

# NASA-funded science balloons launch in Antarctica

February 5 2014

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Launch of a BARREL balloon at Halley Research Station on Jan. 30, 2014.  
Credit: NASA/BARREL/David Milling

In the bright light of Antarctica's summer sun, a NASA mission launched its first 18 science balloons between Dec. 27, 2013, and Feb. 2, 2014. BARREL, or the Balloon Array for Radiation belt Relativistic

Electron Losses, plans to launch 20 balloons in total to help unravel the mysterious radiation belts, two gigantic donuts of particles that surround Earth.

Each day the team must decide whether to launch a balloon based on the current ground conditions, such as how strong the wind is. On days when the wind is too high, Robyn Millan, the BARREL principal investigator at Dartmouth College in Hanover, N.H., says to her team: "Start doing the low wind dance for us!"

Once launched, each balloon travels in a wide circle around the South Pole for up to three weeks, so that a handful of balloons can be up at any one time. Circling the pole, the balloons fly through the foot point of where Earth's magnetic fields descend down to the ground. Instruments on the balloons observe electrons traveling down from space along these fields.



Members of the BARREL team in Antarctica jump up and down in what they call the Low Wind Dance as they hope for the low wind conditions needed to launch another balloon. Credit: NASA/BARREL/Brett Anderson

By coordinating with NASA's Van Allen Probes – two spacecraft orbiting high above—the team hopes to determine what occurrence in the belts correlates to occasional bursts of electrons that can precipitate down toward Earth. Such information will ultimately help scientists understand—and predict changes—in the Van Allen radiation belts.



A BARREL balloon is inflated on Jan. 6, 2014 in front of Halley Research Station in Antarctica. The scientific payload is in the foreground and the parachute and balloon can be seen in the back. Credit: NASA/BARREL/Octavian Carp

Provided by NASA

Citation: NASA-funded science balloons launch in Antarctica (2014, February 5) retrieved 20 April 2024 from <https://phys.org/news/2014-02-nasa-funded-science-balloons-antarctica.html>

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