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Career Magazine My Science Career Find a Job

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Career Advice

The Job Market

Life & Career

ace Career Magazine > Science Careers Blog > Angela Fosada-Swafford Archives

## **Angela Posada-Swafford**

December 16, 2009

#### The microscope doctor

Jim Janoso has created a very nice niche for himself. He is the microscope doctor. His patients: hard working microscopes in field stations in the most remote areas of the world. Microscopes that work day in and day out in the dust, on the ice, under externes of temperature. Microscopes that should not, -- cannot -- fail. His crusade: to help scientists see the mysteries of their tiny world, better. His tools: a large trunk crammed with lenses, cleansing solutions, tons of specialized tissues, tiny screws and screwdrivers, and a huge spirit of adventure.



Housecalls include visits to research stations, ships, labs and outposts everywhere. He is especially fond of his Antarctic visits. This is his third time on The Ice. He has already performed surgeries on microscopes in the South Pole and McMurdo, and now he's spending a whole month at Palmer Station.

Janoso is a mechanical engineer and has held a variety of jobs, from the aerospace industry to the forest service. He had the vision, in 2003, to buy a small company, Northern Focus Optical, which was devoted to fixing small microscopes in high schools in Montana, Wyoming, and Idaho. He took it to new heights by refocusing on the higher-end microscopes of science.

Janoso always finds some battered microscopes that needs his attention, like those of our

transport vessel the Laurence M. Gould. As the boat rocks in the tall waves of the Drake Passage, Jim keeps working, taking apart layer after layer of lenses and precision optics. If he can't find a tool, he'll make it, or use something designed for a different purpose. Where, if

All of us here at Palmer go to Jim for our optical worries. He has scanned many of our cameras and birding binoculars. He is also an excellent hands-on sailor, an asset on our almost daily zodiac expeditions

## **About this Blog**

Get frequent updates from the science-career trenches including advice, opinion, news, funding opportunities, and links to other career-related resources. Our bloggers include Science Careers editors and staff. and select outsiders, including:

Jim Austin, Editor of Science Careers. @SciCareerEditor on Twitter Elisabeth Pain, Barcelona-based Contributing Editor Donisha Adams, Science Careers **Publications Assistant** 

Our guest bloggers include:

Dan Albert MD, MS, Emmett A. Humble Distinguished Director of the Eye Research Institute at the University of

Beryl Lieff Benderly, author of the Taken for Granted column on Science Careers; Siri Carpenter, a regular contributor to Science Careers;

Chelsea Wald, a freelance science writer and contributor to Science Careers:

If you are interested in blogging for Science Careers, send us a writing sample and tell us what you're interested in. Our standards are high, but you never know.

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## **Archives**

June 2012 (5)

May 2012 (21)

April 2012 (27)

March 2012 (24)

February 2012 (32)

January 2012 (33) December 2011 (16)

November 2011 (30)

October 2011 (20)

September 2011 (26) August 2011 (26)

July 2011 (24)

June 2011 (17)

May 2011 (22)

April 2011 (31) March 2011 (28) **ADVERTISEMENT** 

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I bett Scott and Shackleton and the other polar explorers would have loved to have someone like Jim Janoso on board back in the heroic age of exploration.

By Angela Fosada Sw afford on December 16, 2009 12:42 PM | Permalink

#### December 14, 2009

#### **Extreme Science**

It's snowing heavily today. (A year ago, instead of snow, it rained cats and dogs here at Palmer.) The icebergs on the bay are covered by a frosting, like fine powdered sugar, and the sea has blue and green brash ice that sings like broken crystals as the water moves underneath. Visibility is just a few hundred yards.

Even so, we went out water sampling with Maggie Waldron from the Marine Biological Laboratory. Twice a week, Maggie collects water in a contraption similar to the Nansen bottles that are widely used in oceanography. Each bottles is mostly a tube with springs and caps that open and close as the bottle is lowered to stops at five different depths between 0 and 50 meters. Maggie collects always at the same two locations, named B and E. So far, she has collected more than 200 samples

"We want to see what happens with microorganisms, like bacteria, in these locations as the Summer progresses", she says "As soon as we get back to the lab we start processing them, ... before the environmental conditions in the bottles change too much. I start filtering the nitrogen right on the boat"



The zodiac for this job is larger than the ones we have used so far. It has a small crane and it is powered by a 70-horse outboard engine, which allows it to go over medium-sized pieces of brash ice. For the other boats, this brash ice is like a minefield.

Working in the middle of the ocean, under a snowfall, at -4 degrees celcius, is difficult. Doing so while wearing cumbersome gloves -- pushing buttons and entering data in laptops, or in my case, when operating video and still cameras -- can be a small ordeal. Moving gear in and out of a dry bag is a task. Keeping camera lenses clean is even more difficult. And of course, when you spot a penguin on an iceberg everything has to be done at once.



The other two scientists on board today are Alex Kahl and Brian Gaas from Rutgers University. They are collecting information about the quality and quantity of light that phytoplankton receives in these waters. These photosynthetic algae are the base of the food chain in the seas. Alex and Brian are deploying two devices laden with sensors that will measure the extent to which the particles suspended in the water column are absorbing, reflecting, and scattering sunlight. The instruments scan between the surface and 100 meters deep.

The snow is relentless. It accumulates on everything. Our fingers are numb with cold; mine actually hurt. The scientists go on with their work, telling jokes and talking about the hot lunch that awaits at the station as they check salinity and temperature. These parameters, they explain, will be studied along with everything else: the quantity of plankton in the water. How healthy the krill and bacteria are, and what the

penguins are eating.

Because this is such a hostile environment, says Alex, the life chain here in Antarctica is less complex in the upper levels of organisms. Later, he explained what he means in an online chat on the NPR Web site. "The greatest difference between this food chain and that of nonpolar oceans is the energy that is put into the system. The phytoplankton -- the krill's food -can only introduce biomass -- that is, energy -- into the system when it has enough light. That means during the Austral summer.

January 2011 (20) December 2010 (22) November 2010 (8) October 2010 (18) September 2010 (18) August 2010 (15) (19) 2010 باييل June 2010 (26) May 2010 (24) April 2010 (28) March 2010 (28) February 2010 (28) January 2010 (27) December 2009 (20) November 2009 (23) October 2009 (21) September 2009 (26) August 2009 (13) (20) 2009 وليل June 2009 (18) May 2009 (17) April 2009 (20) March 2009 (13) February 2009 (14) January 2009 (27) December 2008 (15) November 2008 (10) October 2008 (17) September 2008 (19) August 2008 (17) July 2008 (22) June 2008 (25) May 2008 (9) April 2008 (15) March 2008 (16) February 2008 (22) January 2008 (28) December 2007 (14) November 2007 (28) October 2007 (25) September 2007 (16) August 2007 (34) July 2007 (33) June 2007 (36) May 2007 (11) April 2007 (4) March 2007 (7)

February 2011 (16)

ScienceCareers Blog Archives

### **Categories**

Academic Careers (122) Alan Kotok (84) Alternative Careers (23) Americas (374) Angela Martin (1) Angela Posada-Swafford (10) Asia (44) Beryl Lieff Benderly (287) CTSciNet (46)

Chelsea Wald (4)

Conference Board Analysis (20)

Dan Albert (25) Donisha Adams (3)

Editor's Blog (164)

Flisabeth Pain (95)

Europe (219)

Feedback (9)

Interviews (8)

Jose Fernandez (2)

Kate Travis (28)

Michael Price (29)

"This makes one think of the enormous impact of the sea-ice variability. It is basically the key to the whole system. Both the krill and the adelies need this ice to survive. But if the sea ice continues to recede to the south there won't be enough light during the winter for the phytoplankton to grow, which would leave the adelies in the dark, so to speak".



Three hours after we leave the station, our fingers are useless. We return to the ranch, our eyes filled with visions of icebergs in an extraordinary array of textures and shapes and characters. This is truly science in the extreme. And I love it.

By Angela Fosada Swafford on December 14, 2009 11:12 PM | Permalink | Comments (1)

December 13, 2009

#### Ambushed by Icebergs

This morning we were ambushed by icebergs. We woke up and realized we were prisoners of large chunks of ice that completely blocked the entrance to our tiny harbor for zodiacs here at Palmer. The station sits on a small, rocky shore, with a glacier behind it. Our only means of transportation are these zodiacs, and there is no other way to get in and out of the station but through our small harbor.

Now that our driveway is blocked and we are temporarily trapped, it is interesting to see what happens in here. Science continues, but to a slower tune, while a crabeater seal sleeps on the very same iceberg that



ambushed everybody. The "birders", who are used to going out every single day, no matter what, walk to and fro, settling finally into rare all-day desk work. The biologists who study microorganisms and phytoplankton in the water column come to terms with not sampling today.

But everybody enjoys a minivacation, taking a few minutes longer at the lunch table, reading, enjoying the fantastic luxury of a hot tub overlooking glaciers, and taking lots of pictures -- Palmer has more cameras per capita than any place I know, and several amazing photographers.

One of them is Zenobia "Zee" Evans, who is in charge of building maintenance and construction. She offers her black and white photos for a Sunday workshop called "art at the bar". The workshop is a cool way to appreciate the beauty of our surroundings in a new way: by learning how to colorize a photo, drawing or painting in watercolors.

Thanks to the icebergs, we also got to do more lab work than usual and, finally, sit in the lounge for a good movie and popcorn. The lounge at Palmer feels like a private social club, with comfortable leather recliners and a ton of movies and books.

The wind has started to blow from the east. That means the icebergs will be blown into the bay and out of the harbor, perhaps overnight. It also means we might get bad weather, or just tons of snow. Or maybe a radiant sun. This is Antarctica: Things change in the time it takes to take off your shades.

MySciNet (29)
Pharmaceutical (2)
Siri Carpenter

## **Blogroll**

# This Week on *Science*Careers

Doing Science While Female
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Often Wrong, Never in Doubt
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#### A New Chapter in the History of Polar Communications

Yesterday we wrote a new chapter in polar communications: the first-ever live wireless internet video conference from Torgersen island, at the Palmer Archipelago, in Antarctica, and the first ever involving 5 parties simultaneously from Palmer Station. It was an outreach effort I came up with several months ago together with the Maloka Science Museum in Bogota, Colombia (www.maloka.org). Thanks to the use of the free "ooVoo" videoconferencing software, we transmitted live to science museums in Colombia, Mexico and Chile, where some 400 people, child and adult, saw and heard us and asked questions. Others were able to follow it online.

The Palmer Station IT people, including Jeff Otten and Ken Kloppenborg, were very gracious about the whole thing. They pointed an antenna from the station to Torgersen, went out there to test the system, and then went back again in a heavy snowfall for the actual broadcast, which lasted over an hour.



Biologist Maggie Waldron (in the photo, wirh me) was at my side, helping answer some of the kids' questions, with one of the penguin colonies in the background. This was a hit with the children hundreds of miles away, as we had a curious penguin that kept coming to see us, to the children's delight. The laptop was placed inside

a cardboard box with a fleece over the keyboard. This low-tech approach protected the laptop while allowing me to see the eager faces in the audiences at the science museums.

It was very rewarding for me because I know we touched a few minds with the issues of Antarctica. Can't think of a better way to contribute to the issue of global warming.

By Angela Fosada Swafford on December 13, 2009 2:40 PM | Permalink

#### December 11, 2009

## A Day with Penguin Researchers in Antarctica

If you are a "birder" at Palmer Station like Kristen Gorman or Jen Blum, your day starts early with a quick breakfast, getting your gear in order, donning your "float coat", getting on the zodiac, and heading to one of the several lovely islands in the Palmer Archipelago. Their job sounds way cool: They get to spend their days surrounded by penguins, skuas, giant petrels, and antarctic cormorans, in the open air, no desk work (until the night, when data needs to be put in to the system).

But appearances deceive. Yes, these young researchers spend their Antarctic Summer days surrounded by penguins and giant petrels and they do love their job. But the work is hard. To get to the birds they must climb steep rocky outcrops, or walk long distances in fresh snow, postholing to their knees, carrying stuff. It looks fun until you have tried it a couple of times. In my case at least, the heavy float coat, the heavy boots, the heavy cameras, the heavy waistline, the wind, the sun, the snow, the sea, all conspired to make it quite a workout.

Kristen and Jen have to observe closely what happens in all these bird colonies. They measure and weigh eggs and chicks, make periodic censuses of the colonies, and take careful notes as to who dies, who is born, who eats whom. Are the parents rearing the chicks properly? are the chicks getting enough to eat? Are the skuas having a better chance to steal eggs and chicks that are not well supervised by distressed parents who have to swim farther out to get dinner? What is the effect of the decrease in the sea ice on the penguin populations, specifically the adelies, which are totally dependent on the ice, both to eat the krill underneath it and to rest on it pretty much like a polar bear would?

For the past 30 years, at least, the leading bird researcher at Palmer, Dr. William Fraser, has been focusing on the ecology of these birds in the Western Peninsula. And even though adelies are still an abundant species, researchers have seen their populations drop to a third of their previous levels. Painstakingly collecting this data day in and day out, Kristen and Jen are contributing to the process of acquiring a deep understanding of this primitive yet wonderful Antarctic ecosystem, which begins with phytoplankton and ends with whales and and encompasses everything in between.



And, oh, yes, they also get to place their hands directly under the soft belly of a mother skua, who courteously allows them to borrow their eggs for a few seconds. Photos: Courtesy of Chris Neill.



By Angela Fosada Sw afford on <u>December 11, 2009 6:01 PM | Permalink | Comments (2)</u>

December 5, 2009

## Open Mic night at Palmer Station

Last night was "open mic" here at Palmer Station. The cozy lounge with the leather chairs and book cases was transformed into a theater, complete with drums, electric guitars, microphones, and a keyboard. It was an amazing display of talent; at least half the station either plays an instrument or sings or composes or writes incredibly clever lyrics and have skills other than their professional reason to be here. It made me feel drab and gray!

MBL research assistant Dan Whiteley, for example, composed the funniest acappella rap, about a minor accident on board an inflatable boat—the "zodiac attack." A still-nameless band, led by engineer Brian Nelson, performed the fastest Michael *Billie Jean* ever. A fellow journalist, NPR science Producer Jason Orfanon, who plays in a rock band in Washington, DC, sang one of his own compositions and played keyboard. Even our pi, MBL ecologist Chris Neill, graciously crooned Barrett's Privateers, a Canadian folk song by Stan Rogers.



These folks at Palmer are having too much fun. The windows had to be covered with black trash bags to keep out the sun (it was late after all) despite one of Antarctica's splendid sunsets. Inside the bar (which has a billiard table, a disco, and walls covered with pictures of visiting ships from the past) the evening proceeded with beers and shots with cool names I forgot already.

Palmer -- its atmosphere and lifestyle -- gets under your skin. I like the call names for the boating parties, which change every day. *Titanic* (for our first outing), *Ice Crusaders*, *Gorman's Down Jacket*, *Campers*, and of course, as of last night, *Zodiac Attack*.

It is snowing now and seven Adelie penguins adorn the rocks, and three or four gentoos. The increasing number of the gentoos in these parts means, according to bird experts Kristen Gorman and Jen Blum, that sea ice has been melting. As it does, it leaves open spaces that the normally more northern gentoos need to forage as they porpoise through the surface of the seas. Adelies, on the other hand, have it tougher since they need the ice to rest on as they come and go to their feeding areas. Time to stop writing and get into the hot tub. With the snow falling it will be quite an experience.

By Angela Fosada Swafford on December 5, 2009 6:51 PM | Permalink

#### December 2, 2009

## **Breakfast in Antarctica**

It is 7:30 a.m. (we're on Chile time) and the smell of freshly baked bread fills the galley at Palmer Station, the only U.S. polar station north of the Antarctic Circle, and the only one on the Antarctic Peninsula. Groups of people gather around a few tables enjoying what I have to describe as a gourmet buffet breakfast where no trimming is spared: omelets made to order; still-fresh fruit from the latest visit of the ARSV Laurence Gould; hot muffins; one or two exotic dishes from last night's dinner -- all topped off by a cappuccino that no coffee house in the world need envy.

Not every polar station has a Cordon-Bleu trained chef.

"The toughest part is the planning ahead," says Head Chef Stacie Murray, who decided long ago to use her superb training to pamper the palates of people working in extreme locations. She has spent time cooking in Greenland, the North Pole, and the South Pacific. "I have to make sure I order every winter what I will be needing for the Summer. And that includes the food, cooking utensils, pots and pans, glassware, etc." If she forgets to add something to that shopping list, she'll likely have to do without it until the next season, or at least the next boat load.

Stacie's logistics challenge is but an afterthought for the 36 to 44 scientists and support personnel who enjoy their meals as they scan the spectacular Arthur Harbor in search of whales, seals and penguins. This is how the day begins for a scientist or contractor working at Palmer Station. After the splendid breakfast, pepole head



off to the lab or the office; others embark on Zodiac boats to collect water for its microbes, krill, or phytoplankton, or data on seabirds.

These scientists constitute the four LTER (Long Term Ecological Research) groups currently working on Palmer and administered through an NSF grant by the Marine Biological Laboratory in Woods Hole, Massachusetts. LTER's mission is to gather, season after season, data on how this amazing ecosystem responds to climate change.

How can you tell it has warmed up? I ask Z -- Zenobia Evans, the jovial maintenance & construction coordinator at the station.

"See that peak behind the Marr glacier, on whose piedmont sits Palmer Station?"

I gaze at a small tabletop that is now bathed in the loveliest pinks and yellows of the Antarctic sunset.

"It used to be almost invisible behind the glacier's dome. Now you can see it well".

I go to bed (late as usual; I blame the never-ending light) still mesmerized by the beauty of this place. I can see the glacier without having to lift my head from the pillow. Its tortured surface and cobalt blue crevasses make me think of Nathaniel B. Palmer, possibly the first American explorer to sight the Peninsula, in the 1820's.

The discomforts those sealers and explorers went through to survive down here contrast almost absurdly with my navy blue comforter and Stacie's roast beef 'au jus'.

By Angela Posada Swafford on December 2, 2009 5:45 PM | Permalink

December 1, 2009

#### 50-year anniversary of Antarctic Treaty

Sitting where I am, at a desk in my own cozy room at Palmer Station, overlooking a magnificent bluish iceberg in the middle of the Antarctic Peninsula, December 1st seems an especially meaningful day: 50 years ago today, 12 nations sat down and signed the Antarctic Treaty, designating this achingly beautiful white continent as one for all humanity, a whole continent devoted to science, not to war or mining. It has worked out well. But now that Antarctica is at the crux of practically all climate change issues, I can't but hope we continue to protect this amazing world of ice.

It is a bit strange to feel so far from the rest of the world and yet be the center of issues, as I am sure Antarctica will be at the forefront of discussions at the next UN's climate change conference in Copenhagen, on December 7th.

Scientists here, however, didn't seem to ponder too much about the specialness of the day, at least not out loud. Instead, they took advantage of the radiant sunny, windless, downright perfect and hot day, and scrambled on black zodiacs to go visit penguins and whales and elephant seals in the gloriously glassy waters of the Palmer Archipelago. We science writers obliged and followed suit.

By Angela Fosada Sw afford on December 1, 2009 11:00 PM | Permalink | Comments (3)

November 30, 2009

### Posada-Swafford's Antarctica Trip, Redux

After I posted that last blog entry, I decided I should provide a little more information. What's the point of the expedition that Posada-Swafford is participating in. In part, at least, the scientists are hunting fossils. Posada-Swafford writes in an e-mail:

We will arrive in Punta Arenas tomorrow and on the 23rd will sail to Seymour Island to install the paleontologists' camp, will hang out with them (hopefully walking around in search on dinos and mammals) and sail to Palmer Station 2 days later.

The paleontologists are Ross MacPhee of the Natural History Museum in New York and Matt Lamanna, a long time triend (what a coincidence) from Carnegie, an expert in Patagonic dinos. They are going to look for clues of mammals and hopefully a dino from a specific geologic era that will give evidence of a land bridge between South America and Antarctica and Australia. Very cool. Wouldn't it be fabulous if we found something new?

By James Austin on November 30, 2009 10:04 AM Permalink

November 30, 2009

#### What Is It Like to Work in Antarctica?

Over the next few weeks, Angela Posada-Swafford will be sending dispatches from her fossil-hunting journey to the coldest continent. Posada-Swafford is a Miami, Florida-based science journalist who has built quite a reputation writing mainly for the Spanish-language market.

"I am doing A LOT of things with this trip," she writes, via e-mail. "We are doing (and this is first for NSF at Palmer and indeed, in Antarctica) a series of 6-party live video conferences with science museums and educational institutions in 3 Latin American countries (Colombia, Chile and either Mexico or Uruguay)." She continues:

The loveliest thing is that I managed to involve in the conferences this isolated, forgotten community in the Colombian pacific jungles, the Universidad del Choco, and are so thrilled at the idea of just seeing the ice! They are asking a thousand questions already.

Only once before had NSF allowed streaming video and that was for 10-minute reporting for the Ophrah Winfrey show. But now they are going full one or more hours per video conference and I have decided that I want 2 of them, one week apart. The kids at the different museums get to ask questions as I tell them all about the station's LTER research (long term ecological research), climate change from the molecular to penguin levels, etc.

Here are the links, also, to two websites that are following my expedition to the detail, through my own dispatches, which will come in every day with pictures, audio and video. They are doing an animated map of the trip, and a zillion more things, which already started with my chronicles of the preparations for the trip. I haven't left and there are already many comments.

This is a great opportunity to talk science to people! One of the links is for my magazine in Spain, MUY INTERESANTE. The second one is for the very sophicticated science museum in Bogota, Colombia, which is orchestrating the video conferences in Latin America:

http://www.muyinteresante.es/index.php/ciencia-y-natura/44-ciencia-a-natura/8233-desde-la-antartida-

#### http://maloka.org/antartida/

The videoconferences can be seen at the Maloka website in real time and later, as they'll be recorded. The dates are:

Saturday 5 December at 2 p.m. U.S. eastern time (4 p.m. Palmer time) Saturday 12 December at the same time.

(Saturdays are good for the children in Latin America and they are also good for the Palmer scientists who will take those days oft.)

In addition to talking science to people, Posada-Swafford will also be sending us regular updates, posted on our blog, telling us about the scientists she meets and what it's like to do science in Antarctica.

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By James Austin on November 30, 2009 9:46 AM | Permalink

#### « Angela Martin | Main Index | Archives | Asia »

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