



DLR/TerraSAR-X: development of IPY portfolio - status June 2009 -

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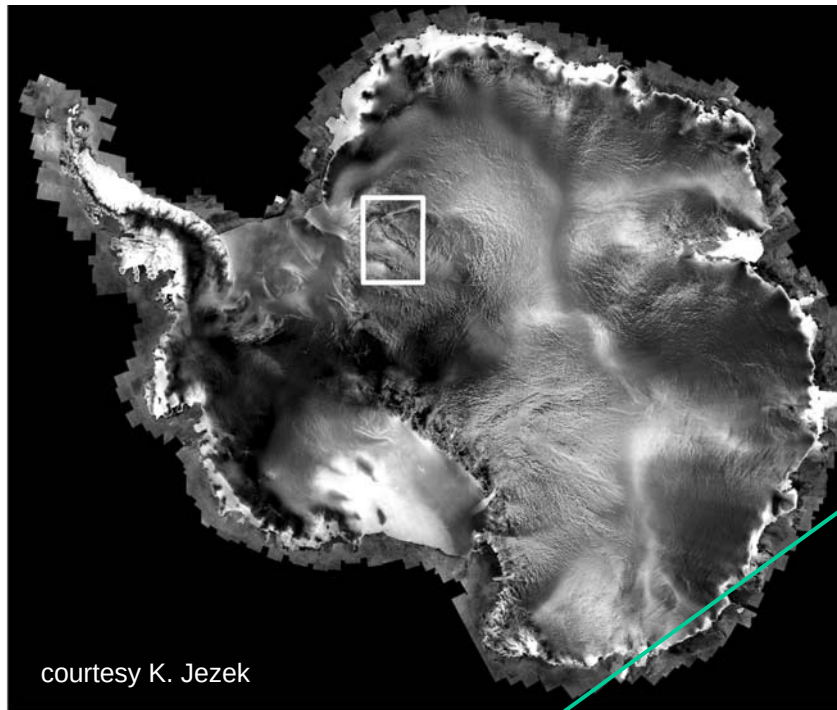
DLR/TerraSAR-X Activities after STG-4 meeting:

- publication in Environmental Geology, July 2009:
**Antarctica During the IPY:
TerraSAR-X Images the Recovery Glacier System**
Dana Floricioiu and Kenneth Jezek
- IGARSS'09:
TerraSAR-X Observations of the Recovery Glacier System, Antarctica
K. Jezek, D. Floricioiu, K. Farness, N. Yague-Martinez, M. Eineder
- News on <http://www.dlr.de/terrasar-x>

- Acquisitions and processing of TerraSAR-X data from the IPY/GIIPSY - related TerraSAR-X science proposals:
 1. **High-Resolution Surface-Velocity Measurements of Antarctic Outlet Glaciers and Ice Streams (HYD0438)**
 2. **Ice velocity measurements of Greenland outlet glaciers (HYD0492)**
 3. **TerraSAR-X background mission “Antarctic Peninsula & Antarctic Ice Shelves” initiative of Matthias Braun**

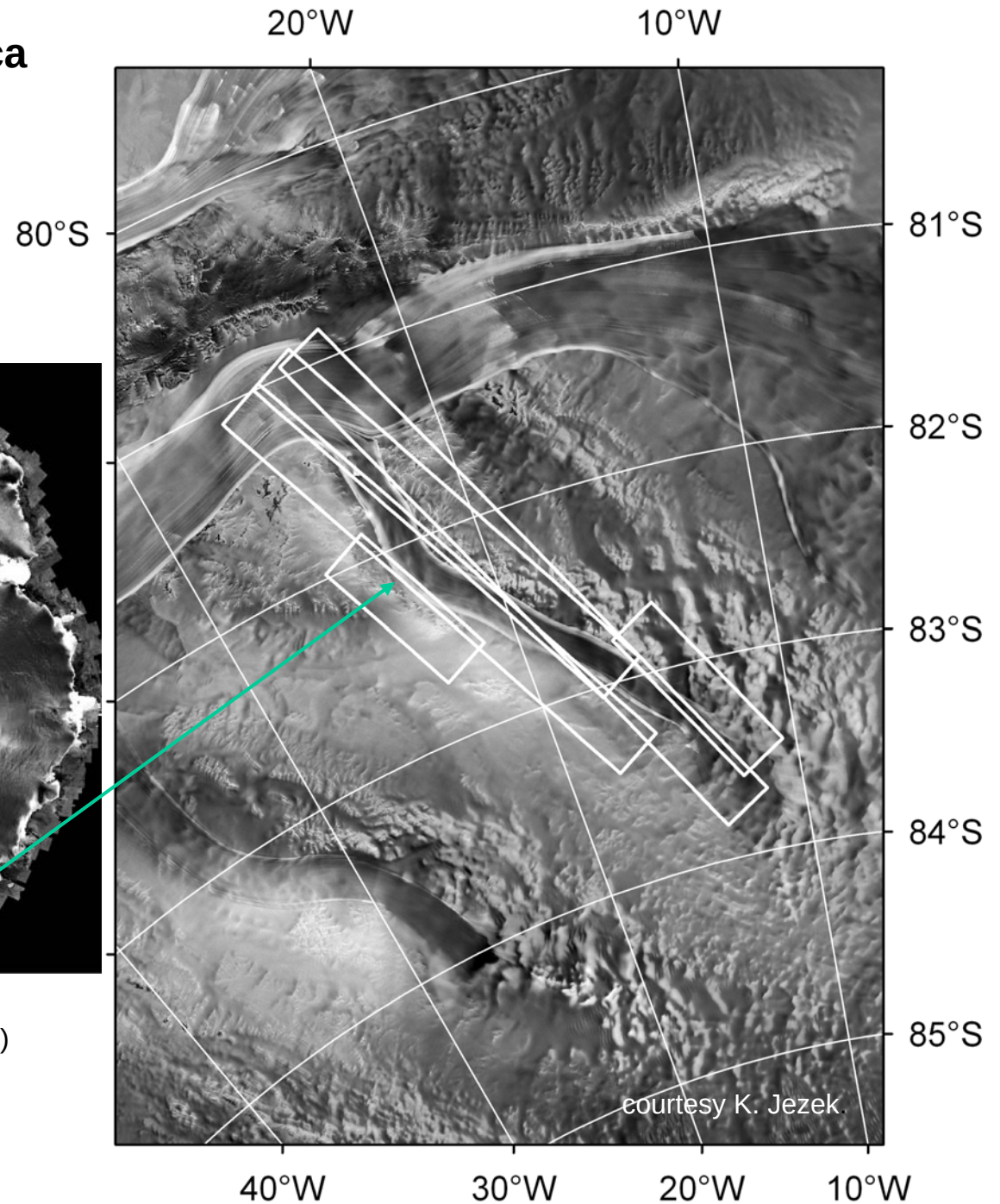
(1) Project HYD0438 - Antarctica

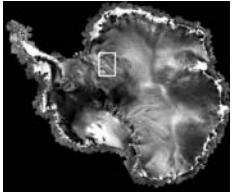
Left looking (not nominal)
TerraSAR-X acquisitions over
Antarctic ice sheet, south of
80°S: Tributary ice stream of
Recovery glacier



TerraSAR-X planned coverage (by Katy Farness)

Background: Radarsat-1 (RAMP) mosaic



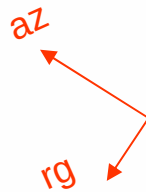


Recovery Glacier tributary ice stream

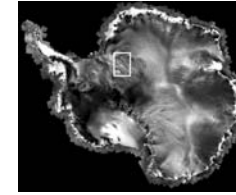
- TerraSAR-X acquisitions started on 30.10.2008, ended on 26.01.2009
- Mode: stripmap, <3m resolution
- 3 complete coverages; total left looking acquisition time: 483"

InSAR
processed

Ascending
Left looking (area South of
80°S)

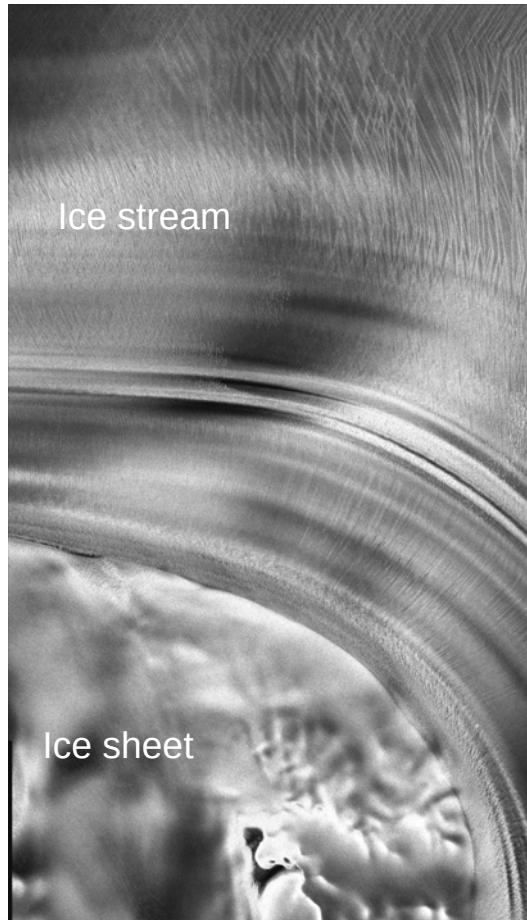


Preliminary results on Recovery Glacier

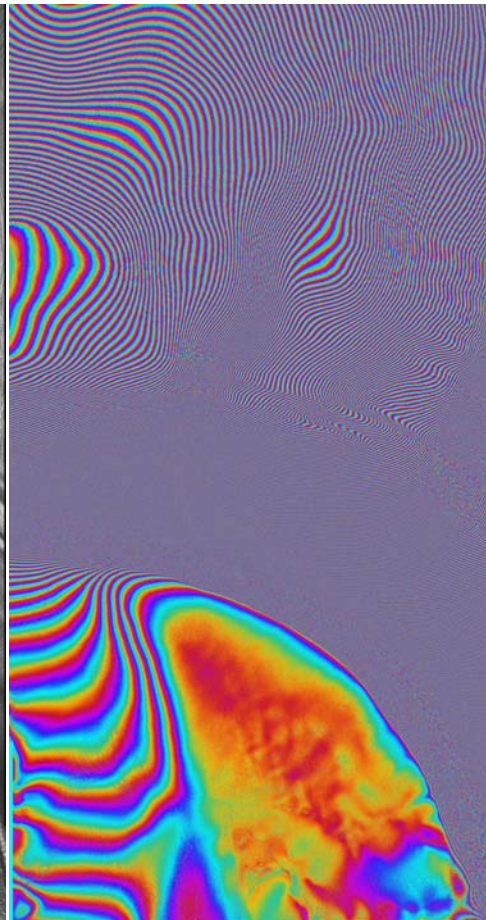


Slow motion, below 1m/day. Combined methods InSAR and feature tracking

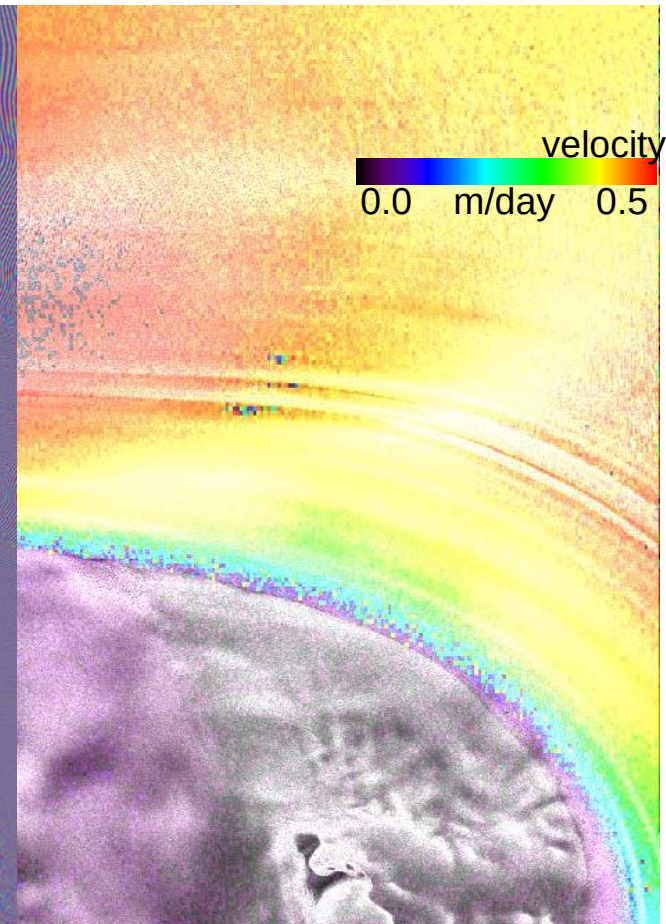
TSX Backscattering



11 days Interferogram



Velocity map (feature tracking)

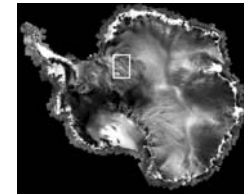
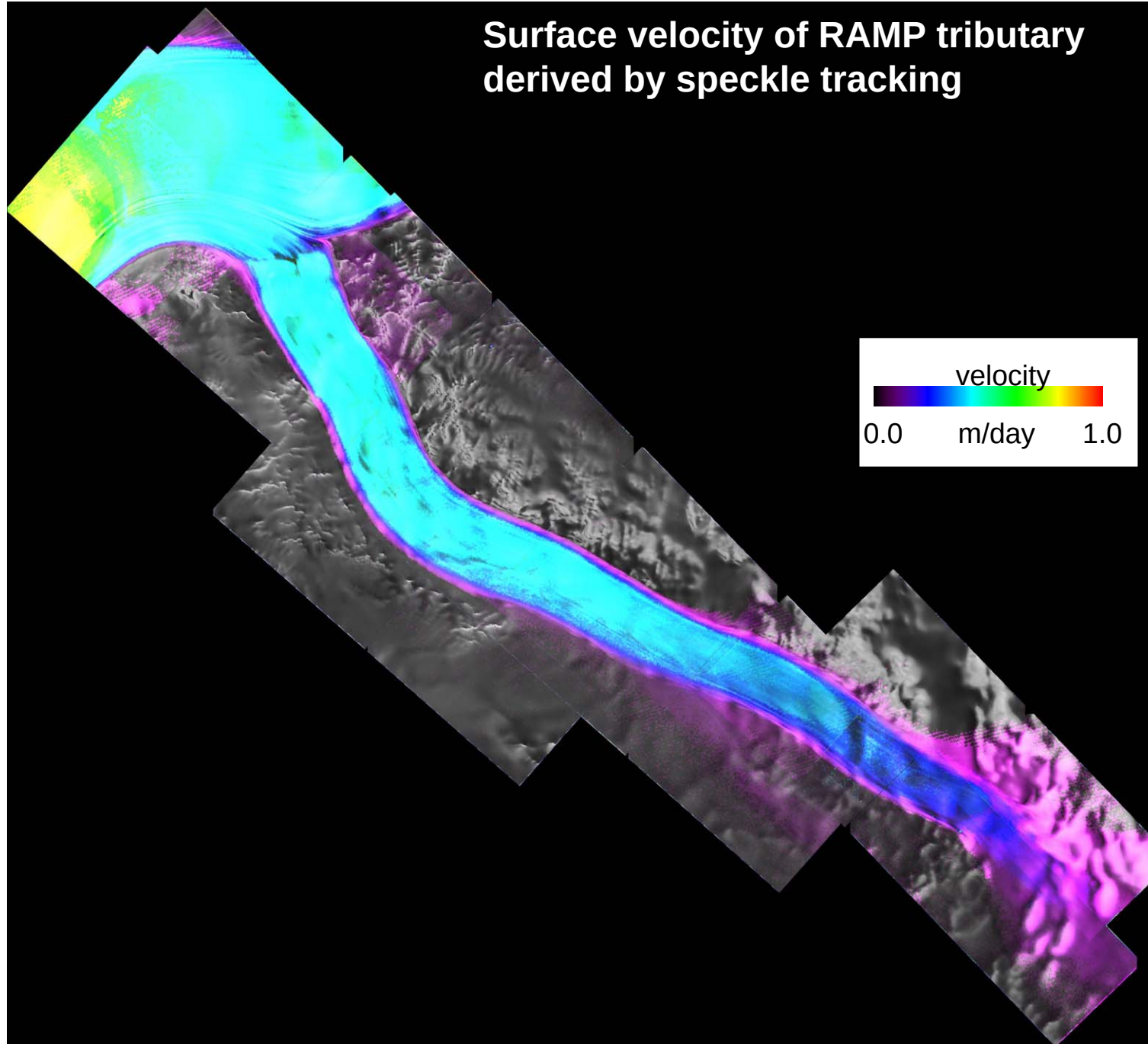


Deutsches Zentrum
für Luft- und Raumfahrt e.V.
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TSX Pair
30.10/10.11.2008
30 m baseline

IPY STG SAR-3 Meeting, Esrin, Frascati 23/24 June 2009

Surface velocity of RAMP tributary derived by speckle tracking



21 pairs of
stripmap TSX
scenes

1 pair ~ 10GB

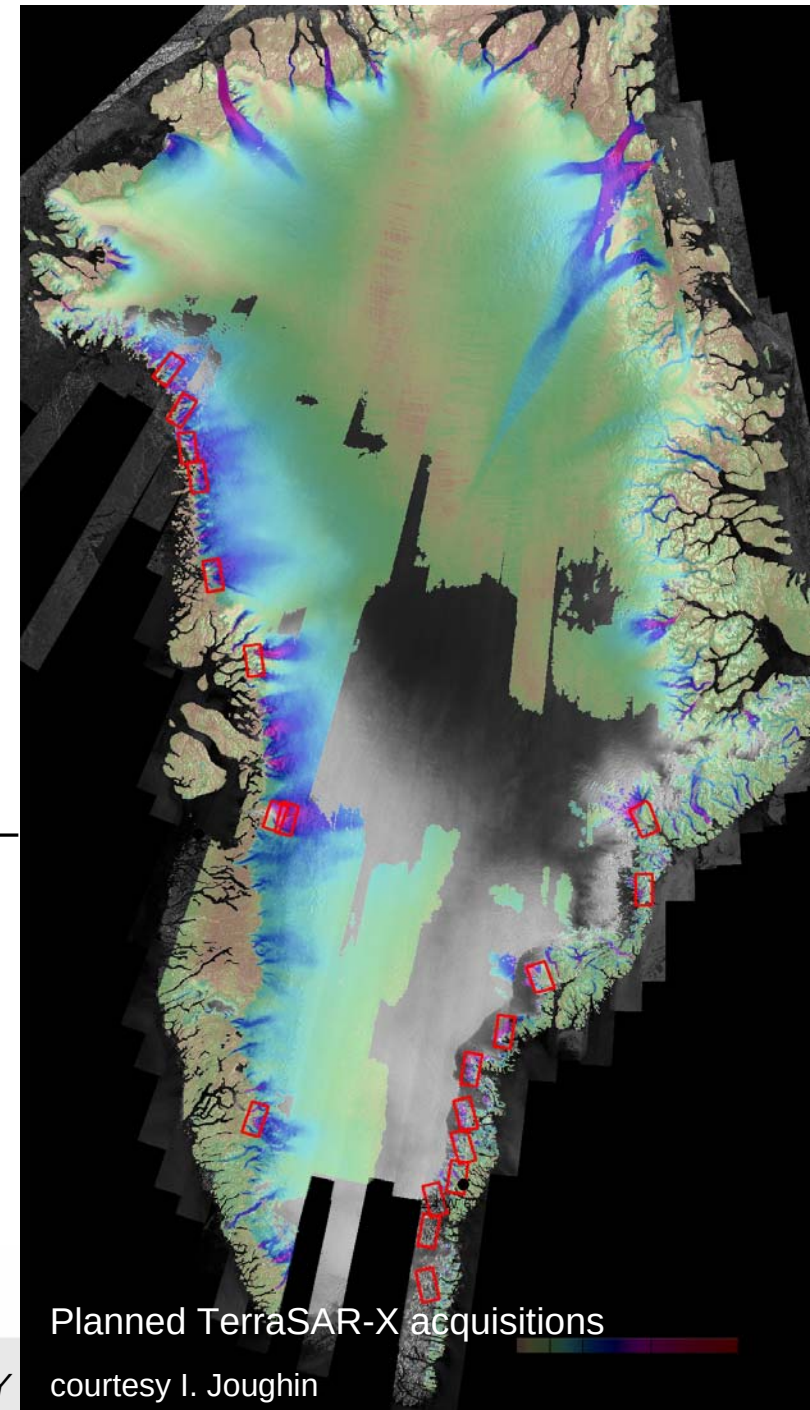
Quota of TSX
proposal
HYD0438 :

200 products

~70 TSX
products
delivered

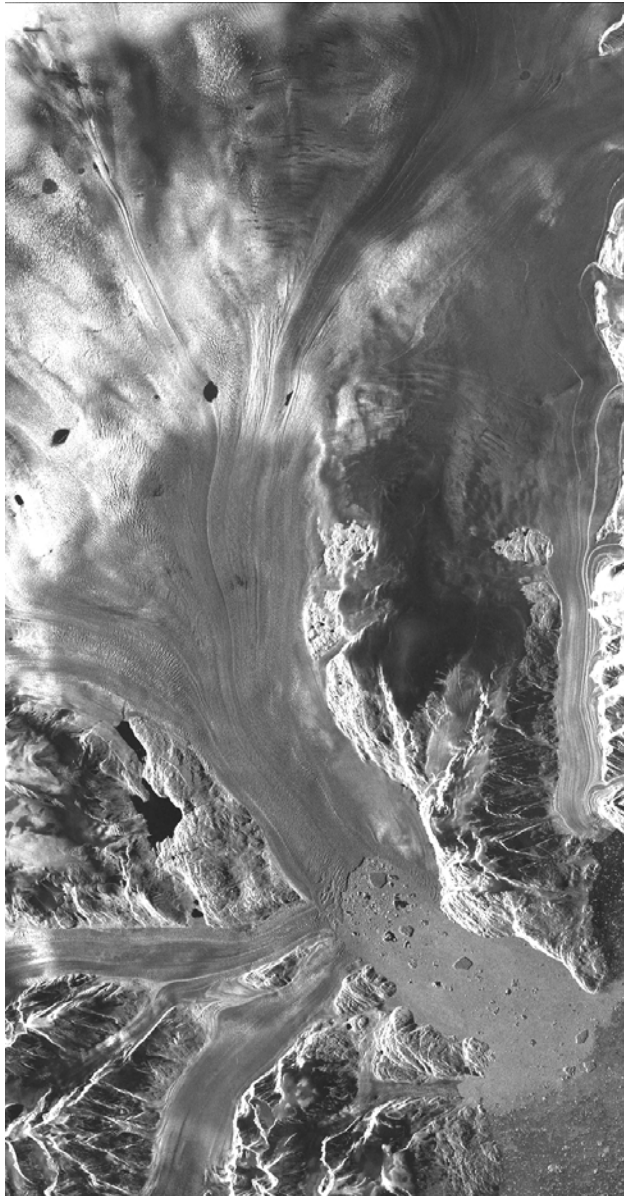
(2) Project HYD0492 - Greenland

- 245 TerraSAR-X products approved
- Repeat pass pairs are collected several times per year over about 20 rapidly changing outlet glaciers. Planning by Ian Joughin (Univ. of Washington)
- TerraSAR-X acquisitions started end of January 2009
- Planned: about 5 TSX pairs per glacier per year. More for Jakobshavn, Kangerlussuaq and Helheim.
- Status June 2009: first two mappings done – no failed data takes, 92 products delivered



TerraSAR-X acquired data Greenland, status June 2009

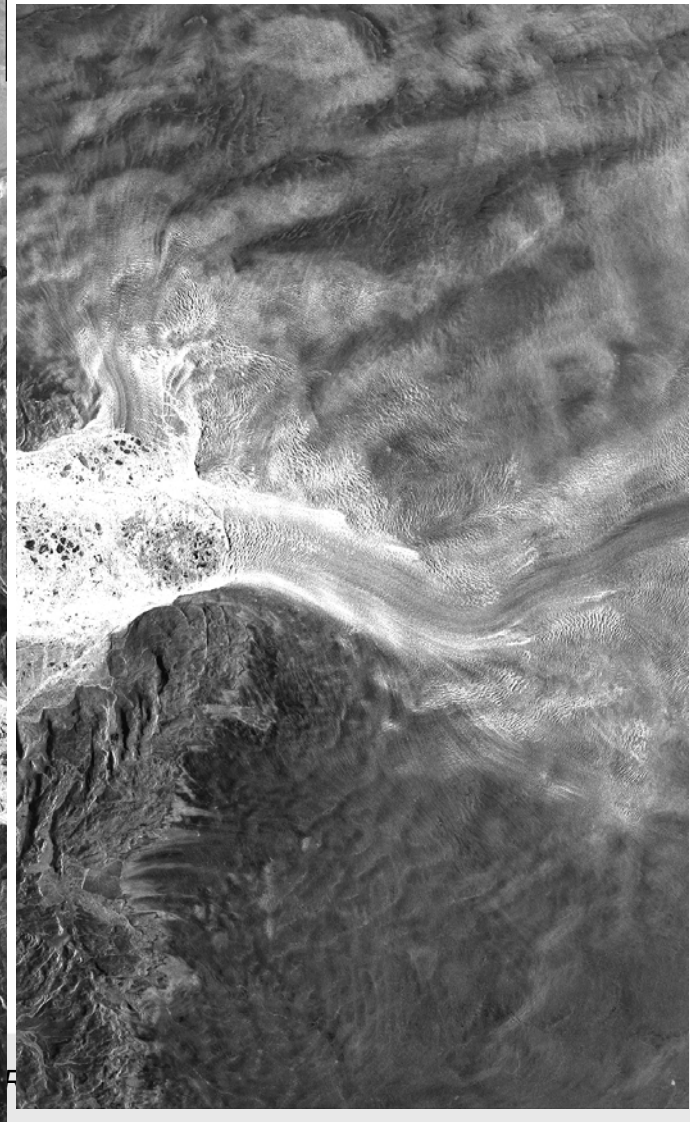
Kangerlussuaq: 3 pairs



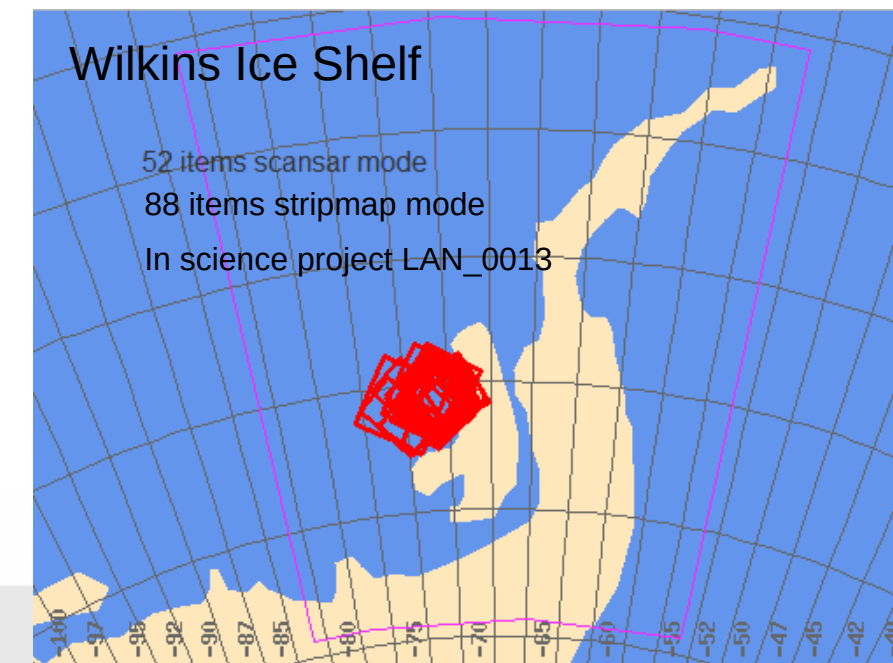
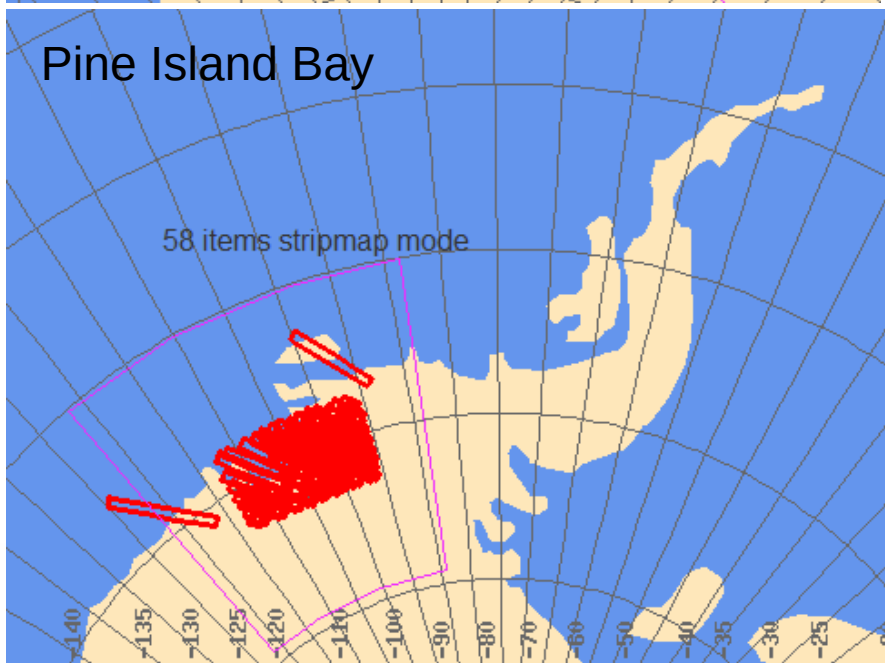
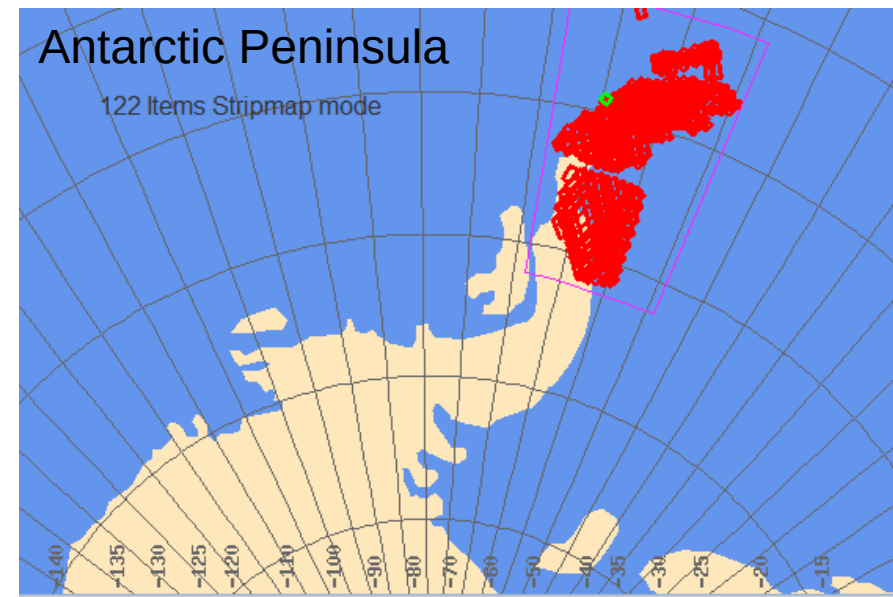
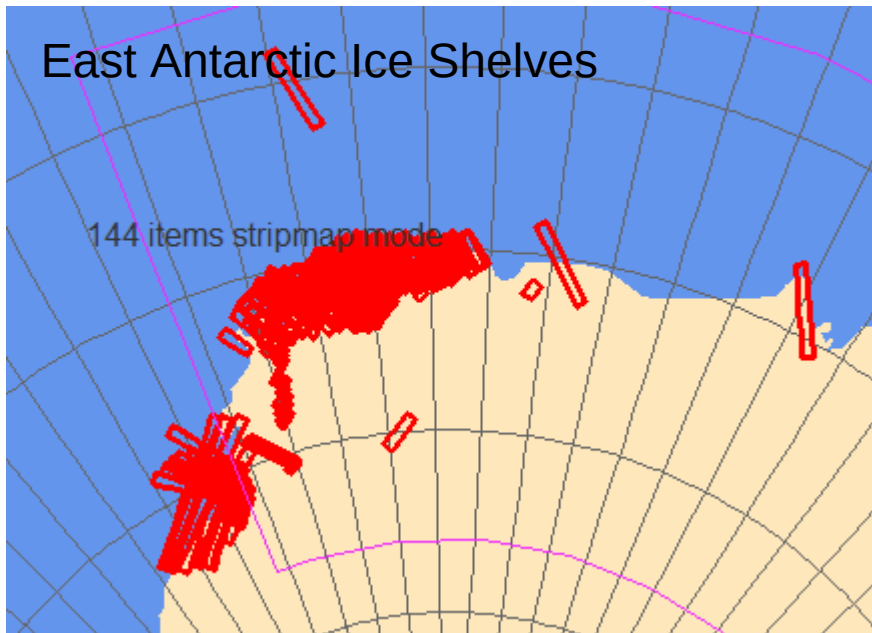
Helheim: 2 pairs, 3rd ongoing



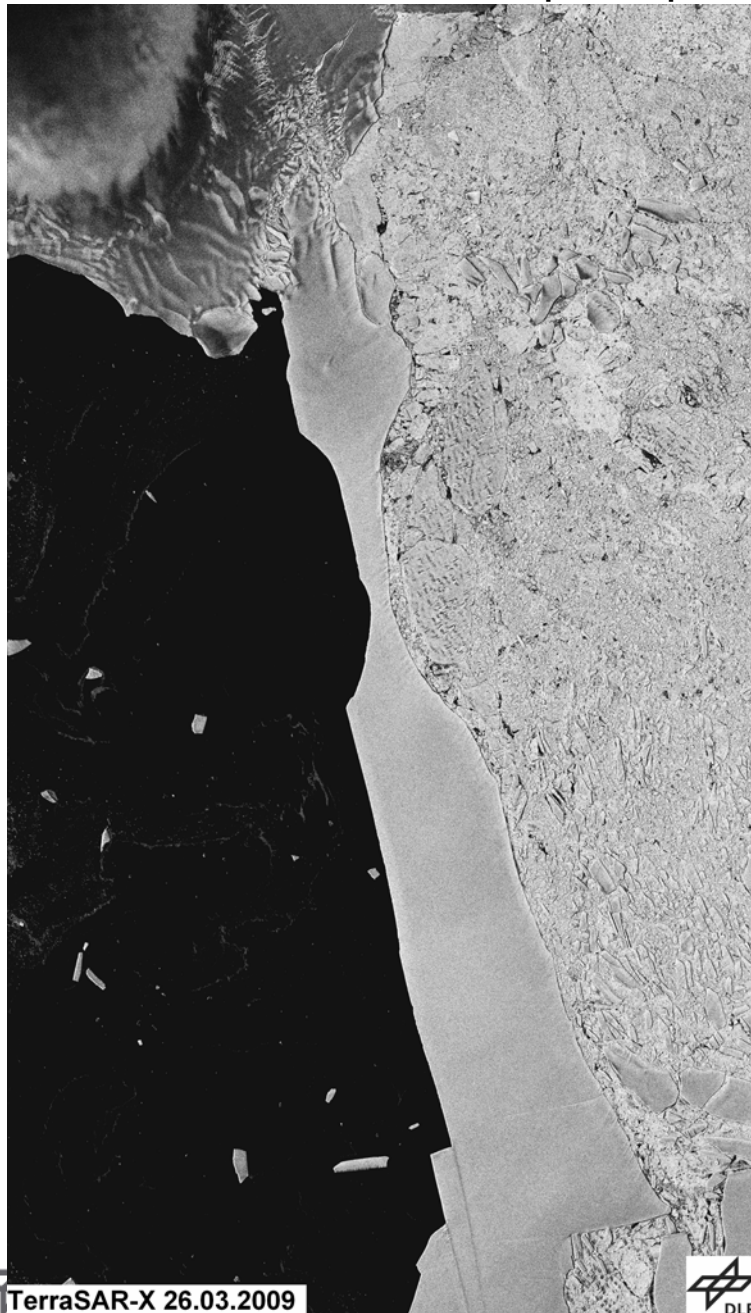
Jakobshavn: 7 pairs



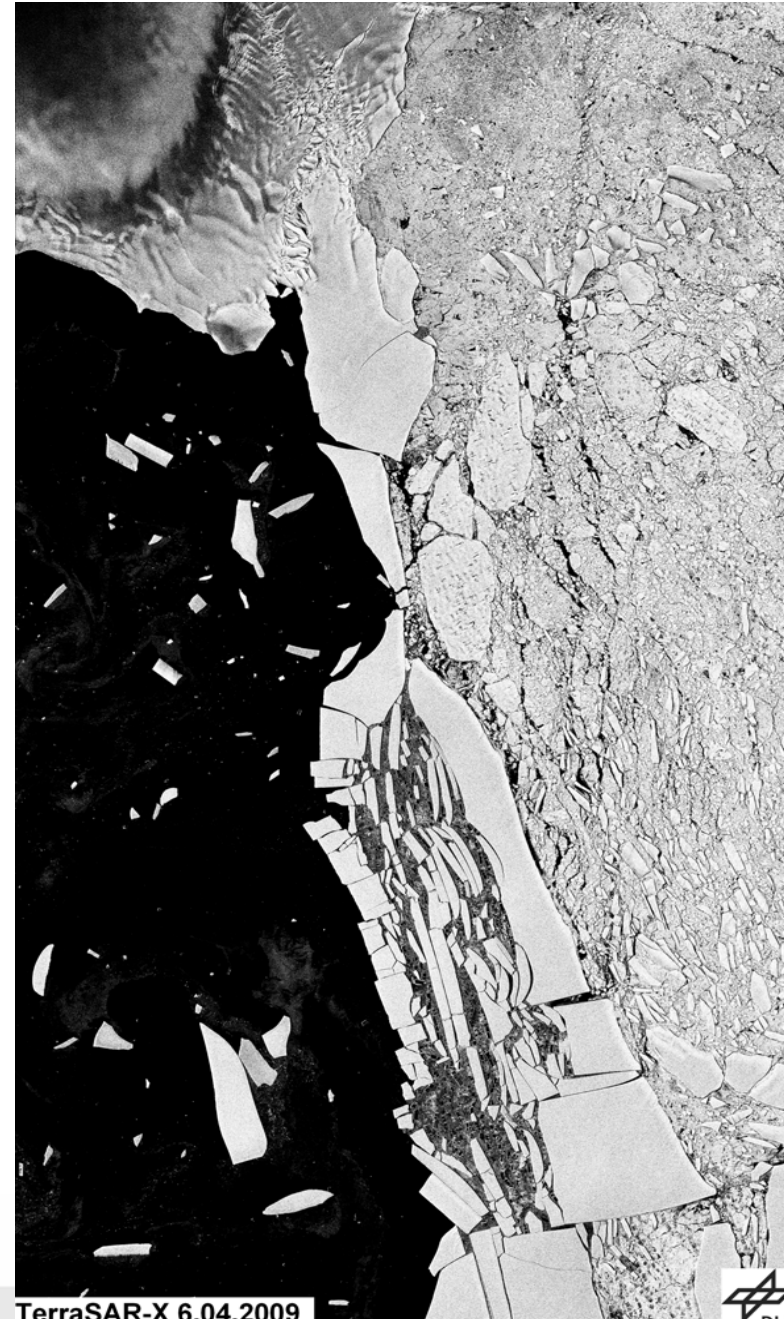
(3) TerraSAR-X background mission “Antarctic Peninsula & Antarctic Ice Shelves”



Wilkins Ice shelf collapse April 2009



TerraSAR-X 26.03.2009
DLR für Luft- und Raumfahrt e.V.
in der Helmholtz-Gemeinschaft



TerraSAR-X 6.04.2009



IPY STG SAR-3 Meeting, Esrin, Frascati 23/24 June 2009

Ongoing and future activities at DLR:



1. Update TerraSAR-X Digital Elevation Model (DEM) database

The replacement of the GLOBE DEM used to process TerraSAR-X data over Antarctica with the most accurate DEM based on IceSat and ERS-1 altimeter data recently derived by J. Bamber et al (2008) is ongoing.

2. Participation at IGARSS09

4. Continuing with left looking acquisitions in the pole hole over Transantarctic Mts. Planning ongoing.

5. Acquisitions over Greenland will continue through December 2009

6. Ice velocity maps generation from TSX left looking data

Planning of left looking acquisitions in the pole hole over Transantarctic Mts – ongoing -> scheduled August - October 2009

