

# TERRASAR-X CAPABILITIES IN POLAR REGIONS

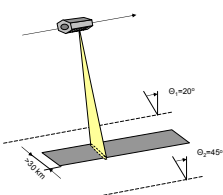
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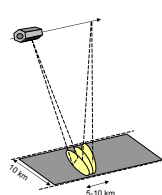
## TerraSAR-X characteristics

- X-band (9.65 GHz) SAR, launched 15.06.2007, operational since 7.01.2008
- repeat cycle of 11 days
- right and left rolling capabilities, covering latitudes up to 89.7 degrees North and South
- basic imaging modes:

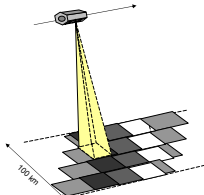
### Stripmap (SM)



### High Resolution Spotlight (HS) & Spotlight (SL)



### ScanSAR (SC)



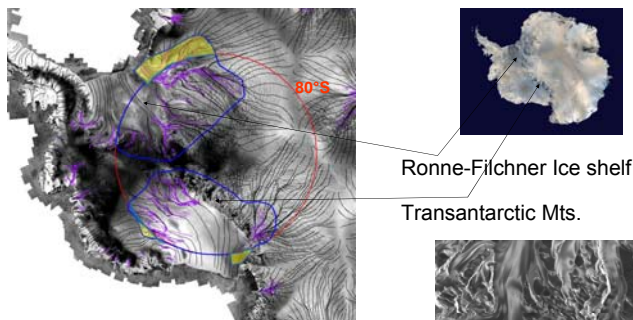
	Stripmap	Spotlight (HS & SL)	ScanSAR
azimuth resolution	3.3 m (single pol.) 6.6 m (dual pol.)	1.1 m / 2.2 m (HS, single / dual pol.) 1.7 m / 3.4 m (SL, single / dual pol.)	17 m (1 look, 4 beams)
ground range resolution @ 150 MHz chirp BW	1.7 m - 3.5 m (@ 45°.. 20°)	1.5 m - 3.5 m (@ 55°..20°)	1.7 m - 3.5 m (@ 45°.. 20°)

## Topics of TerraSAR acquisitions related to IPY

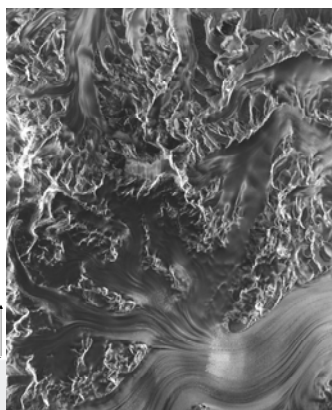
- were established at the STG SAR coordination workshop in March '08 :
1. Antarctica: InSAR coverage of Tansantarctic Mts. and Ronne-Filchner ice shelf\*
  2. Antarctica: pole hole mapping\*
  3. Greenland and major Canadian icefields: InSAR acquisitions during 4 consecutive cycles in winter
  4. Multi- and full-polarimetric data acquisitions over common supersites

\*left looking acquisitions necessary

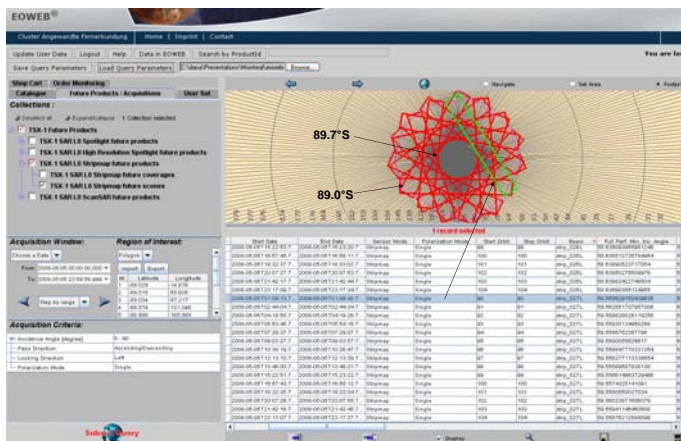
## Areas of interest for the InSAR coverage with TerraSAR-X in Antarctica



Left looking mode of TerraSAR-X tested:  
 Stripmap image of Beardmore glacier  
 85.0°S 170.0°W  
 25.09.2007  
 Incidence angle: 41 deg  
 Polarization: HH



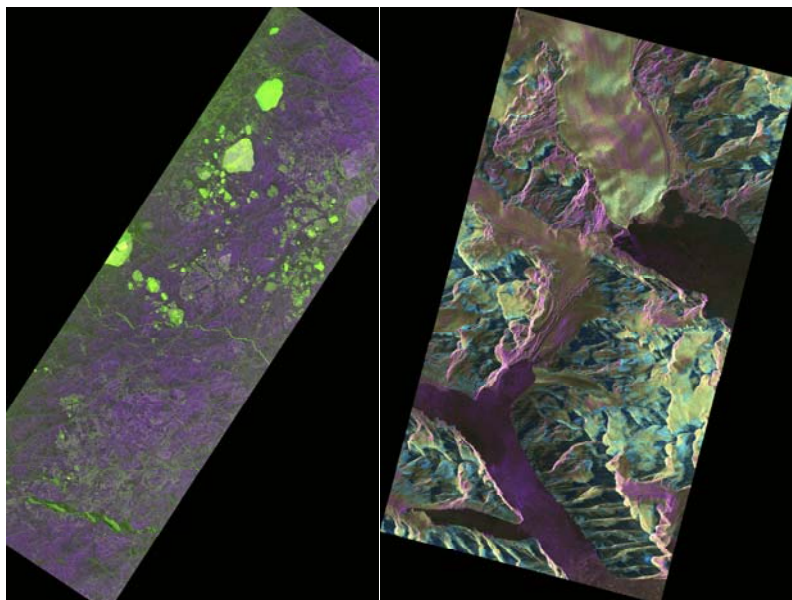
## Pole hole mapping simulation in EOWEB ordering tool



1 day, 1 beam/orbit 60°inc. angle (strip\_027), left looking  
 Region of interest: South of 89.0°S

## Dual- pol acquisitions HH/VV, HH/HV, VH/VV

Stripmap swath width 15 km



Stripmap, dual polarization  
 Sea Ice 74.0S 51.9W , 01.09. 2007  
 Polarization: HH/HV  
 Incidence Angle: 15 deg

Stripmap, dual polarization  
 East Greenland glaciers 68.3N 31.1W, 12.12.2007  
 Polarisation: HH/HV  
 Incidence Angle: 25 deg

## Access to TerraSAR-X data for scientific use

Apply for a scientific proposal via :

[http://www.dlr.de/tsx/main/science\\_en.htm](http://www.dlr.de/tsx/main/science_en.htm)

- submission at any time
- evaluation (mission objectives, data requirements, scientific use criteria)
- data are provided for the costs of fulfilling the user request