



## **Statistical study: substorm triggering associated with northward and southward IMF orientation**

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We used large substorm database to be able to analyze concurrent observations of the solar wind, magnetotail and ground based data from polar regions for being able to understand better if the magnetospheric substorm onset is always externally triggered or it can be sometimes a case of result of internal processes, which can be observed especially during northward oriented interplanetary magnetic field i.e. in the time when there is no significant flux transfer. Other sources can be better seen during the northward oriented interplanetary magnetic field, like e.g. large directional changes in the solar wind flow which can result in large-scale windsock motion of magnetotail. It can lead to current sheet thinning and force magnetic reconnection in magnetospheric tail, which consequently can lead to substorm onset. We use solar wind data from OMNI database, GEOTAIL and THEMIS data for magnetotail and ground based data from IINTERMAGNET network.