



Energization of Particles in Substorm Aurora.

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Substorm auroral configuration was documented by the high time (3 second cadence) and spatial (km scale) resolution optical imagers of the THEMIS Ground Based Observatory chain. In the chain adjacent imagers mostly have overlapping coverage and in the final configuration the observatories will cover the entire North American sector of the auroral oval from New Foundland to Western Alaska. In its present configuration the network already offers unprecedented longitude coverage and allows the determination of the onset location and timing of substorms. After onset most substorm auroras expand poleward and rapidly propagate east and west. The THEMIS network is able to distinguish the true global onset region from the azimuthally propagating features. Overflights of the FAST satellite over the ground based network provide snapshots of the particles and fields associated with the substorm aurora during all phases of the substorm. The optical data from the ground based network gives the context for interpreting simultaneous satellite observations and allows the extrapolation of the energy deposited over a wider region. Conversely from the simultaneous satellite passes, the auroral forms associated with various types of auroral energization mechanisms will be identified.