



Scientific objectives and opportunities during the THEMIS mission.

R. Nakamura (1), V. Angelopoulos (2), W. Baumjohann (1), E. Donovan (3)

(1) Institut für Weltraumforschung der OAW, Schmiedlstrasse 6, A-8042 Graz, Austria, (2) Space Sciences Laboratory, University of California, Berkeley, CA 94720-7450, (3) University of Calgary, Dept. of Physics and Astronomy, SB-636, Canada

THEMIS is a 5 spacecraft (probe) mission to launch in October 2006. Its near equatorial probes will align once per 4 days to provide measurements along the tail between 10 and 30 Earth Radii, with the primary scientific objective to distinguish between competing substorm theories. Over 180hrs of alignments will be possible each year. A ground network of white-light imagers and magnetometers in Canada and Alaska will ensure that the relevant alignments (at onset meridian) during >10 substorms will qualify as prime candidates for extensive analysis of onset mechanism and its dependence on external factors such as solar wind triggers, precursor pseudobreakups or ionospheric conditions. In addition to its prime observation period, THEMIS will provide coordinated and comprehensively instrumented platforms and easily accessible datasets for studies beyond substorms. Conjunctions with Cluster and Double Star together with coordinated worldwide ground-based observations will strengthen the capabilities of those missions. Interpretational challenges and ancillary datasets augmenting this mission beyond what was originally envisioned will also be discussed.