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Ganymede's magnetic footprint brightness and location with respect to main emission

Jupiter's aurora features have been observed by Hubble space telescope (HST) for over two decades. One of the auroral feature, Ganymede's magnetic footprint, appears close to the main emission and is sometimes embedded in the main emission. The later case causes confusion in identifying Ganymede's magnetic footprint from in main emission. The FUV aurora images were taken by Advanced Camera for Surveys (ACS) onboard HST. The fluctuations of Ganymede's footprint brightness over time will be analyzed. Moreover, the correlation between the brightness and locations of the main emission and Ganymede's magnetic footprint will be analyzed to characterize the connection between ionospheric phenomena and the magnetospheric dynamics. Since the main emission is very bright in comparison with the footprint, therefore, the variation of the main emission can affect Ganymede's magnetic footprint. Furthermore, the expansion of the main emission is consistent with the location shift of Ganymede's magnetic footprint in equatorward direction. The brightness and location of the main emission can be influenced by the plasma variation in Jupiter's magnetosphere which is affected partly by the volcanic eruption on Io and solar wind dynamic pressure.

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