Super-TIGER balloon breaks records while collecting data

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Super-TIGER prepares for launch from Antarctica.

(Phys.org)—A large NASA science balloon has broken two flight duration records while flying over Antarctica carrying an instrument that detected 50 million cosmic rays.

The Super Trans-Iron Galactic Element Recorder (Super-TIGER) balloon launched at 3:45 p.m. EST, Dec. 8 from the Long Duration Balloon site near McMurdo Station. It spent 55 days, 1 hour, and 34 minutes aloft at 127,000 feet, more than four times the altitude of most

commercial airliners and was brought down to end of the mission on Friday. Washington University of St. Louis managed the mission.

On Jan. 24, The Super-TIGER balloon team broke the record for longest flight by a balloon of its size, flying for 46 days. Last Friday when it landed, the team broke another record, the longest flight of any heavy lift scientific balloon, including NASA's Long Duration Balloons. The previous record was set in 2009 by NASA's Super Pressure Balloon test flight at 54 days, 1 hour, and 29 minutes.

"Scientific balloons give scientists the ability to gather critical science data for a long duration at a very low relative cost," said Vernon Jones, NASA's Balloon Program scientist. "Super-TIGER is scientific ballooning at its best."

Super-TIGER flew a new instrument for measuring rare heavy elements such as iron among the flux of high-energy cosmic rays bombarding Earth from elsewhere in our Milky Way galaxy. The information retrieved from this mission will be used to understand where these energetic atomic nuclei are produced and how they achieve their very high energies.

The balloon gathered so much data it will take scientists about two years to analyze it fully.

"This has been a very successful flight because of the long duration, which allowed us to detect large numbers of cosmic rays," said Dr. Bob Binns, principal investigator of the Super-TIGER mission. "The instrument functioned very well."

The balloon was able to stay aloft as long as it did because of prevailing wind patterns at the South Pole. The launch site takes advantage of anticyclonic, or counter-clockwise, winds circulating from east to west in

the stratosphere there. This circulation and the sparse population work together to enable long-duration balloon flights at altitudes above 100,000 feet.

More information: www.wff.nasa.gov/balloons

Provided by NASA