Satellite data for IPY – a Norwegian Perspective

Kongsberg Satellite Services
and Norsk Romsenter

Richard Hall
KSAT owner structure

Kongsberg
Defense and Aerospace (KDA)

Norwegian
Space Center (NCS)

50 %

Kongsberg Satellite Services

SvalSat (Svalbard)

TrollSat (Antarctica)

Grimstad Station

Tromsø Station

Ground Station Services

Earth Observation

Business Segments
What does KSAT do?

• Provide communications link for satellite owners
  • Uplink and downlink
    • Satellite commands go up
    • Data comes down
      • Svalsat “sees” every orbit (14 per day)
  • Exploit data received in real-time

• Deliver the images anywhere in the world in real-time
Tromsø 69 ´North
TrollSat 72° South
Direct downlink area

- Provision of images in less than 10 minutes
- Analysis and information delivery < 30 minutes
Troll downlink area
Data Coverage
IPY SAR Data Distribution summary

- ENVISAT
  - Straight-forward

- Radarsat-1
  - Straight forward for Norwegian users under “Public Norway” user agreement
  - Fairly straight forward outside of Norway

- Radarsat-2
  - Requirement of keep track of data distribution so therefore needs clarification

- ALOS
  - Interesting potential but difficultly in accessing data
  - Interest in receiving real-time data – needs to be addressed in Europe
Access in the field for IPY expeditions
First zoom
The Detail
Envisat - Alternating Polarization

**VV**
Difficult to distinguish between calm open water in Isfjorden and the ice belt (1). The fast ice in Forland Sundet (2) and Isfjorden is distinguishable from open water and sea ice. The open ocean region (3) is not continuous. At (4) the IceCam shows that this region is calm water with a low percentage ice cover (13:00 and 14:00 UTC).

**VH**
The ice band, open ocean edge is most visible in this band (1). However, in Isfjorden it is difficult to distinguish between calm open water and fast ice (2). Open ocean appears uniform (3). Region 4 is a region of higher ice concentration (than 4) and calm water, and is illustrated by the 15:00 IceCam 15:00 picture.

**VH-VV**
There are two distinctive regions identifiable in this image. Firstly, the calm water regions found in Isfjorden (1) and along the coast (2). Secondly, the bright water region that occurs alongside the edge of the ice band (3).

© raw data ESA 2004
Envisat AP pseudo-colour image and IceCam ground truth data

R=HH G=HV B=HV-HH

© raw data ESA 2004 Processed by Richard Hall/Norwegian Polar Institute 2005
IceCam data collected by Richard Hall/Norwegian Polar Institute 2004
Radarsat-2 data

HH

HV

HV-HH

Dual polarization ScanSAR-B 21st July 2008
Snow mapping
Norwegian Computing Centre, NORUT and KSAT
Glacier monitoring
Andreas Kääb, University of Oslo
Thank you for your attention!