



Magnetic flux transport in the Dungey cycle: A survey of dayside and nightside reconnection rates

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Changes in the open flux content of the ionospheric polar cap, estimated from auroral, radar, and low-Earth orbit particle measurements, are used to determine dayside and nightside reconnection rates during 73 hours of observation spread over 9 intervals. We identify 25 episodes of nightside reconnection, and examine statistically the rates and durations of reconnection, as well as possible triggers for the onset of reconnection, such as changes in solar wind ram pressure or orientation of the interplanetary magnetic field. Approximately half of the events can possibly be identified with a trigger, the other half appearing spontaneous. On average 0.3 GWb of open flux are closed in each event, with average durations and reconnection rates being 70 min and 85 kV. We find no evidence for a low background rate of nightside reconnection between these events, and conclude that substorms and other large reconnection bursts provide the major or only source of flux closure on the nightside.