

Polar Gateways Arctic Circle Sunrise 2008 Conference
Barrow, Alaska, January 23-29, 2008
<http://polargateways2008.org/>

Abstract

Observations of Polar Aurora at Jupiter and Saturn During IPY

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We report the first results from the recent, ongoing Hubble Space Telescope program of observation Jupiter's and Saturn's auroras. The program is divided into four campaigns: i) observations of Saturn near opposition (Jan/Feb 2007) with coordinated Cassini plasma and field measurements and solar wind conditions extrapolated from 1 AU, ii) observations of Jupiter close in time to the New Horizons flyby (late Feb 2007) and coordinated with NH measurements of the solar wind upstream of Jupiter and then the magnetotail plasma, iii) observations of Jupiter close to opposition (May/June 2007) with extrapolated solar wind conditions from earth-based measurements, and iv) further observations of Saturn near opposition in Jan/Feb 2008. In this talk we present movies of the images, along with three of the major first results. These are: i) the observation of a direct relationship between the auroras and the solar wind, despite the auroral generation mechanisms at these planets being very different to the Earth's, ii) the first direction observation that Saturn's auroras map to the open/closed field line boundary, and iii) the discovery that the centre of Saturn's auroral oval rotates with a radius of ~ 1 deg and period ~ 10.75 h, despite the apparent high axisymmetry of the planet's internal field.