		5			
2	7						6	1
	6			1			9	

Puzzles devised by © Kevin Stone
www.brainbashers.com



Puzzlers

- A box of candy bars can be divided equally (without cutting anything) among 2, 3, or 7 people. What is the least number of candy bars the box could contain?
- Bob is ten years older than his brother Stan. There was a time when Bob was three times as old as Stan. What was Stan's age when Bob was three times as old?

Look for answers in the next newsletter!

Previous newsletter puzzle answers:

Sudoku

8	7	5	6	4	1	3	2	9
9	6	1	3	5	2	4	7	8
4	3	2	8	7	9	1	6	5
3	1	4	5	8	6	2	9	7
6	9	7	2	1	3	5	8	4
2	5	8	7	9	4	6	1	3
5	2	6	9	3	7	8	4	1
1	8	9	4	2	5	7	3	6
7	4	3	1	6	8	9	5	2

Math Quiz

- Yesterday, Today and Tomorrow
- You would light the match first so you can light the candle. Then use the candle to light everything else.

Classroom Science Focus: Lightning!

What is lightning?

Lightning is a bright discharge of electricity produced by a thunderstorm. All thunderstorms produce lightning and are very dangerous. If you hear the sound of thunder, then you are in danger from lightning. In the United States, lightning kills and injures more people each year than hurricanes or tornadoes; between 75 to 100 people.

What causes lightning?

Lightning is an electric current. Within a thundercloud way up in the sky, many small bits of ice (frozen raindrops) bump into each other as they move around in the air. All of those collisions create an electric charge. After a while, the whole cloud fills up with electrical charges. The positive charges or protons form at the top of the cloud and the negative charges or electrons form at the bottom of the cloud. Since opposites attract, that causes a positive charge to build up on the ground beneath the cloud. The ground's electrical charge concentrates around anything that sticks up, such as mountains, people, or single trees. The charge coming up from these points eventually connects with a charge reaching down from the clouds and—zap—lightning strikes!



Some quick facts about lightning:

- Lightning is approximately 54,000 degrees Fahrenheit (30,000 degrees Celsius) . That is six times hotter than the surface of the sun!
- A lightning flash is no more than one inch wide.
- What we see as a flash of lightning may actually be four different strokes in exactly the same place, one right after another. That's why lightning appears to flicker.

Classroom Activity!

MATERIALS: Balloon

- PROCESS:**
1. Blow up the balloon and tie it.
 2. Rub it against your hair on top of your head.
 3. Watch what happens! Your hair will stick up!

You usually notice static electricity when the air is very dry. When the air is more humid, the water in the air helps electrons move off you more quickly, so you cannot build up as big of a charge.

EXPLANATION: Why does this happen? It's because of static electricity! When you rub the balloon on your hair, you're covering it with little negative charges. Now that each of the hairs has the same charge, they want to repel each other. In other words, the hairs try to get as far away from each other as possible. The farthest they can get is by standing up and away from each other .



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ENSO Discussion

Issued by the Climate Prediction Center/NCEP, 9 February 2012

Synopsis: La Niña is likely to transition to ENSO-neutral conditions during March-May 2012.

A mature La Niña continued during January 2012, as below-average sea surface temperatures (SST) persisted across the equatorial Pacific Ocean. The monthly SST indices remained near -1.0°C in the Niño-3.4 and Niño-4 regions. However, the negative SST anomalies weakened in the far eastern Pacific, indicated by warming in the Niño-1+2 and Niño-3 regions. The oceanic heat content (average temperature in the upper 300 m of the ocean) anomalies also weakened slightly, but continued to reflect an extensive area of below-average sub-surface temperatures east of the Date Line. Also, anomalous low-level easterly and upper-level westerly winds persisted over the central and west-central Pacific. Convection remained suppressed in the western and central Pacific, and enhanced over Indonesia. Collectively, the oceanic and atmospheric patterns reflect a weak-to-moderate strength La Niña.

A majority of models predict La Niña to weaken through the rest of the Northern Hemisphere in winter 2011-12 and then to dissipate during the spring 2012. Also, there is evidence of a downwelling phase of an eastward-propagating oceanic Kelvin wave, which may increase temperatures across the Pacific in the next couple of months. The combination of a weakening subsurface temperature anomaly, the historical seasonal evolution, and forecaster preference for the average dynamical model prediction favors a return to ENSO-neutral conditions during the Northern Hemisphere spring, which are likely to continue into the summer. Therefore, La Niña is likely to transition to ENSO-neutral conditions during March-May 2012.

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center web site (El Niño/La Niña Current Conditions and Expert Discussions). Forecasts for the evolution of El Niño/La Niña are updated monthly in the Forecast Forum section of CPC's Climate Diagnostics Bulletin. The next ENSO Diagnostics Discussion is scheduled for 8 March 2012. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.ens0-update@noaa.gov.