

them. "I look at the study of the Kuiper Belt as part of the broader program of comets from cradle to grave, the Kuiper Belt being the cradle of short-term comets."

Cruikshank, who is part of a SIRTf solar system working group, said he anticipates that about 100 Kuiper Belt objects will be measured during the first eighteen months of the observatory's operation.

A "Great Observatory"

SIRTf includes an 85-cm-diameter telescope and three cryogenically-cooled science instruments with sensitivity at wavelengths from about 3–180 microns. The instruments

are an infrared array camera, infrared spectrograph, and multi-band imaging photometer.

Meadows said that solar system applications have been included in the planning and development of the facility. She said all of the observing modes for fixed target objects also are supported for moving targets within the solar system.

Much of the facility's early observing time is devoted to guaranteed time observations and the observatory's Legacy Science Program. However, about 80% of the observation time has not yet been assigned. Responses to a first-round call for proposals are due in mid-February 2004; a specific deadline will be announced in mid-December.

The observatory has a life span of between 2.5 and 5 years, determined by how long the coolant lasts. Because the observatory is in a heliocentric orbit around the Sun, and will be about one-half of an Astronomical Unit away from the Earth near the end of its mission, it cannot be serviced by the Space Shuttle.

SIRTf is the fourth and final of NASA's "Great Observatories," which also include the Hubble Space Telescope, the Compton Gamma Ray Observatory, and the Chandra X-ray Observatory.

For more information, visit the Web site: <http://sirtf.caltech.edu>.

—RANDY SHOWSTACK, Staff Writer

MEETINGS

Advancing Remote Sensing of Volcanic Clouds

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A second international workshop on the remote sensing of volcanic clouds was recently held to improve and expand the use of satellite-based remote sensing data for hazard mitigation and other research purposes, such as volcano-atmosphere interactions and chemical and meteorological effects on the troposphere and stratosphere. Forty-six researchers attended, representing 11 countries, 10 universities, and several government meteorological and volcanological organizations. Also represented were the Volcanic Ash Aviation Centers in Washington, D.C., Anchorage, Montreal, Darwin, London, and Tokyo, which monitor volcanic ash plumes and predict their displacement within their areas of responsibility. The nine VAACs were established by the International Civil Aviation Organization (ICAO) to address various aviation concerns related to volcanic ash.

The workshop consisted of presentations about volcanic clouds and extended computer laboratory sessions in which attendees worked with actual satellite remote sensing data. The participants covered the current and future status of remote sensing instruments and their detection capabilities by reviewing examples of eruptions and discussing and demonstrating new techniques for improving detections, such as atmospheric corrections, accurate assessment of initial eruption conditions, environmental conditions during eruptions, and variable volcanic phenomena.

Sessions covered MODIS applications that are now being used to sense eruptions and volcanic clouds extensively; North Pacific volcanic cloud hazards with presentations by U.S., Russian, and Japanese scientists; small eruption detections, with interest focused on Etna, Popocatepetl, and Soufrière Hills; detection of wildfire and sandstorm events using

the same remote sensing tools; discussion of ice-laden volcanic clouds such as the Hekla 2000 event; and operational strategies used by VAACs. There was a strong effort at collaborative interchanges of information, and a workshop CD was produced for information exchanges involving reprints and presentation graphics about the workshop theme.

Satellite coverage and limitations and integrating trajectory models into mitigation efforts were also discussed, as was how volcanic cloud hazards mitigation efforts could be improved through validation, modeling, multi-sensor comparisons, and different band selections. Common issues discussed were the need for timely, accurate, and diagnostic predictions by agencies involved in monitoring and ash cloud detection and the need for timely dissemination of educational information to responsible agencies and the public.

Some highlights of the workshop were: discussion of the value of c-band radar data during the Hekla eruption by Gerald Ernst and others; discussion of large Canadian wildfires and associated stratospheric clouds by Rene Servranckx; presentations about volcanism in Kamchatka and the north Kuriles by Olga Girina and Pavel Izbekov; and presentation of a Meteosat automatic detection system for volcanic clouds by Helen Watkin.

Participants plan to continue working as an informal and non-exclusive group to advance efforts in volcanic cloud hazards mitigation by making recommendations for instrumental improvements for volcanic cloud remote sensing applications, particularly for improvements of the Geostationary Operational Environmental Satellite (GOES) instruments, beginning with GOES-R (~2012); attempting to interest the scientific community in making improved spectral measurements of the refractive indices of volcanic ash materials at appropriate wave-

lengths; and developing an improved strategy for accurate determination of volcanic cloud heights from remote sensing. Maintaining good communications among the international community working on volcanic clouds by continuing to operate a list server for volcanic cloud remote sensors (volcanicclouds@yahoo.com) was also seen as important, as was providing constructive input to plans for other meetings on the subject of volcanic clouds. These include the 2nd International Symposium on Volcanic Ash and Aviation Safety, planned for June 2004 in Washington D.C. (http://www.ofcm.gov/homepage/text/spc_proj/volcanic_ash/volash2.html).

Participants also agreed to work toward perfecting the use of Moderate Resolution Imaging Spectrometer (MODIS) for volcanic cloud study, and investigating the use of other new detectors such as the SEVIRI, which is now being used in Europe and Africa; and toward developing a strategy to provide better source term information for volcanic cloud trajectory models.

Finally, participants also planned to transfer constructive partnership/linkages and input from the informal group of workshop attendees to other professional organizations such as IAVCEI, AGU, CEOS, WMO, ICAO, and AMS.

A third international workshop on the remote sensing of volcanic clouds is being planned for summer 2005 or 2006 at Michigan Technological University. In this next workshop, we will try to improve our efforts by encouraging representation from all of the Volcanic Ash Aviation Centers. We also will encourage and recruit more graduate students to attend; just 13 attended the 2003 workshop. Laboratory sessions will be expanded and revamped. Those interested are referred to the following Web sites: <http://www.geo.mtu.edu/~raman/workshop2.html> and http://www.geo.mtu.edu/volcano/vc_web/.

Requests for the workshop CD may be directed to Matt Watson (watson@mtu.edu). The second International Workshop on the Remote Sensing of Volcanic Clouds was held 8–12 June 2003 in Houghton, Michigan.

—WILLIAM I. ROSE, Michigan Technological University, Houghton