TERRASAR-X CAPABILITIES IN POLAR REGIONS

D. Floricioiu, M. Gottwald, E. Diedrich, A. Roth and M. Eineder
German Aerospace Center (DLR), Oberpfaffenhofen, Germany

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)

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

Topics of TerraSAR acquisitions related to IPY
were established at the STG SAR coordination workshop in March’08:
1. Antarctica: InSAR coverage of Transantarctic 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

Access to TerraSAR-X data for scientific use
Apply for a scientific proposal via:
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

Contact: Dana Floricioiu
German Aerospace Center (DLR)
Remote Sensing Technology Institute, Oberpfaffenhofen, 82234 Wessling, Germany
daana.floricioiu@dlr.de