



Results of Joint Observations of Jupiter's Atmosphere by Juno and a Network of Earth-Based Observing Stations

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The Juno mission has promoted and coordinated a network of Earth-based observations, including both Earth-proximal and ground-based facilities, to extend and enhance observations made by the Juno mission. The spectral region and timeline of all of these observations are summarized in the web site: <https://www.missionjuno.swri.edu/planned-observations>. Among the earliest of these were observation of Jovian auroral phenomena at X-ray, ultraviolet and infrared wavelengths and measurements of Jovian synchrotron radiation from the Earth simultaneously with the measurement of properties of the upstream solar wind. Other observations of significance to the magnetosphere measured the mass loading from Io by tracking its observed volcanic activity and the opacity of its torus. Observations of Jupiter's neutral atmosphere included observations of reflected sunlight from the near-ultraviolet through the near-infrared and thermal emission from 5 μm through the radio region. The point of these measurements is to relate properties of the deep atmosphere that are the focus of Juno's mission to the state of the "weather layer" at much higher atmospheric levels. These observations cover spectral regions not included in Juno's instrumentation, provide spatial context for Juno's often spatially limited coverage of Jupiter, and they describe the evolution of atmospheric features in time that are measured only once by Juno. We will summarize the results of measurements during the approach phase of the mission that characterized the state of the atmosphere, as well as observations made by Juno and the supporting campaign during Juno's perijoves 1 (2016 August 27), 3 (2016 December 11), 4 (2017 February 2) and possibly "early" results from 5 (2017 March 27). Besides a global network of professional astronomers, the Juno mission also benefited from the enlistment of a network of dedicated amateur astronomers who provided a quasi-continuous picture of the evolution of features observed by Juno's instruments.