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Substorms at Jupiter and Saturn

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When Galileo was in the predawn quadrant of the jovian magnetotail it observed strong southward and northward turnings of the magnetic field that were interpreted as substorm associated reconnection across the tail current sheet. These north-south magnetic fields reached nearly 20 nT. The turnings were mainly northward beyond about 80 R_J and mainly southward inside of that distance. The strength of the lobe magnetic field in this region was also variable in a manner similar to that observed in terrestrial substorms but was of much longer duration lasting several days. Contemporaneous solar wind measurements at 5AU on Ulysses indicate that the variation of the field strength is not due to solar wind sources. Cassini has also observed sudden and strong northward and southward turnings of the magnetic field in the magnetotail of Saturn. These events have many similarities to jovian events but also some notable differences. The relative contributions of solar wind versus internal control at Saturn are not currently well defined, and thus the possible triggers for tail reconnection events are currently being investigated. We examine the magnetic field data for possible growth phase signatures and constraints on the location of the neutral point at times when Cassini was near the tail current sheet.