Such large-scale provision of data for the two principal meteorological elements of wind force and wind direction can serve many purposes. As the wind speed and direction over the oceans relate closely to atmospheric circulation patterns, and are less disrupted by boundary layer influences than are land-based observations, the data offer the potential to reconstruct past occurrences of major regional phenomena such as the El Niño–Southern Oscillation and the North Atlantic Oscillation. *Jones and Salmon* [2005] have made the first attempts at filtering these signals from the CLIWOC data, while *Gallego et al.* [2005] have explored the possibilities of using the data to reconstruct sea level pressure, resolving those reconstructions at the seasonal scale.

The CLIWOC data are unique in their provision of pre-1850 observations of large-scale atmospheric circulation patterns over the world's oceans. The coverage over the seas and oceans is extensive and comparable with that derived from modern networks. In addition, spatial interpolation of the atmospheric fields allows for reconstructions of the atmospheric circulation over continental land surfaces. A good example of the latter is eighteenth-century Africa, which is surrounded by oceans that are well represented by observations from ships, while the land surface remains largely devoid of data.

The CLIWOC project has demonstrated its scientific value for climatic studies of meteorological observations, most notably wind, recorded in ships' logbooks from before the middle of the nineteenth century. The database therefore represents a valuable backward extension of world climatological oceanic databases such as the International Comprehensive Ocean Atmosphere Data Set [see *Worley et al.,* 2005] by a full century.

However, it by no means realizes the full potential of the pre-1854 ship logbook information, and further studies have suggested that over 130,000 logbooks with daily records of the prevailing weather and winds may have survived from this period. Exploration of the remaining logbooks, drawing upon the foundations provided by the CLIWOC project, would allow for an extension yet farther backward in time until at least 1690. A significant increase in data density in the 1750–1854 period could be made by calling upon the estimated six million days of data yet to be reclaimed. Much has been accomplished, but much more can yet be achieved with this remarkable source.

The CLIWOC database is freely available from the project Web site (http://www.ucm.es/info/cliwoc) or at http://www.knmi.nl/cliwoc, or on CD-ROM by request. The new release, 2.0, containing 5000 new data entries, will be issued in July 2006.

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NEWS

New Products From the Shuttle Radar Topography Mission

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New data products with broad applicability to the Earth sciences are now available from the Shuttle Radar Topography Mission (SRTM). SRTM, a joint project of the National Geospatial-Intelligence Agency (NGA) and NASA, flew aboard the Space Shuttle Endeavour on an 11-day mission in February 2000 with the goal of collecting a near-global data set of high-resolution elevation data [*Farr and Kobrick*, 2000]. Data from the mission have been available to researchers for several years, but newly available products offer enhanced usability and applicability.

Final products include elevation data resulting from a substantial editing effort by the NGA in which water bodies and coastlines were well defined and data artifacts known as spikes and wells (single pixel errors) were removed. This second version of the SRTM data set, also referred to as 'finished' data, represents a significant improvement over earlier versions that had nonflat water bodies, poorly defined coastlines, and numerous noise artifacts. The edited data are available at a one-arc-second resolution (approximately 30 meters) for the United States and its territories, and at a three-arc-second resolution (approximately 90 meters) for non-U.S. areas.

The data can be freely downloaded in 1° by 1° tiles in a simple binary raster format (see ftp://e0srp01u.ecs.nasa.gov/srtm/version2/). The data may also be acquired by purchasing a DVD in several different formats for a nominal cost (see http://eros.usgs.gov/products/elevation.html), or by downloading user-defined areas from the U.S. Geological Survey's (USGS) seamless data distribution system (see http://seamless.usgs.gov/).

In addition to the edited elevation data, the vector format water body and coastline mask derived by NGA during the editing process is also available. The SRTM Water Body Data (SWBD) is a 30-meter resolution near-global map of oceans and inland water bodies derived from radar data and Landsat data [*Slater et al.,* 2006]. The SWBD is available for download and on DVD at the same sources as the SRTM elevation data.

SRTM30, a near-global elevation model at a resolution of 30 arc-seconds (approximately one kilometer), is another SRTM data product that has been recently upgraded. SRTM30 has been enhanced by incorporating the edited version of SRTM elevation data in combination with the widely used USGS GTOPO30 global elevation model [*Gesch et al.,* 1999]. As with the other new SRTM data products, SRTM30 can be freely downloaded (see ftp://e0srp01u.ecs.nasa.gov/srtm/version2/SRTM30/).

In addition to the updated SRTM data products, new documentation and recent research results are also available, serving as helpful resources for the SRTM data user community. The Jet Propulsion Laboratory (Pasadena, Calif.) has released a detailed report [*Rodriguez et al.,* 2005] on the accuracy and quality of SRTM data (see http://www2.jpl.nasa.gov/srtm/SRTM_D31639.pdf).

Results from many recent investigations using SRTM data were presented at an SRTM data validation and applications workshop held in Reston, Va., in June 2005. Most of the 60 oral and poster presentations given at the workshop are available for viewing and/or

download at the workshop Web site (http://edc.usgs.gov/conferences/SRTM/). The workshop covered a wide variety of topics, including horizontal and vertical accuracy of SRTM data, comparison of SRTM elevation data with other types of elevation data, comparison of Digital Elevation Models (DEMs) derived from SRTM C-band radar data with those from X-band radar data in terms of accuracy and spatial resolution, and applications of SRTM data and derived products. Several papers presented at the workshop have also been published in a special SRTM issue of *Photogrammetric Engineering & Remote Sensing* [*Gesch et al.*, 2006] (see http://www.asprs.org/publications/pers/2006journal/march/index.html).

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SPRING MEETING PREVIEW

Sessions Focus on Astrobiology, Geoneutrinos, and International Science Years

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New technologies, such as the emerging field of geoneutrino research, and new data sets from the *Cassini* and *Voyager* spacecrafts have captured the attention of scientists, prompting them to freshly explore the furthest reaches of their fields, from the Earth's deep interior to the outer solar system and beyond. Several sessions at the 23–26 May 2006 AGU Joint Assembly in Baltimore, Md., will offer a glimpse into these new investigations, while others are devoted to discussing plans for coordinated research efforts during upcoming international science years.

Geoneutrinos

One session on "Geoneutrinos: A New Tool for the Study of the Solid Earth" (U41F) will take place on Wednesday, 25 May at 8:30 A.M. Geoneutrinos, which are anti-neutrinos produced by the radioactive decay of uranium, thorium, and potassium housed within the Earth, have been detected by Japan's Kamioka Liquid-Scintillator Anti-Neutrino Detector (KamLAND) apparatus. With such information, scientists for the first time can directly estimate the amount of radioactive elements present in different regions of the Earth.

"At present, we do not know how much heat is produced by radioactivity within the Earth," explained session co-convener V. Rama Murthy, professor of geology and geophysics at the University of Minnesota, Minneapolis. According to Murthy, the amount of radioactivity attributed to the Earth in models is only half of what direct measurements show to be radiating from the surface.

Neutrino measurements, however, have the potential to transform current understanding of these topics, said session co-convener Seth Stein, professor of geological sciences at Northwestern University in Evanston, Ill. "This is a brand new technology, coming from high-energy physics," said Stein. "Knowing the concentrations of radioactive elements can tell us a lot about the Earth's current thermal state, and gives us insight into how the Earth formed in the early solar system."

Speakers at the session will discuss other potential locations for anti-neutrino detectors, including a new Italian detector, which, in comparison to KamLAND, is farther away from nuclear power stations that can contaminate the geoneutrino signature. Another detector is planned on the Canadian Shield, which would give a good estimate of the radioactivity within the oldest parts of the continental crust, and a fourth could be sunk to the bottom of the ocean floor to give a good estimate of mantle signatures below the thin oceanic crust, said session co-convener William McDonough, professor of geology at the University of Maryland, College Park.

Astrobiology and Outer Solar System Ices

Other sessions focus on the potential for life on the moons of gas giants. Two sessions on "Studies of Outer Solar System Ices—Implications for Astrobiology" (P23A and P24A) will be held on Tuesday, 24 May at 2:00 P.M. and 4:15 P.M. These will focus on the moons of Jupiter and Saturn.

"You must follow the water to find biology," said session convener Reggie Hudson, chemistry professor and cosmic ice expert at Eckerd College in St. Petersburg, Fla. "What we do is look for where there is frozen water of any type, possible gaseous water, or liquid phase water."

One such place is Jupiter's moon, Europa, which has ice on its surface. However, radiation from the sun alters the surface of this ice, causing the formation of hydrogen peroxide, explained Hudson. "This is bad news for astrobiology because peroxide is very reactive—you want to avoid that in order to search for anything that might be pre-biological. But the good side of it is that it does provide a source of oxygen," he said. Session talks will explore hydrogen peroxide as a biological limiter.

New results from the *Cassini* spacecraft and the *Huygens* probe have revealed the presence of water on Saturn's moon Titan. Session presentations will discuss these results, and the discovery of an effect called cryovolcanism, where instead of just lava, volcanoes erupt with geysers of liquid water. Other talks will hypothesize on how gases are trapped within ices; these gases could potentially aid in the metabolism of microorganisms if present on outer solar system moons.

Upcoming International Science Years

As scientists continue to investigate the physical environment, new programs are being created to coordinate data collection and manage data sets. Two sessions on "International Science Years on the Fiftieth Anniversary of IGY: *e*GY, IHY, IPY and Planet Earth" (U33A and U34A) will discuss collaboration efforts and research pushes on Wednesday, 25 May at 2:00 P.M. and 4:15 P.M.

The International Geophysical Year (IGY) in 1957 was a coordinated research effort organized to study the Earth on a global scale. IGY was inspired by the International Polar Years (IPY) of 1882 and 1932. Over the next several years, four programs, each focusing on a major aspect of the original IGY, will be organized: IPY (2007–2009), the International Year of Planet Earth (IPY; 2007–2009), the International Heliophysical Year (IHY; 2007–2008), and the Electronic Geophysical Year (*e*GY; 2007–2008).

Topics to be discussed at the sessions include *e*GY's mission to make past, present, and future geoscientific data rapidly, conveniently, and openly accessible through electronic means. Roger Smith, director of the Geophysical Institute at the University of Alaska, Fairbanks, and the U.S. national coordinator for IHY, said, "For people not fully aware of what the IHY is doing, they can get a catch of the excitement of extending the boundaries of our investigation out to the edge of the heliosphere." Smith noted that