

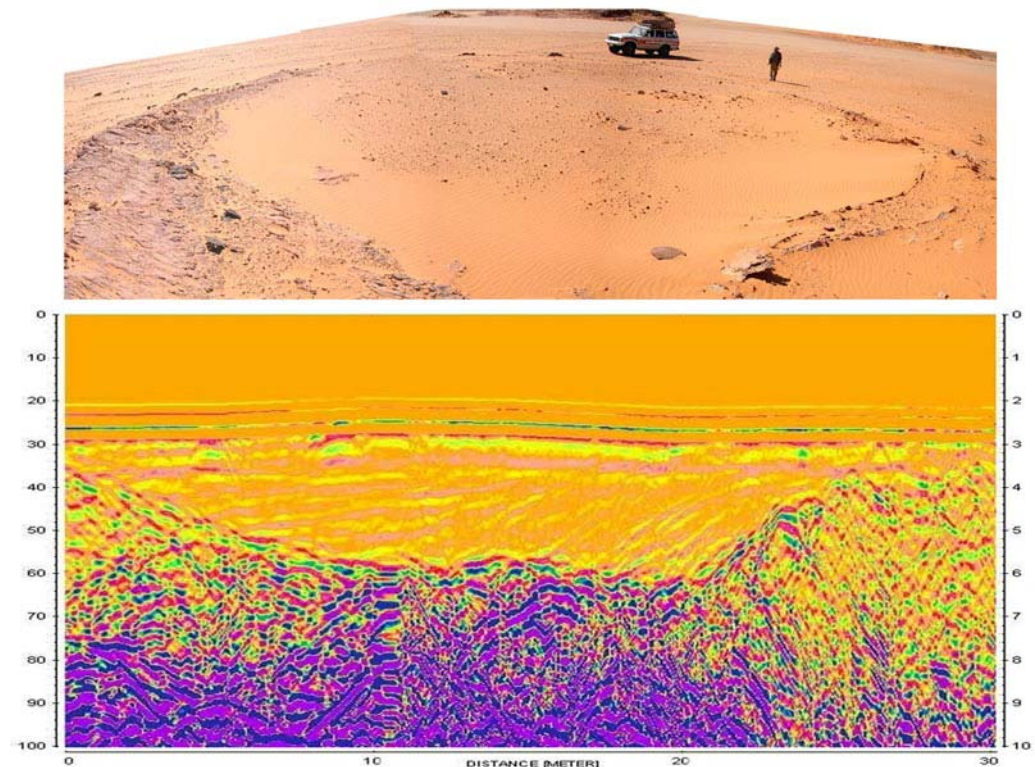
Desert & Water theme



Completion of Work from Phase 1: Desert & Water theme

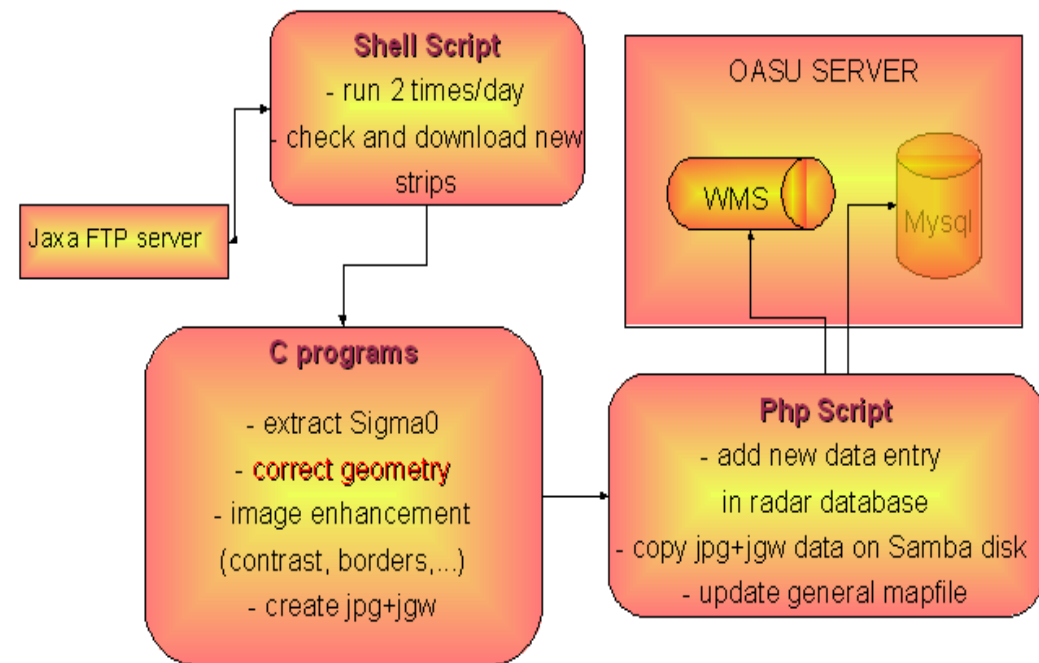
Subtask 1

- Collecting ground data during the course of the project and provide JAXA with the data, if requested.
- Completed. Fieldwork missions in Egypt in January 2006, February 2007 and September 2008. No ground data was requested by JAXA.



Subtask 2

- Developing methodology for generation of PALSAR image mosaics.
- Completed. We developed a processing chain to read, geocode, project and mosaic PALSAR strips, based on C-language code and Global Mapper interface.



Subtask 3

- Developing methodology for sub-surface geology mapping.
- Completed. We developed a simple HV/HH ratio analysis that enhances sub-surface features in SAR images (these features present a higher HV/HH ratio compared to surface structures).



Subtask 4

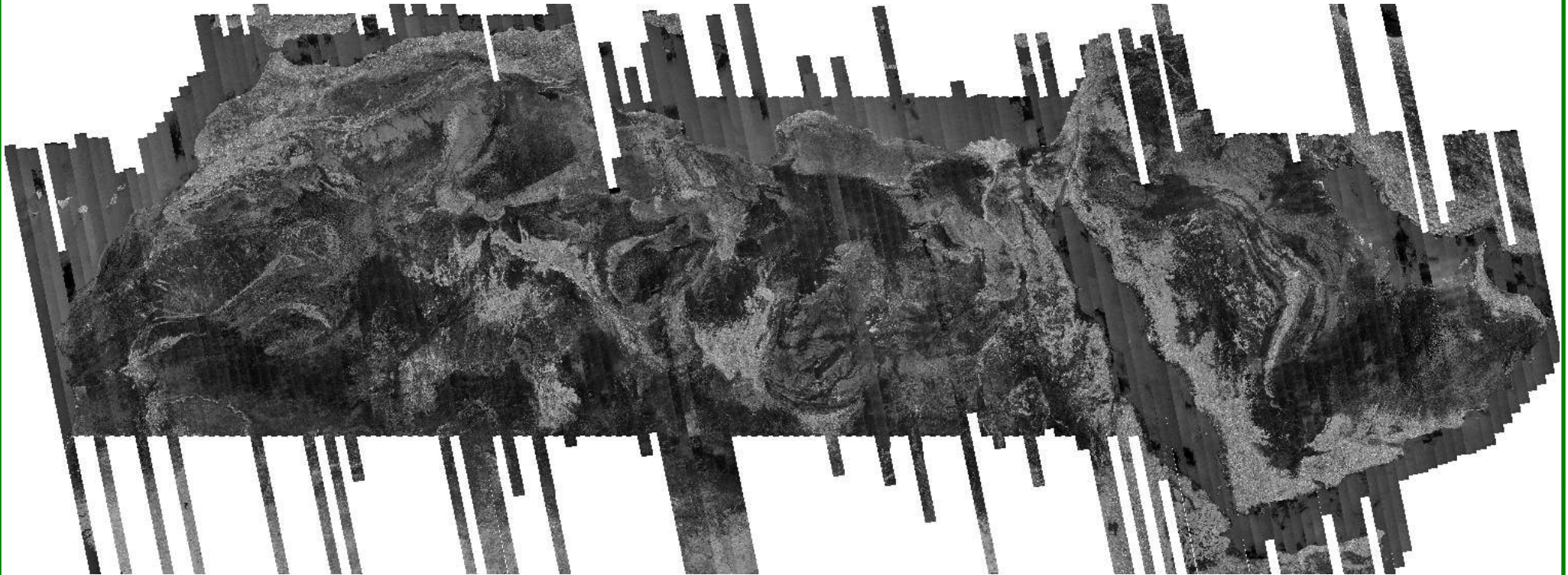
- Developing methodology for product validation and accuracy estimation.
- Not completed. We are still in the process of scientific analysis of PALSAR data. Product validation and accuracy estimation will be undertaken after scientific exploitation of data, i.e. end of 2009.

Subtask 5

- Generating PALSAR mosaics over the Prototype Area 1, sub-surface geology maps over Prototype Area 2, estimates of the corresponding product accuracies.
- Not completed. Agreement was taken with JRC (Ake ROSENQVIST) that they will produce the African continent (Prototype Area 1) PALSAR mosaic, while we shall produce the Sahara and Arabia (Prototype Area 2) PALSAR mosaic. The later task is completed, although a couple of PALSAR strips are still missing. Regarding product accuracy estimation, see previous subtask.

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Missing strips

- RSP601 from 29°N to 38°N.
- RSP600 from 30°N to 38°N.
- RSP550 from 29°N to 38°N.

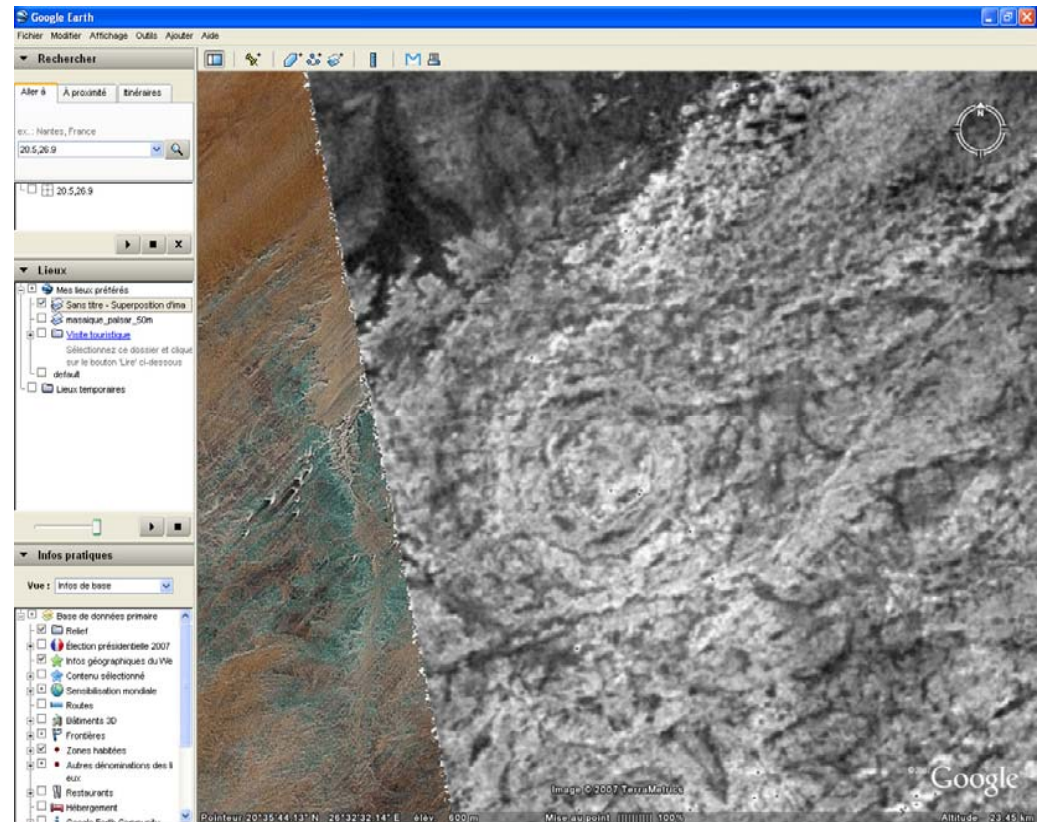
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Subtask 6

- Delivering all the products generated within this cooperation to JAXA, including a report describing the methodologies and validation procedures employed.
- Not completed. All products generated for Prototype Area 2 are however available in the form of 1x1 degree image files (cf. SRTM format) that can be sent on DVD support under JAXA request. The report will be delivered by the end of March 2009.

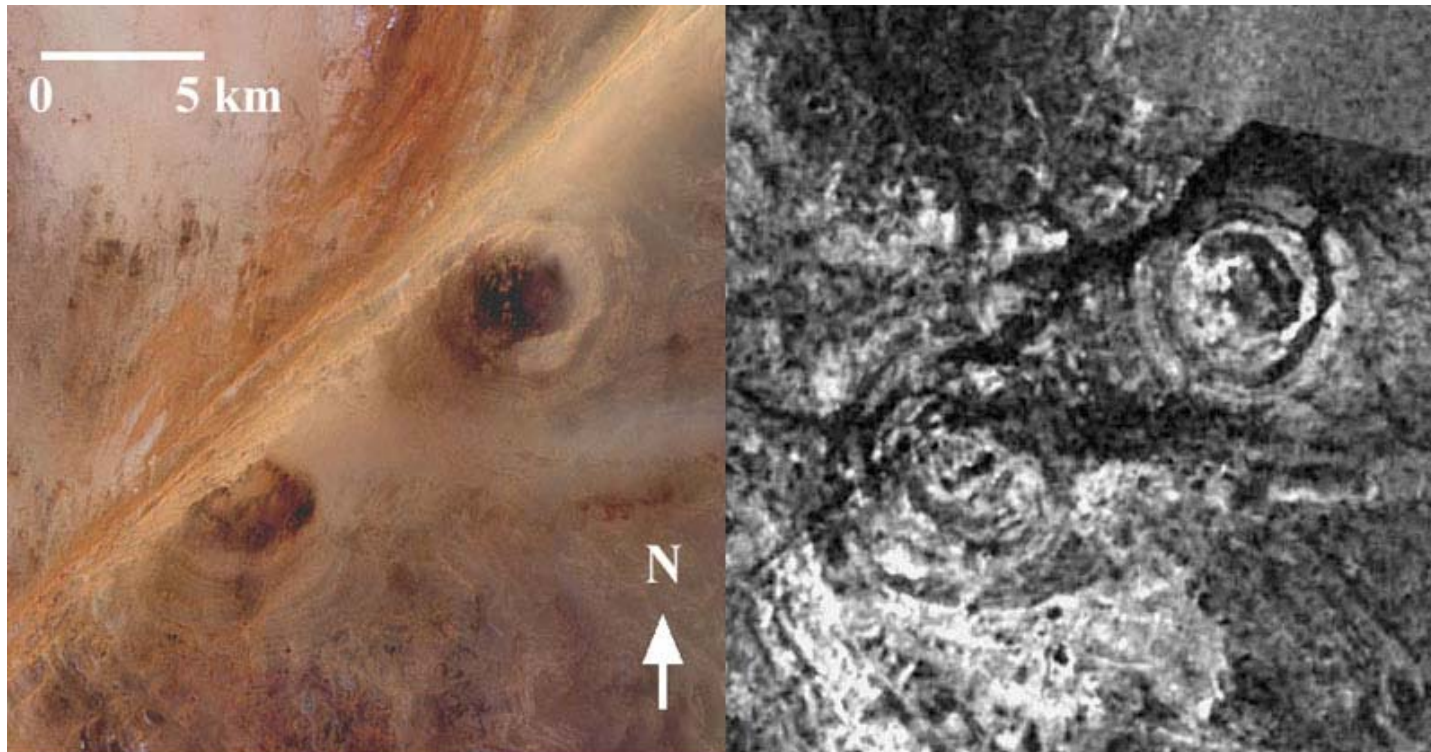
Subtask 7

- Making a subset of such products available on the internet.
- Completed. All products generated for Prototype Area 2 are available through a WMS (Web Map Server) located at our institute, allowing to display PALSAR maps ontop of the Google Earth interface.



Subtask 8

- Scientific exploitation of products generated for Prototype Area 2.
- Not completed. We nevertheless already produced some relevant scientific results: discovery of a double impact crater in south-east Libya, discovery of a vast crater field in south-west Egypt, mapping of a major paleo-river in east Libya. Considering 1) the size of the studied area (whole Sahara and Arabia), 2) the richness of the sub-surface geology revealed by PALSAR and 3) the difficulty to access such remote areas for fieldwork validation, several years will still be needed in order to fully exploit the generated products.



A double impact crater in southeast Libya

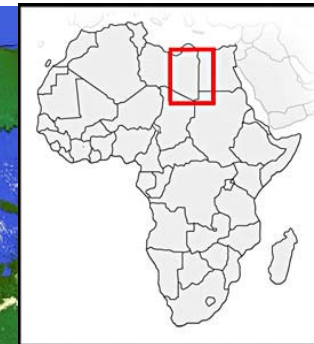
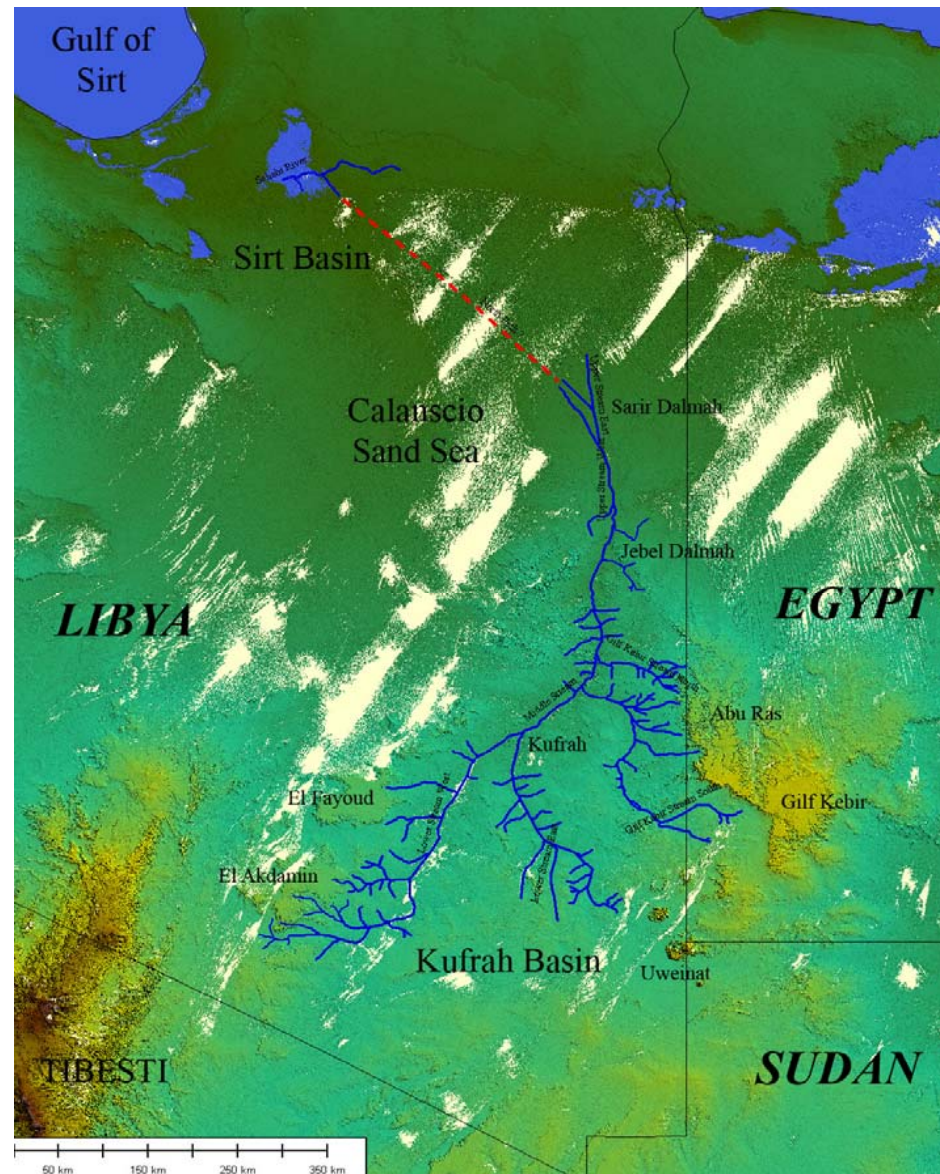
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A vast crater field in southern Egypt

**A 1200km long
paleo-river in
east Libya !
(EPSL jan. 2009)**



Subtask 9

- Participating in project science meetings organized by JAXA.
- Completed !



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Domo aligato gozaimass JAXA !

Extension Phase Proposal: Desert & Water theme *(giving up change detection proposed in Phase 1)*

Project title

- Mapping sub-surface geology in central Asia.

Project objectives

- Use of PALSAR L-band data to map sub-surface geology in arid regions of northern China: Sinkiang and Badain Jaran deserts.

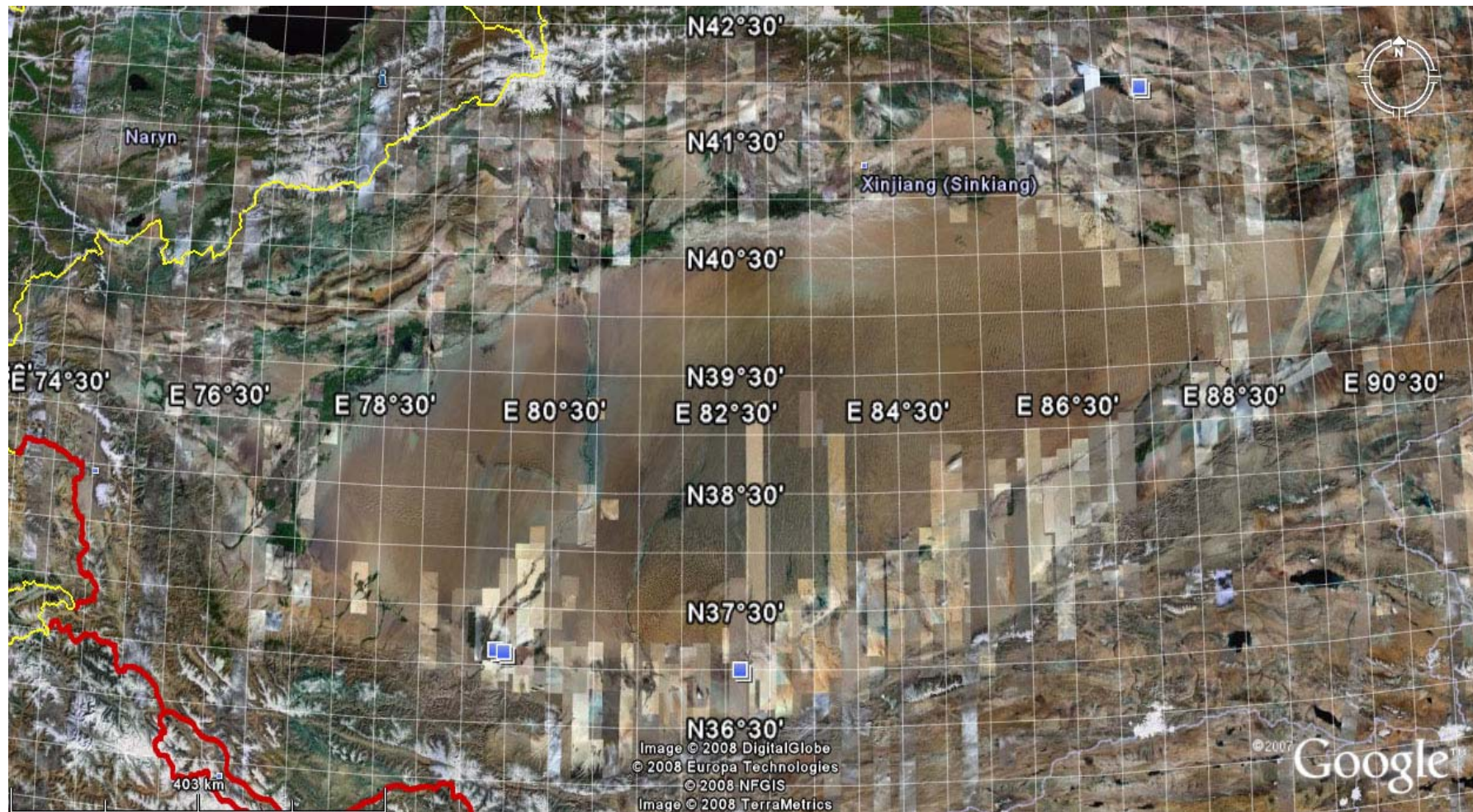
Project area

- Sinkiang desert
- Badain Jaran desert



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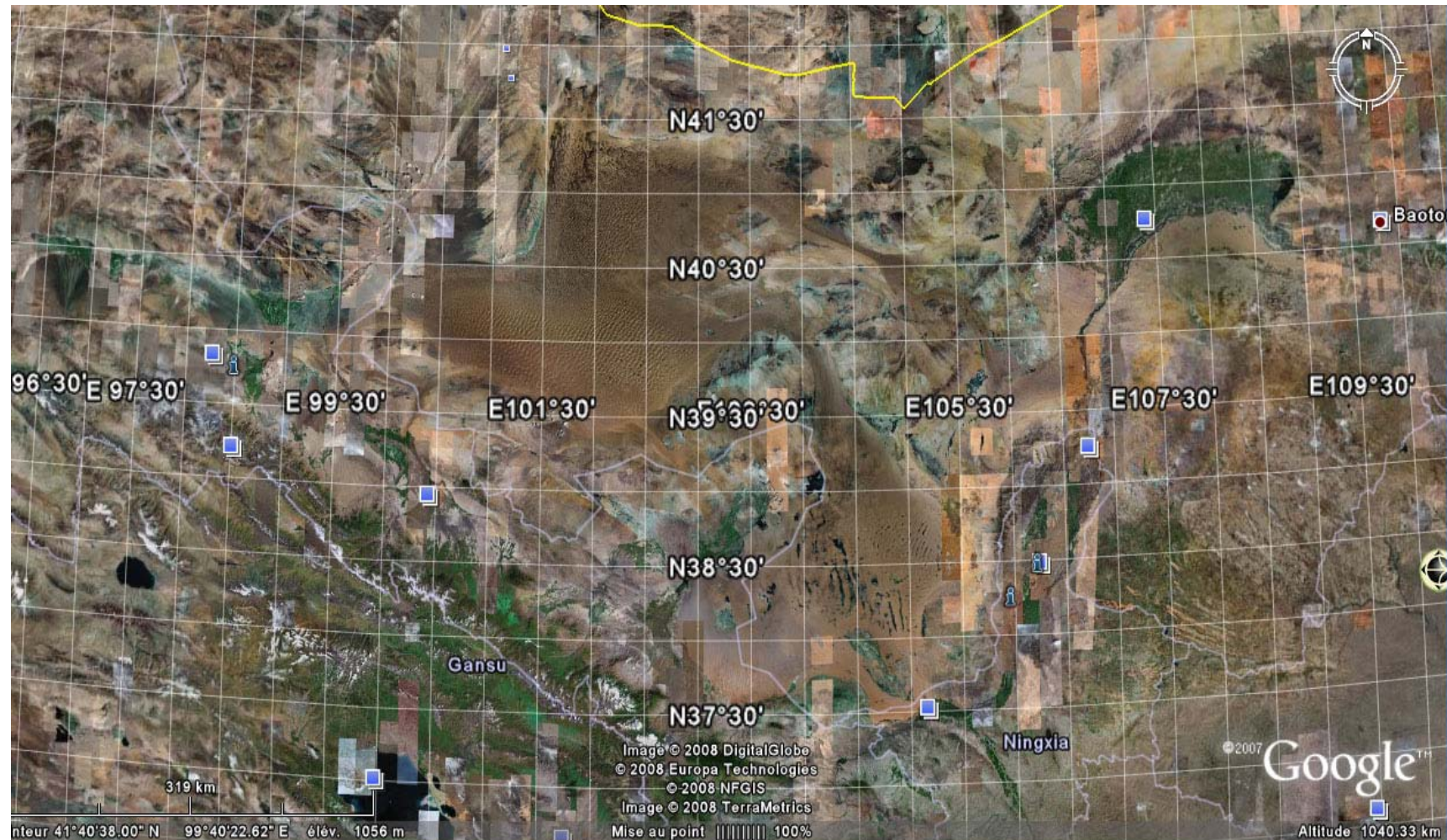
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Sinkiang desert: 36°N to 42°N, 76°E to 90°E, 900 x 400 km.

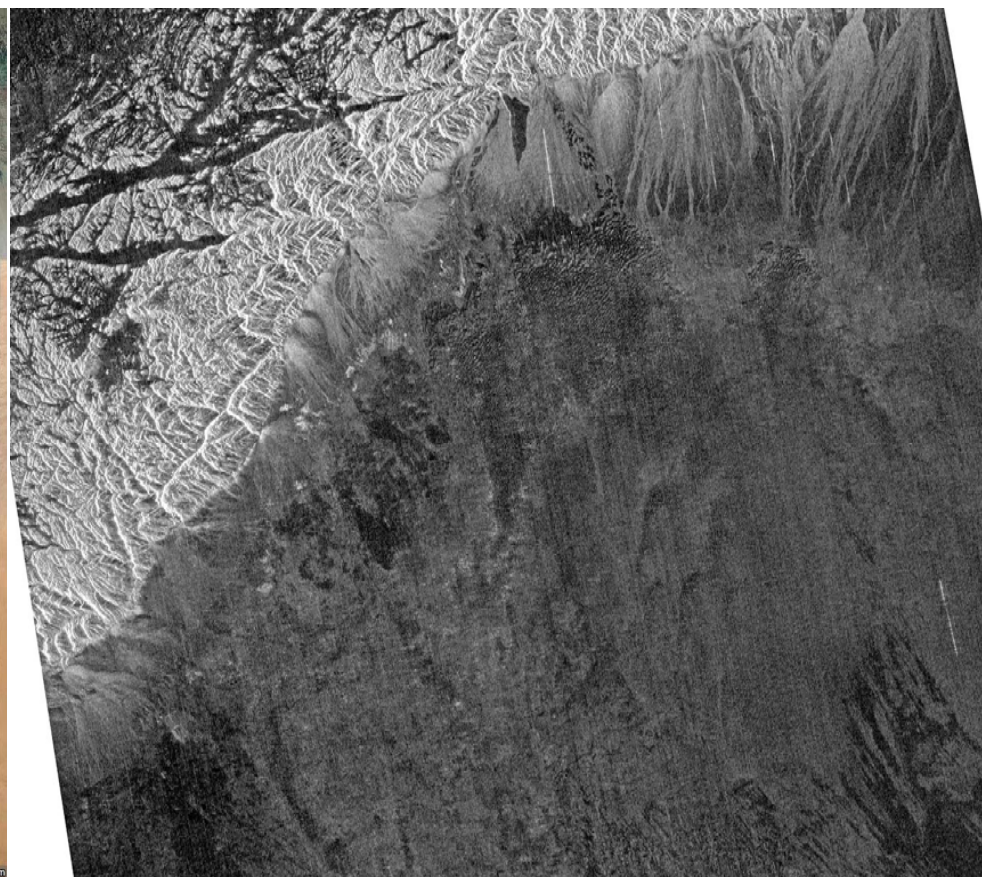
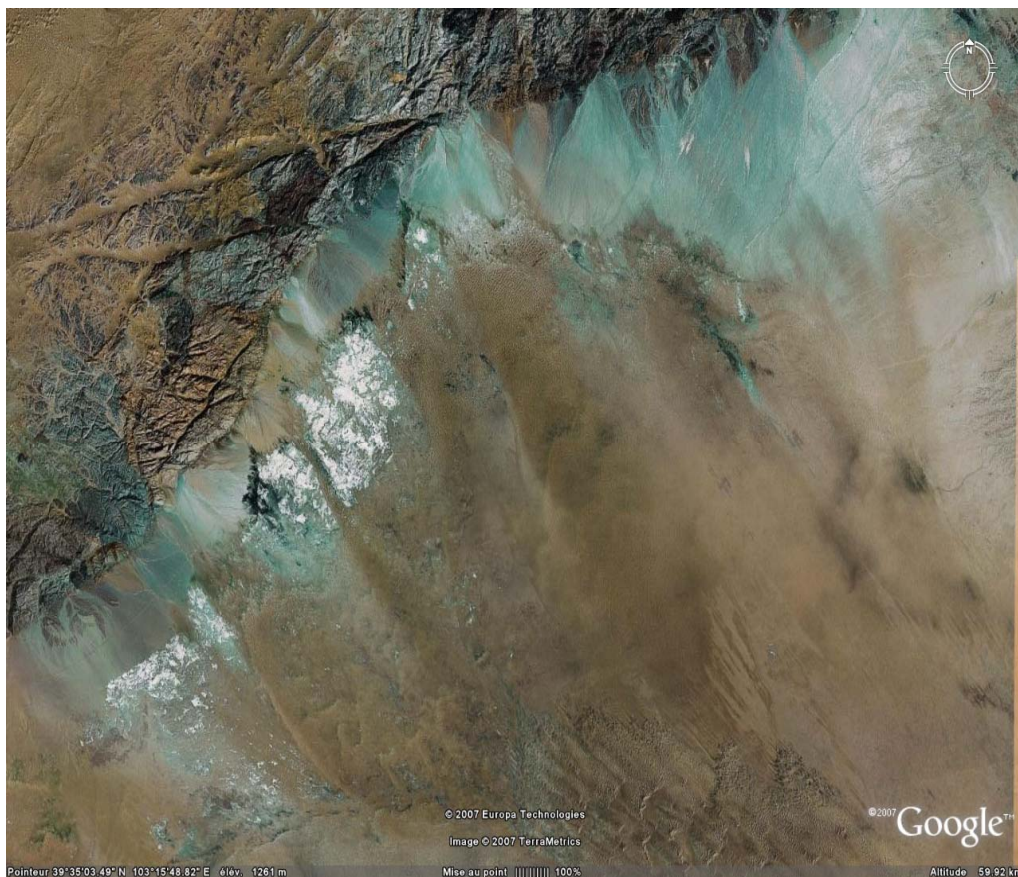
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Badain Jaran desert: 37°N to 42°N, 99°E to 107°E, 500 x 500 km.

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Project plan

- PALSAR acquisitions over two large arid regions in northern China, in order to map sub-surface geology (mainly paleo-drainage channels) and help study climatic changes during the Quaternary. Cooperation with the Chinese Academy of Science (Xiaoping YANG).

Project schedule

- PALSAR acquisitions over the Sinkiang and Badain Jaran deserts (cycle 20, June 2008); PALSAR data delivery mid of 2009; data processing, mosaicking, analysis and fieldwork end 2009 – 2010; final results end of 2010.

Project deliverables

- Sub-surface geology map of Sinkiang and Badain Jaran deserts, fieldwork validation.

Data requirements

- Dual-pol PALSAR 50m strips for global coverage of the two areas. Cycle 20 (June 2008), 48 RSP over A9 and A10 regions (427 scenes, only 6° in latitude).
- Single-pol, dual-pol and full-pol PALSAR 12.5m scenes over selected areas for detailed mapping and temporal changes monitoring (cycles 8,9,12,13,14,16,17,19,20,24,25,28,29,30).
Need for more than 50 allocated scenes / year.
- Some PRISM scenes for optical counterpart.

Other issues

- Cooperation (other than data providing) with JAXA people and K&C team is very welcome (PhD, post-doc, senior).

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