

Substorm-like processes at Jupiter

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Abstract

In contrast to the solar wind driven terrestrial magnetosphere, the Jovian magnetosphere is dominated by internal processes. The fast planetary rotation and the efficient internal plasma source, the moon Io, govern the dynamics of the magnetosphere, including the stability of the Jovian magnetotail. The Jupiter orbiting spacecraft Galileo has provided evidence that the magnetosphere is subject to global reconfiguration processes which in their basic properties resemble terrestrial substorms. They occur quasi-periodically with a repetition period of about 3 days. We will review the properties and the different phases of these substorm-like events using data from different spacecraft missions and instruments ranging from auroral images to in situ measurements of magnetospheric particles. Periodic reconfiguration processes at Jupiter will be compared with periodic substorms at Earth. Different views on the triggering mechanism of these Jovian substorm-like events will be discussed.