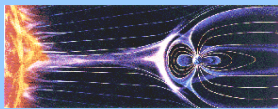




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FYS 3610 Research infrastructure and substorm aurora



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Research infrastructure

Main installations for Space Research in North Norway and Svalbard

Longyearbyen

UNIS, EISCAT Svalbard Radar

The auroral station

Ny-Ålesund

Norwegian polar institute, SvalRak

North-Norway

ARS, EISCAT

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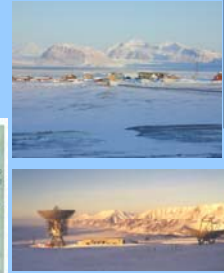
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The Uniqueness about Svalbard:

- Ideally located for daytime auroral measurements
- Well developed research infrastructure
- Multi-instrument observations



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The auroral station, LYR:



- Owned by the University of Tromsø
- Operated by UNIS
- Ca. 22 instruments, 16 institutions from 8 nations

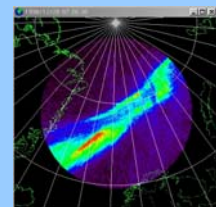


University Centre on Svalbard –
14 full-time scientists
and ~100 students



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Ny-Ålesund Auroral Platform



Key instruments:

- Meridian Scanning Photometer – 4 channels
- All-Sky Camera (5 positions filter wheel)

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All-sky field of view coverage

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EISCAT Scientific Association

3 Incoherent Scatter Radar Systems:

- Tromsø UHF (933 MHz) - 3-static with receivers at Kiruna and Sodankylä
- Tromsø VHF (224 MHz)
- Eiscat Svalbard Radar - dual antenna system (500 MHz)

Associated countries:
Germany, France, Finland, Japan, Norway, Sweden, UK

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ARS and Svalrak

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Ground support for CLUSTER

30 Nov, 2000

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Solar-Terrestrial interaction

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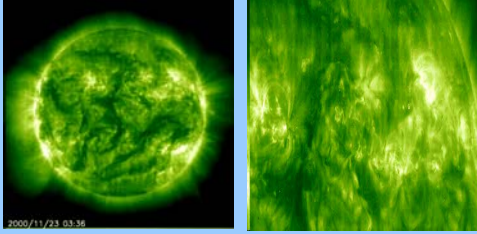
The Terrella-Experiment

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The Sun- "A boiling soup of plasma"

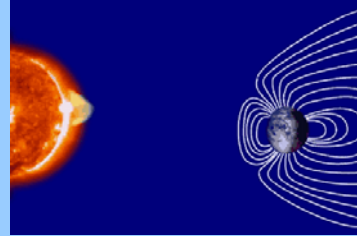


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Aurora – a visualisation of solar terrestrial coupling

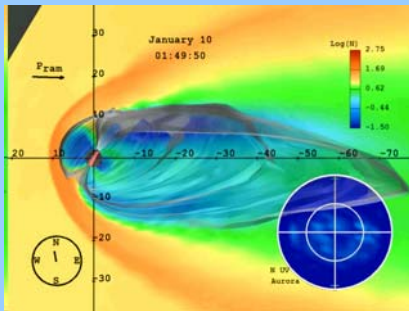


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Solar wind interaction with the Earth's magnetic field



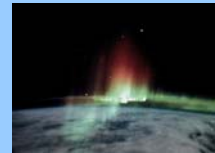
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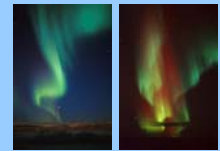
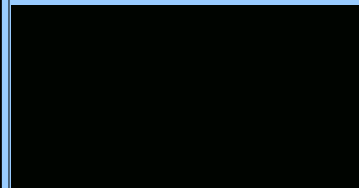
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NORDLYS



Nordlys sett fra romferga Challenger

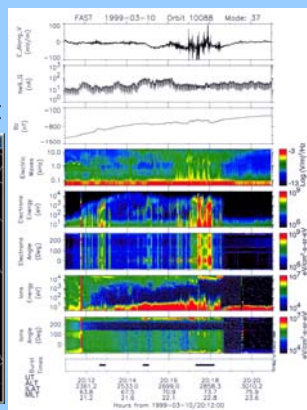
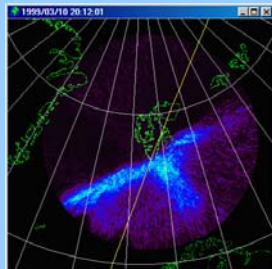


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FAST – passasje gjennom Nordlyset

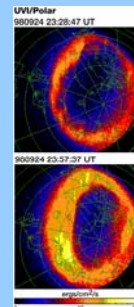
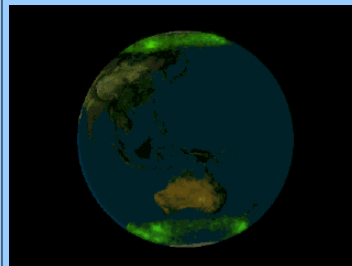


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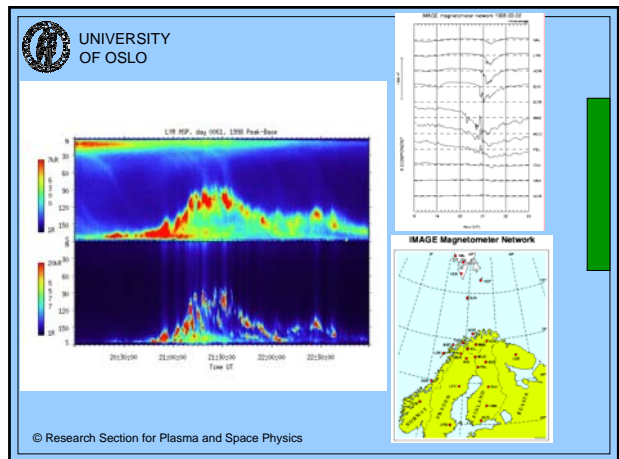
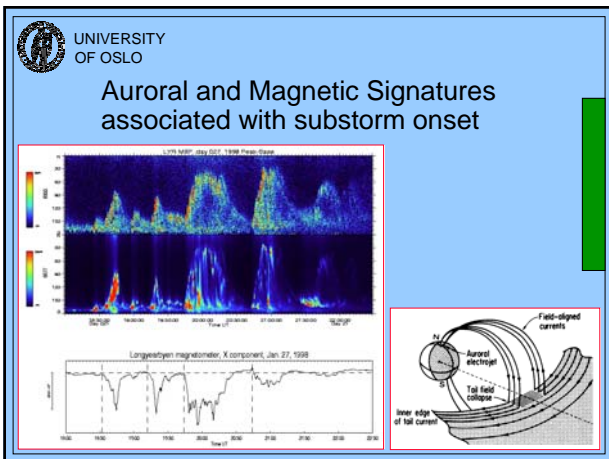
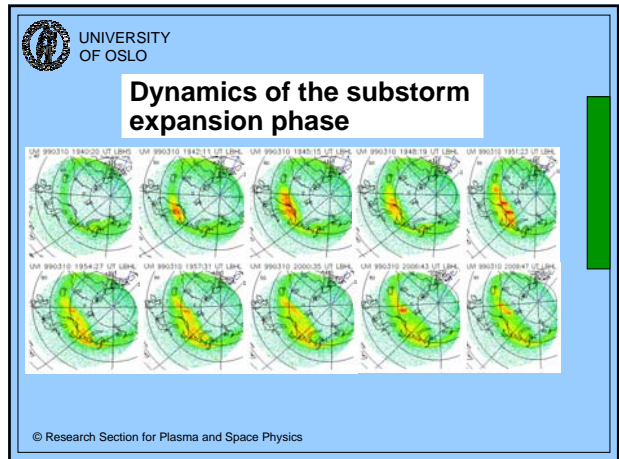
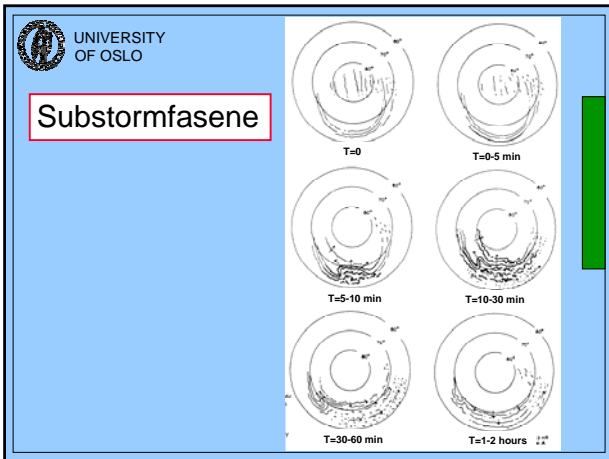
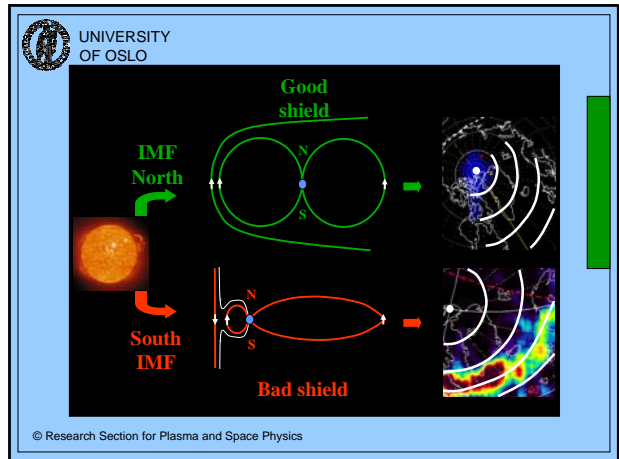
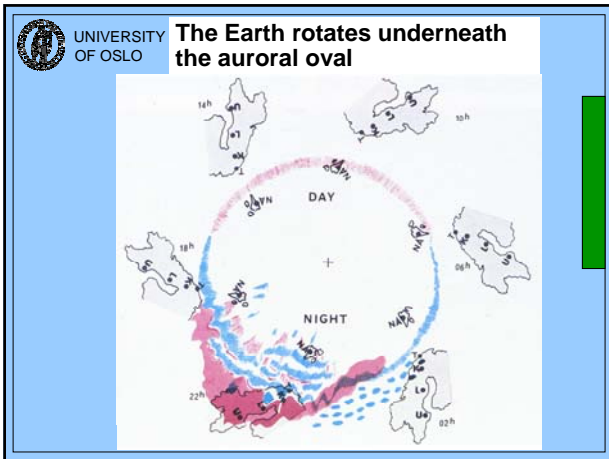


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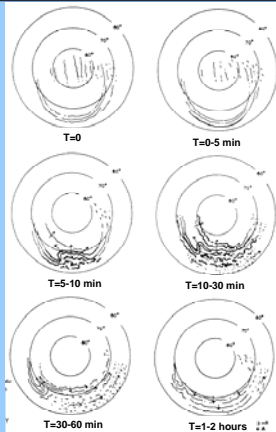
Aurora Borealis – Aurora Australis



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Substorm phases



Colors in the aurora

630.0 nm – red upper border
Atomic oxygen : $^1D - ^1S$ transition

557.7 nm – green
Atomic oxygen : $^1D - ^3P$ transition

427.8 nm – magenta bottom border
 N_2^+ - 1st negative band

