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Magnetotail stress during storms and non-storm intervals

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The state of the magnetotail can be characterized by using several different measures in the different parts of the magnetotail. The stress level of the magnetotail can be measured by J x B when the spacecraft locates close the neutral sheet, but not exactly during the neutral sheet crossing. We will examine the stress level of the magnetotail during Cluster magnetotail seasons. The neutral sheet crossings are identified and the total current will be computed by using magnetic field measurements from all four spacecraft. The magnetotail stress is examined separately during storm, substorm and magnetically "quiet" intervals, and furthermore during the different solar wind driving conditions. Magnetic storms are identified from the Dst index and substorms from the high-latitude magnetic field measurements. The magnetotail stress is hypothesized to be largest during the abrupt solar wind drivers (e.g. interplanetary shocks) and during the enhanced activity periods such as magnetic storms and substorms.