



Expedition: Antarctica and Mt. Erebus as Analogues for Planetary Landscapes

Field Study: Astronomy

Summary: WINGS Fellow and volcanologist Dr. Rosaly Lopes spent one month at Mt. Erebus in Antarctica, the southernmost active volcano on Earth. Along with astronomical artist and science writer Michael Carroll, she is working on a book project that will use landscapes in Antarctica as a model to help envision what other planets look like. Mt. Erebus features one of the only lava lakes that exists on Earth. Lava lakes are a phenomenon common on Jupiter's moon Io, which Lopes has studied extensively with her work at NASA's Jet Propulsion Laboratory. The book will also feature accounts from Lopes and Carroll about what it was like to live and work on Antarctica. Lopes won the WINGS Air & Space Woman of Discovery Award in 2009.

THE EXPEDITION



The otherworldly landscapes of Antarctica inspire both artists and scientists, each seeking to understand how they came to be and where else in the universe one might find similar icy, alien geology, and even microbial lifeforms. The overall goal of this project was to bring together art and science to produce a book in which both subjects will inspire greater understanding of our world and others.

Dr. Rosaly Lopes used her knowledge of planetary geology to seek out landscapes and geologic features in Antarctica that are analogous to those in distant worlds, advising artist Michael Carroll as he depicted these scenes in paintings. Lopes and Mr Carroll photographed and made sketches of landscapes of Antarctica that are analogous to those of other worlds and will use them to visualize what could be seen in distant worlds. They will use these in a book to be published by Springer Publishing Co.

EXPEDITION GOALS

The goals of the expedition were to photograph and sketch vistas in Antarctica



WHO

Rosalyn Lopes

WHAT

To study and document Mt. Erebus and its lava lake

WHEN

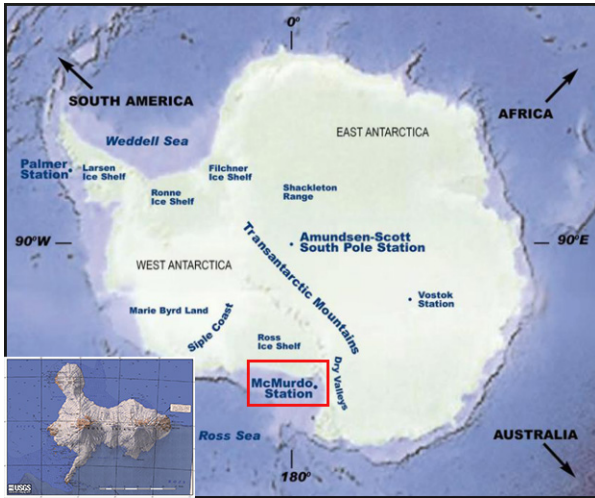
December 9 - 29, 2016

WHERE

Mt. Erebus, Antarctica

WHY

To use landscapes in Antarctica to envision what other planets look like



that are analogous to those in other worlds, particularly those on the moons of the outer solar system.

Our goals were to reach:

- At least one ice cave on Mt. Erebus volcano
- Tower (also known as Fumarole) Ridge on the upper slopes of Erebus
- The summit of Erebus to photograph the crater and lava lakes

We also hoped to get close to the pressure ridges on the edge of the Ross Ice Shelf near McMurdo station.

EXPEDITION RESULTS

We obtained hundreds of photographs, and Michael Carroll made many sketches and several paintings. We reached every goal, including two ice caves (Hut and Helo), explored Tower Ridge and, on Christmas Day, reached the summit of Erebus.

Visiting the pressure ridges looked to be more difficult, given that summer was advancing, the ice was soft and thin in places, and visits from McMurdo had stopped. But,





upon return to McMurdo, we were able to get close to pressure ridges, thanks to a mountaineer from Scott Base, New Zealand's Antarctic Research Station.

CHALLENGES FACED

We went through several days of training while at McMurdo, including how to recognize altitude sickness symptoms and life-threatening situations, and crevasse traverse and rescue. The Erebus summit is at over 12,400 feet and the air is thinner in the polar regions. We luckily coped well with the cold, but every day at altitude was a challenge.

EXPEDITION FUNDING

The National Science Foundation funded the expedition under the Writers and Artists Program. Financial support was also provided by WINGS WorldQuest.



ABOUT THE FELLOW



Dr. Rosaly Lopes is a Senior Research Scientist at NASA's Jet Propulsion Laboratory and an expert on terrestrial and planetary volcanoes. She is currently Manager of the Planetary Science Section at JPL, overseeing close to 100 scientists. She has published seven books and 120 peer-reviewed publications. She was selected as the WINGS Woman of Discovery in Air and Space in 2009. Her other awards include the American Astronomical Society's Carl Sagan Medal for Excellence in Communicating Science to the Public, the Lowell Thomas Award for Exploration from The Explorers Club (2014), the NASA Exceptional Service Medal (2007), the Women at Work Medal of Excellence

(2006), the Latinas in Science Medal from the Comision Femenil Mexicana Nacional (1991), and the 1997 Woman of the Year in Science and Technology Award from the Miami-based GEMS television.



EXPEDITION TEAM

Rosaly Lopes

Michael Carroll

Evan Miller, Mountaineer

PHOTO CREDITS

Michael Carroll and Rosaly Lopes

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