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The NASA DESDynI Mission - Deformation, Ecosystem Structure, and Dynamics of Ice

by
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ABSTRACT

NASA recently commissioned a decadal study called Earth Science Applications from Space to recommend the next suite of missions for studying the Earth in the next 10+ years. One mission recommended for launch in the near term is called DESDynI: Deformation, Ecosystem Structure, and Dynamics of ice. The mission will use Interferomtetric Synthetic Aperture Radar (InSAR) and Light Detection and Ranging (LIDAR) to study earthquakes, volcanoes, ice sheets, and ecosystems. The goals of the mission are to 1) Determine the likelihood of earthquakes, volcanic eruptions, and landslides, 2) Predict the response of ice sheets to climate change and impact on sea level, 3) Characterize the effects of changing climate and land use on species habitats and carbon budget, and 4) Monitor the migration of fluids associated with hydrocarbon production and groundwater resources. Donnellan will show how space technology and NASA's QuakeSim project can improve our understanding of natural hazards and climate change.

BIOGRAPHY

Andrea Donnellan is a geophysicist at NASA's Jet Propulsion Laboratory and is a research professor at the University of Southern California. Andrea integrates satellite technology with high performance computer models to study earthquakes, plate tectonics, and the corresponding movements of the earth's crust. Her jobs at JPL have included Principal Investigator of NASA's QuakeSim project, Project Scientist of a mission to study natural hazards, ice sheets, and ecosystems, and Deputy Manager of the Laboratory's Science Division. She has conducted field studies in California in the region of the Northridge earthquake, the Ventura basin, and on the San Andreas fault. She has also carried out fieldwork on the West Antarctic Ice Streams, in the Dry Valleys, and in Marie Byrd Land of Antarctica, on the Altiplano of Bolivia, in Mongolia, and on Variegated Glacier in Alaska. She has a B.S degree in geology from the Ohio State University, an M.S. and Ph.D. in geophysics from Caltech, and an M.S. in Computer Science from USC. She held a National Research Council Postdoctoral Fellowship at NASA Goddard Space Flight Center and has been a Visiting Associate at the Seismological Laboratory at Caltech. In December 1996 Andrea received the Presidential Early Career Award for Scientists and Engineers, in 2003 the Women in Aerospace Award for Outstanding Achievement, in 2004 the Woman At Work Medal of Excellence, and in 2006 she was the MUSES of the California Science Center Foundation Woman of the Year. Andrea is an instrument rated commercial land and sea pilot, SCUBA diver, and enjoys photography, running, ice skating competitively, dancing ballet, playing the piano, and spending time with her son Alexander.