



This image of Jupiter was taken by the Hubble Space Telescope in June 2016. The dramatic whirls around the North Pole are giant aurora rendered in false color. Their light is actually in the ultra-violet, so human eyes cannot see them directly. Earth's northern lights are also aurora but have lower frequencies than those of Jupiter so we can see them directly. Auroras occur when charged particles (usually electrons) reach a planet from space. These particles interact with a planet's magnetic field and get directed to the planet's magnet poles where these fast moving particles start moving down into the planet's atmosphere and then they interact with the atmosphere's atoms and molecules to give off visible light on Earth and ultra-violet light on Jupiter. The source of the charged particles for Earth is mostly solar storms. However, Jupiter, with its large magnetic field collects, collects most of the charged particles emitted by its moons, particularly Io, Europa and Ganymede. These separate moon sources account for the three main whirls seen in the image. They provide Jupiter with a nearly constant stream of charged particles unlike the solar storms which are intermittent. To help with scale, the diameter of Jupiter is 10—11 times that of Earth, while the aurora whirl diameter is about three times that of Earth.

The image credits go to NASA, the European Space Agency and J. Nichols (University of Leicester). It was downloaded from:

<http://www.nasa.gov/feature/goddard/2016/hubble-captures-vivid-auroras-in-jupiter-s-atmosphere> .

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