

ILWS Science in Finland

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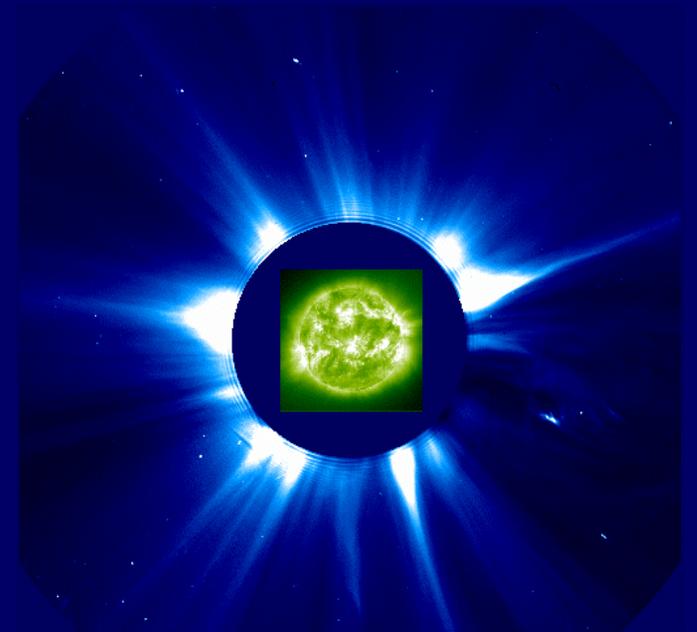
- Space activities in Finland
 - ESA member since 1995
 - Science Programme member since 1987
 - 40 MEuro annual budget
- Space science in Finland
 - 6 MEuro budget for projects
 - 130 scientists
 - 150 refereed publications/year





ILWS and Science of Space Weather: A Finnish Perspective

- Solar physics
 - Solar observations from space
- Magnetospheric and ionospheric physics
 - Multi-satellite observations
 - Ground-based monitoring network
 - Global simulations
- Space weather activities
 - ESA space weather initiatives
 - Auroral and GIC forecasts
 - Proposal for ESA Flexi mission STORMS

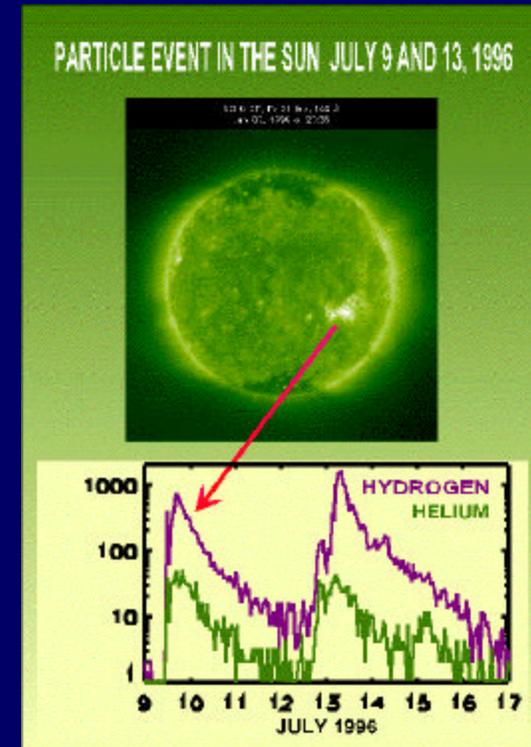


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Solar Physics: Energetic Particles, UV, and X-rays

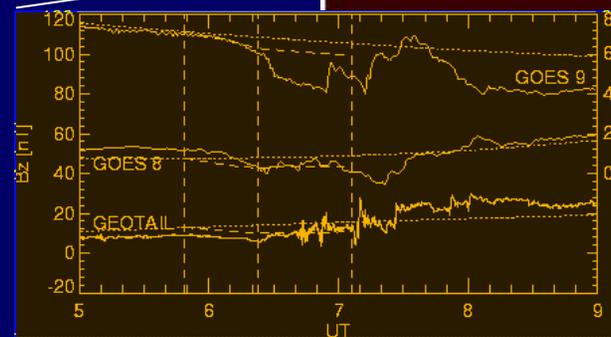
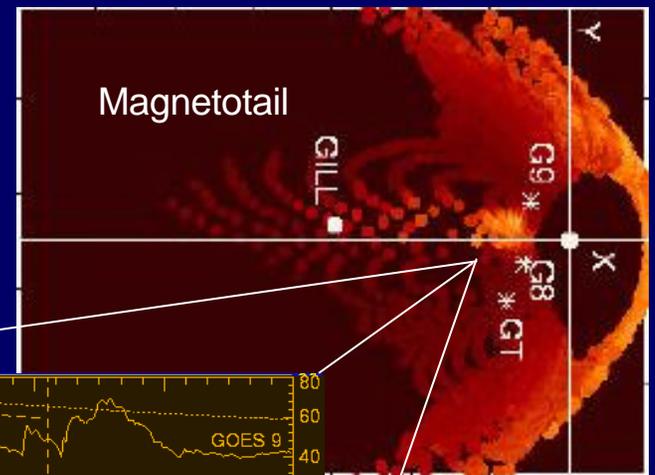
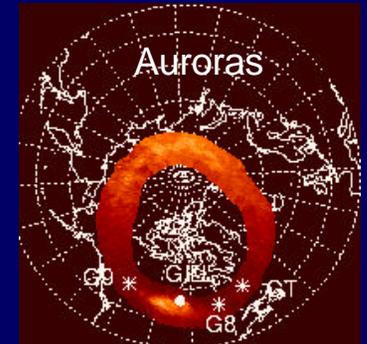
- SOHO
 - ERNE: PI-instrument, solar energetic particles
 - SWAN: co-I instrument, heliospheric view on solar activity in UV
- SMART-1
 - XSM: PI-instrument, solar X-rays
- Science
 - Analysis of shocks and CMEs
 - Emphasis on geoeffective CME properties





Solar wind - Magnetosphere - Ionosphere: Plasmas and Electric Fields

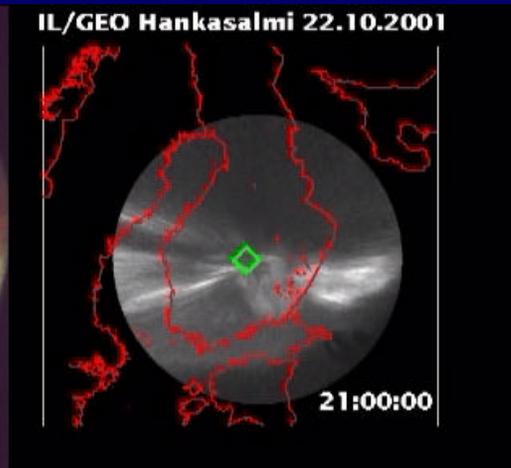
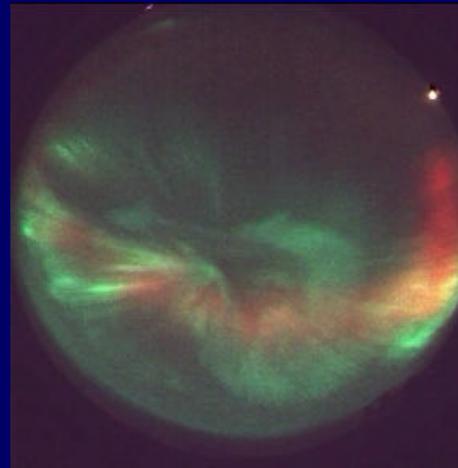
- Hardware participation
 - Ionosphere: Viking, Freja, Astrid
 - Magnetosphere: Polar, Interball, Cluster
- Active ISTP participation
 - Use of synoptic multisatellite and ground-based observations
 - Analysis through empirical and physical modeling





Ground-based Monitoring Network

- Finland offers infrastructure in the auroral region (60-70° geog. latitude)
- MIRACLE
 - 25 magnetometers, 8 all-sky cameras, radar
 - Continuous monitoring at 10-s resolution
- Sodankylä Observatory
 - Instrument platform
 - High-quality time series

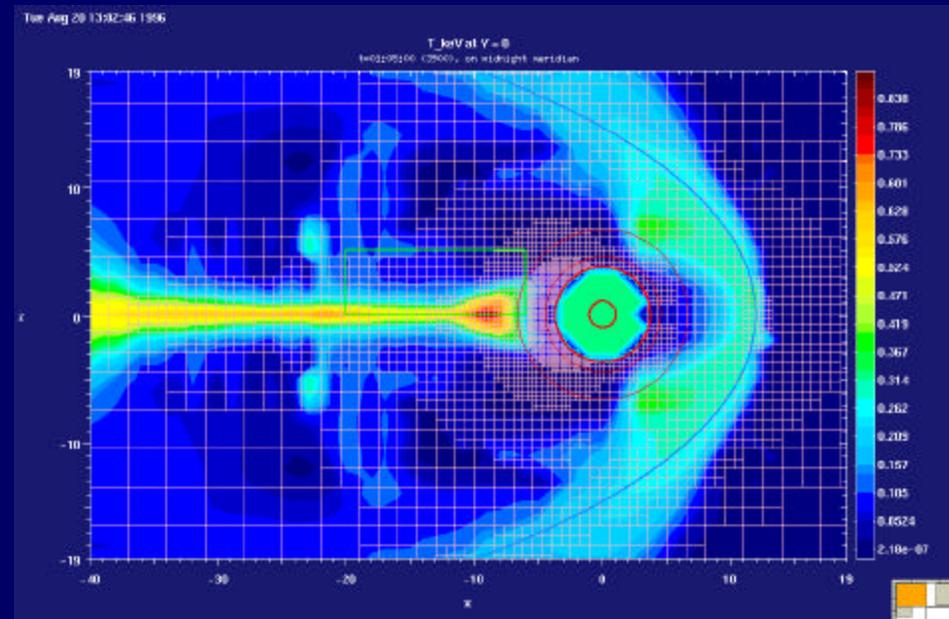
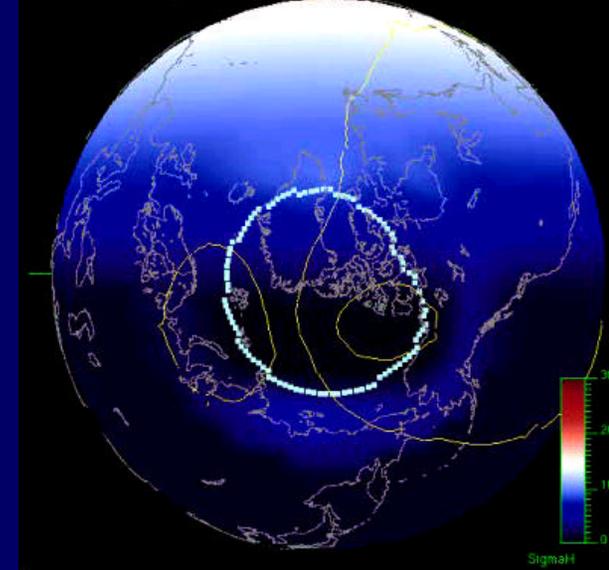




Numerical Space Physics

- Global MHD simulations
 - Solar wind - magnetosphere - ionosphere interaction
- Empirical field modeling
 - Substorms
- Particle acceleration
 - Ring current formation
 - Solar energetic particles

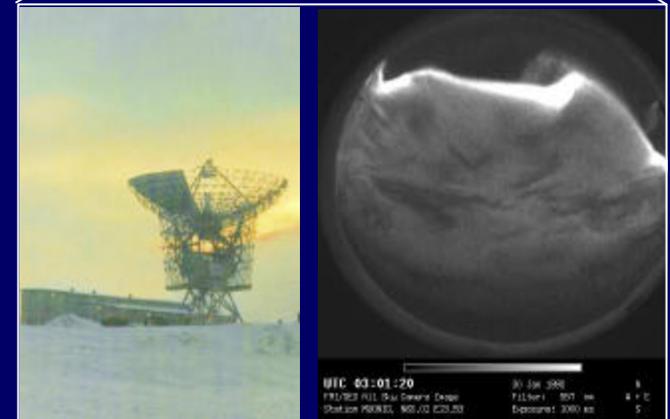
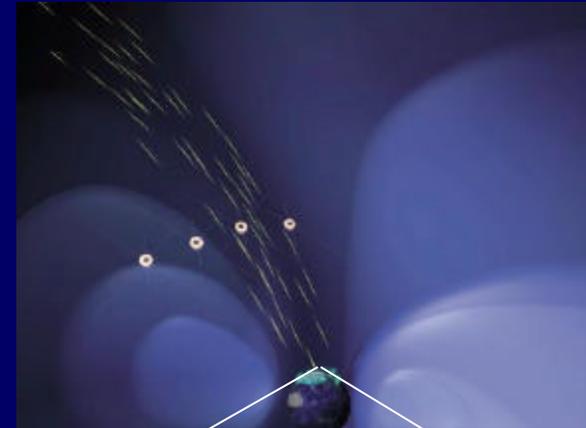
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Opportunities within ILWS: On Ground

- Ground-based facilities
 - Continuous monitoring
 - Optical instruments, magnetometers, ionospheric radars
 - Continuous real-time data taking
 - Immediate data publication via WWW
- Receiving station
 - Data receiving begins 2003





Opportunities within ILWS: In Space

- Possibilities for space instrumentation
 - Solar physics missions
 - Magnetospheric missions
- STORMS - Space Weather Satellite
 - Synoptic view of ring current
 - Highly ranked in ESA Flexi-mission round in 2001

