



# Norwegian ILWS Development

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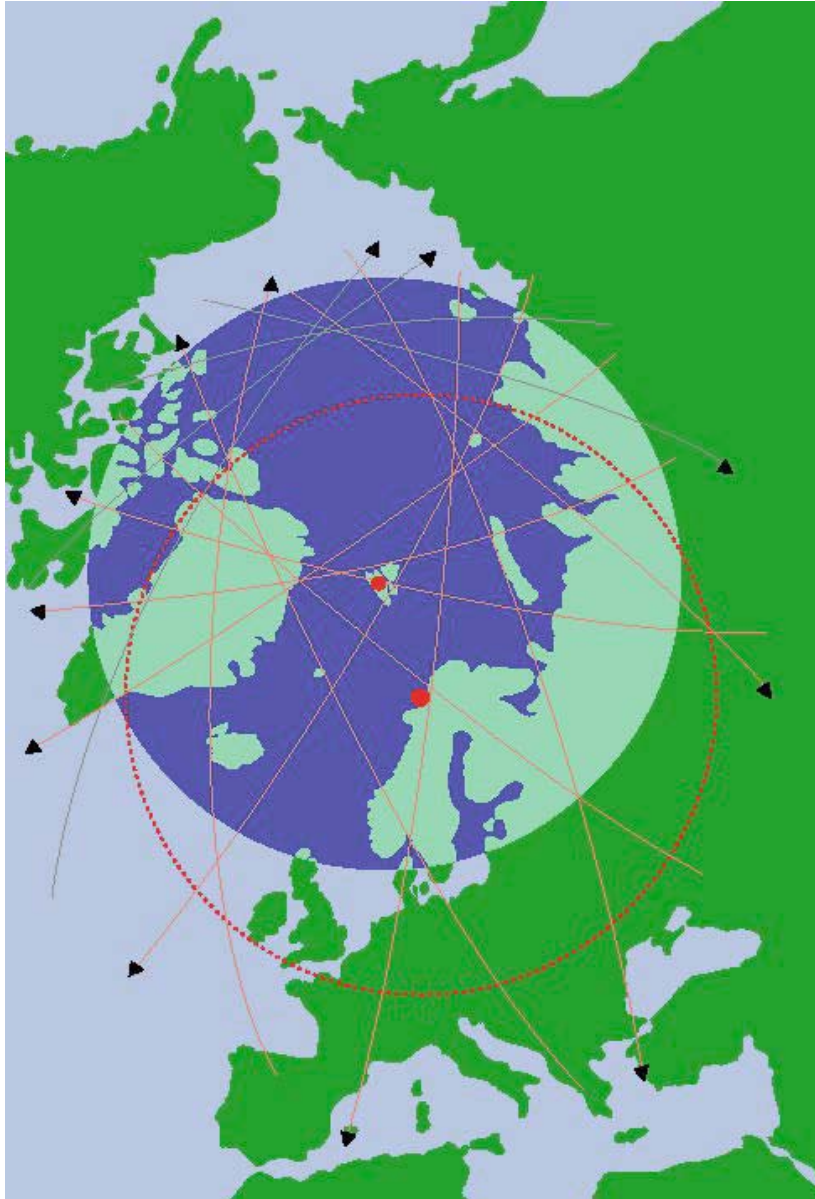
# Significant Focus on ILWS



- Meetings and presentations with all groups.
- National workshop end April.
- Ongoing attempts to increase funding for ILWS in general and sounding rocket activities in particular.
- Consorted effort led to a 3.3 M€ committed investment in Solar B data reception and distribution.
- Will to develop broader operational support to ILWS missions from Svalbard.



# Why Svalbard?



- At 79 degrees latitude, all orbits of polar orbiting satellites  $>500$  km.
- Easy access and relatively benign climate.
- Existing infrastructure for satellite downlink and commanding.
- Infrastructure commercially developed; that is cost-effective.
- Strong national support.
- Investment by NSC of high speed communication to Svalbard.



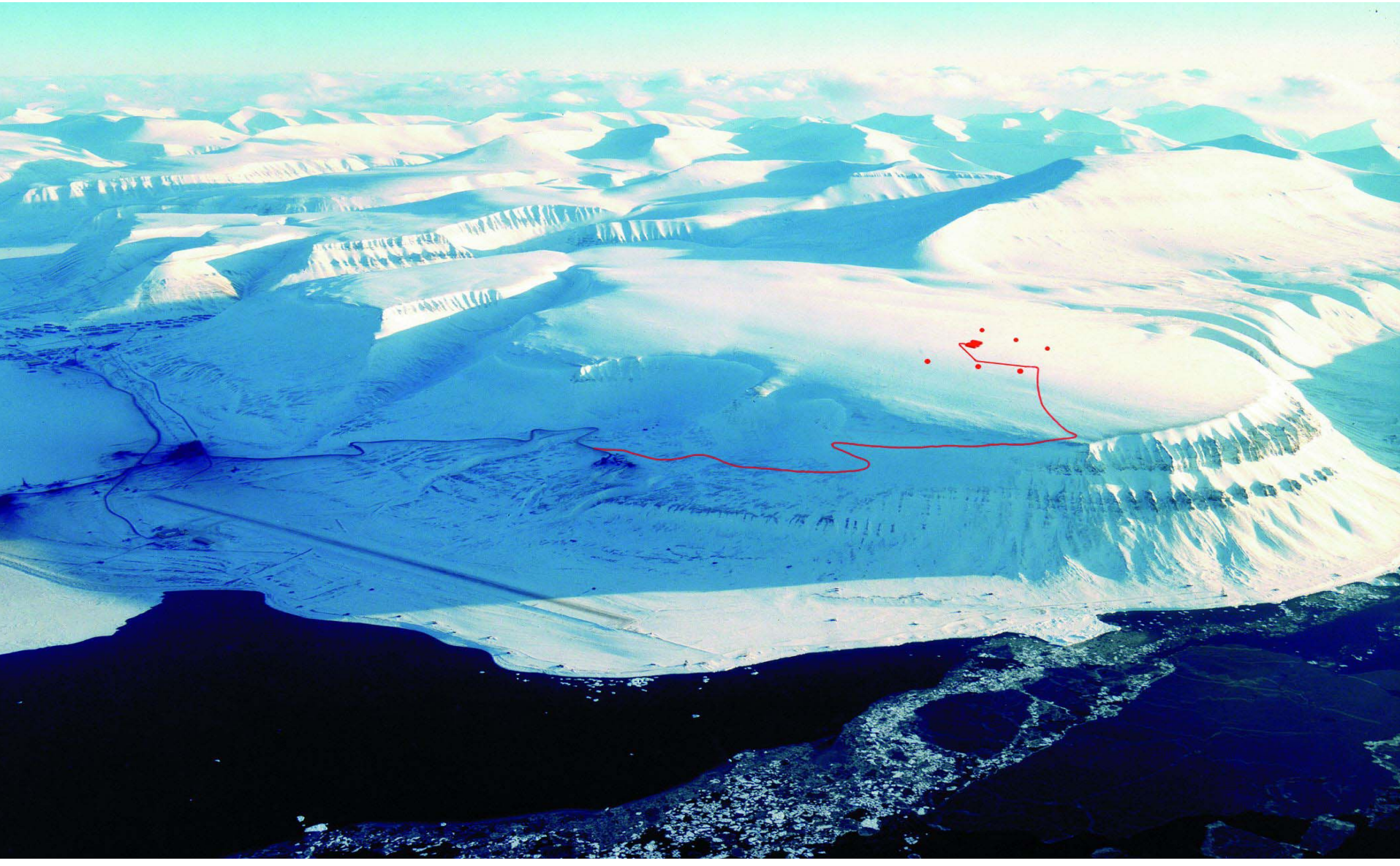
# On top of the world



- Well developed satellite communication, but costly.
- NSC signed contract 11-04-03 to connect Svalsat and mainland with optical cable.
- Investment of 40-50 M€.
- In operation from 2004 with an initial bandwidth of 20 Gbit/s.
- By 2005 the largest ground station for polar orbiting satellites, NASA, NOAA, ESA, EUMETSAT, ISAS.



# Location of Svalsat





# SVALSAT





# Not your common neighbourhood!



- **Most of Svalbard protected.**
- **No unarmed movement outside major settlements.**
- **Polar bear small, but real danger.**



# Background

- **ISAS**

- Scientific output limited by downlink bandwidth.
- Wish to increase RT data access.
- Decrease risk by more contact possibilities.

- **ESA**

- No offer to community between SOHO and SOLO
- Provide support for something that is important to project in exchange for data rights.
- Support should have simple interfaces.

- **Norway**

- Involved with MSSL on EIS.
- See the need for more data bandwidth.
- Solar physics one of two national priorities.
- Has suitable ground station on Svalbard.
- Sees an opportunity to move "non-science" resources into science.'



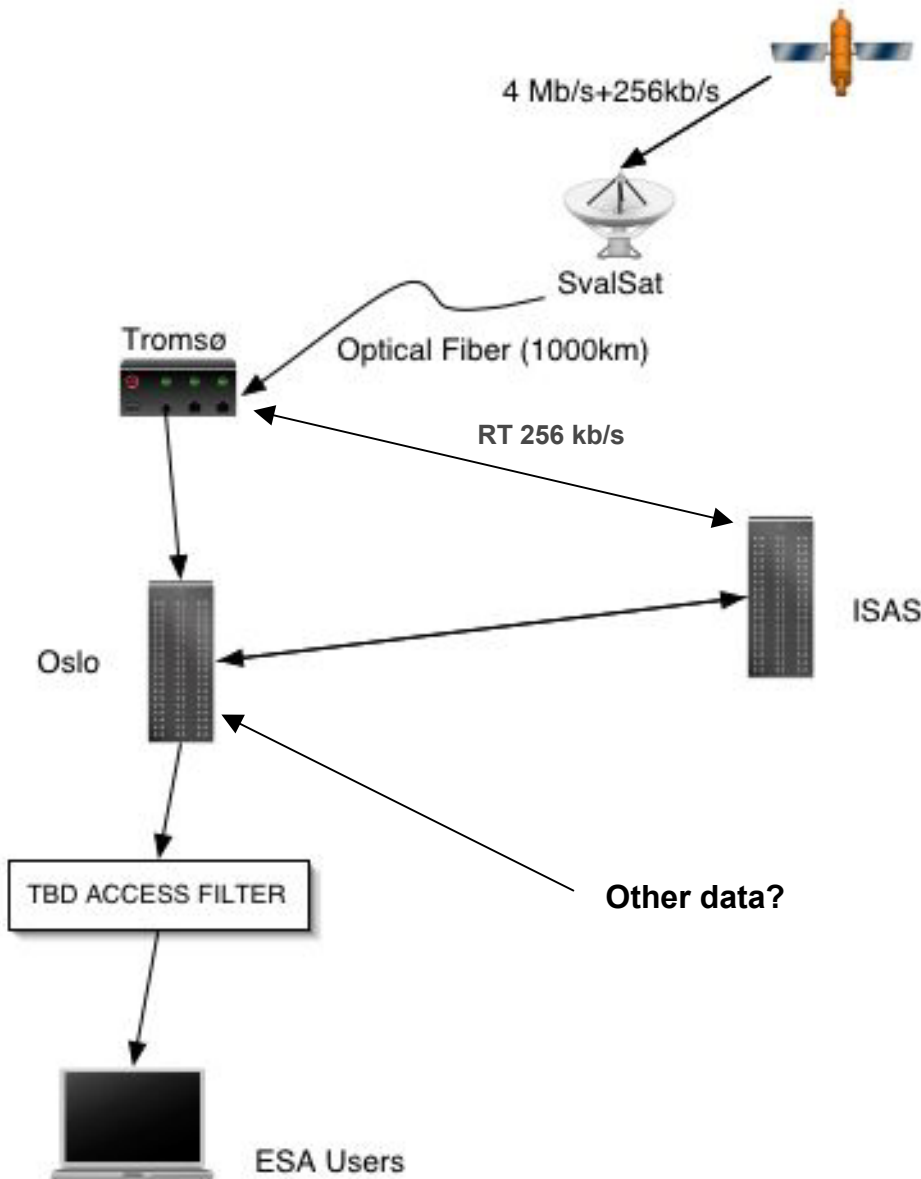


# ESA-Norwegian Solar B Support

- **Unsolicited proposal from NSC to ESA will provide the ESA support to Solar B as fixed price contract (7.7 M€).**
- **Proposal includes:**
  - 15 orbits/day downlink at 4 Mb/s for four years operation.
  - Transport of data to ISAS/Oslo.
  - Real time datalink to ISAS of up to 256 kb/s.
  - Build-up and operation of European data centre for Solar B data for four years operation and one year archiving phase.
  - High speed data links to European users.
- **NSC will subcontract the downlink/operation part to its subsidiary KSAT and the data centre to ITA/UiO.**
- **Norwegian contribution is valued to 3.3 M€.**



# Svalbard Downlink



- Will provide additional 2.4GByte per day.
- Norway will provide to ESA users a data centre in Oslo for data distribution and archive.
- Oslo data centre will provide the required access filter as determined by ISAS/ESA.
- Approximately 10 minutes RT data to ISAS every orbit.
- Data archive of  $\geq 24$  Tbyte and high speed access.
- Possibility to include other data (Swedish La Palma solar telescope being considered)



# Supplementary Observations



- **Future of EISCAT?**
- **Extended use of small and inexpensive sounding rockets.**
- **Auroral camera and magnetometer networks.**