

イオ火山活動による木星内部磁気圏の変動

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Jupiter's inner magnetospheric change caused by Io's volcanic activity

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Monitoring observations of Jupiter's sodium nebula and [SII] 673.1 nm emission from the Io plasma torus were made for 20 days in 2003. During these observations, the brightness of the sodium nebula showed a small enhancement which seemed to be caused by Io's volcanic outburst. During this enhancement, [SII] 673.1 nm brightness and the ion temperature (scale height) along Jupiter's magnetic fields did not show any significant change, but magnetic flux tube content of S⁺ ion was calculated from the [SII] 673.1 nm brightness and the scale height, and an increase of the ion flux tube content was clearly identified. Thus, increase of supplied plasma from Io seems to be reflected in both plasma density and ion temperature. We conclude that Io's volcanic enhancement with a duration time of a few days can change Jupiter's inner magnetospheric environment in aspects of both ion density and temperature.