



→ **POLINSAR 2013**

The 6th International Workshop on Science and Applications of SAR Polarimetry and Polarimetric Interferometry

Summary Report for PolInSAR Session Forest

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Forest Session



- What comes after forest height / DTM ? What is the next generation of Pol-InSAR products:
 - **Vertical Structure:** Do we understand what we ‘see’ ? Do we have the required validation approaches / data bases for the new products?
 - Forest gaps and gap dynamics;
 - Biomass ??? Height is not enough ... what else.
- Temporal decorrelation the key limitation factor in the implementation of traditional tomographic techniques: We need to understand better the mechanisms behind.
- Coherence Tomography (based on Single-pass interferograms) is a very promising way to avoid temporal / propagation disturbances;
- The interpretation of SAR tomograms is not established:
- Structure Validation Protocol > 3D ground measurements is required for future tomographic experiments;
- Is there a requirement of EM Modelling improvement (Thuy)?

Forest Session



- Time Series of PolSAR / Pol-InSAR Data:
 - There is no established way today how to process time series of Pol-InSAR Data;
 - Strong recommendation for the realisation of Quad-pol Temporal data sets with the appropriate reference measurements
 - > Third party mission(s) & campaigns: Requirement on temporal series?
- What is the optimum way to process a reduced set (~3) of Pol-InSAR baselines?

Forest Session



- What is the robustness of the forest parameter techniques with respect to spatial variation of the forest characteristics ? (resolution – spatial variation). What are the available tools for an accuracy estimation?
 - Statistical analysis may be helpful for assessing validity
 - Data fusion (in terms of Frequency (Optical), Statistical Parameters as texture, Radiometry) may increase stability / performance of Pol-InSAR Algorithms.

Forest Session



- Pol-InSAR Acquisition design:

- How many baselines are needed: 1, 2, 3 or more?

Depends on:

- Forest height range to be covered;
- The variation of kz in the swath;
- Level of Temporal Decorrelation in the Data;

- Optimisation of geometry: Vertical vs Horizontal baselines?

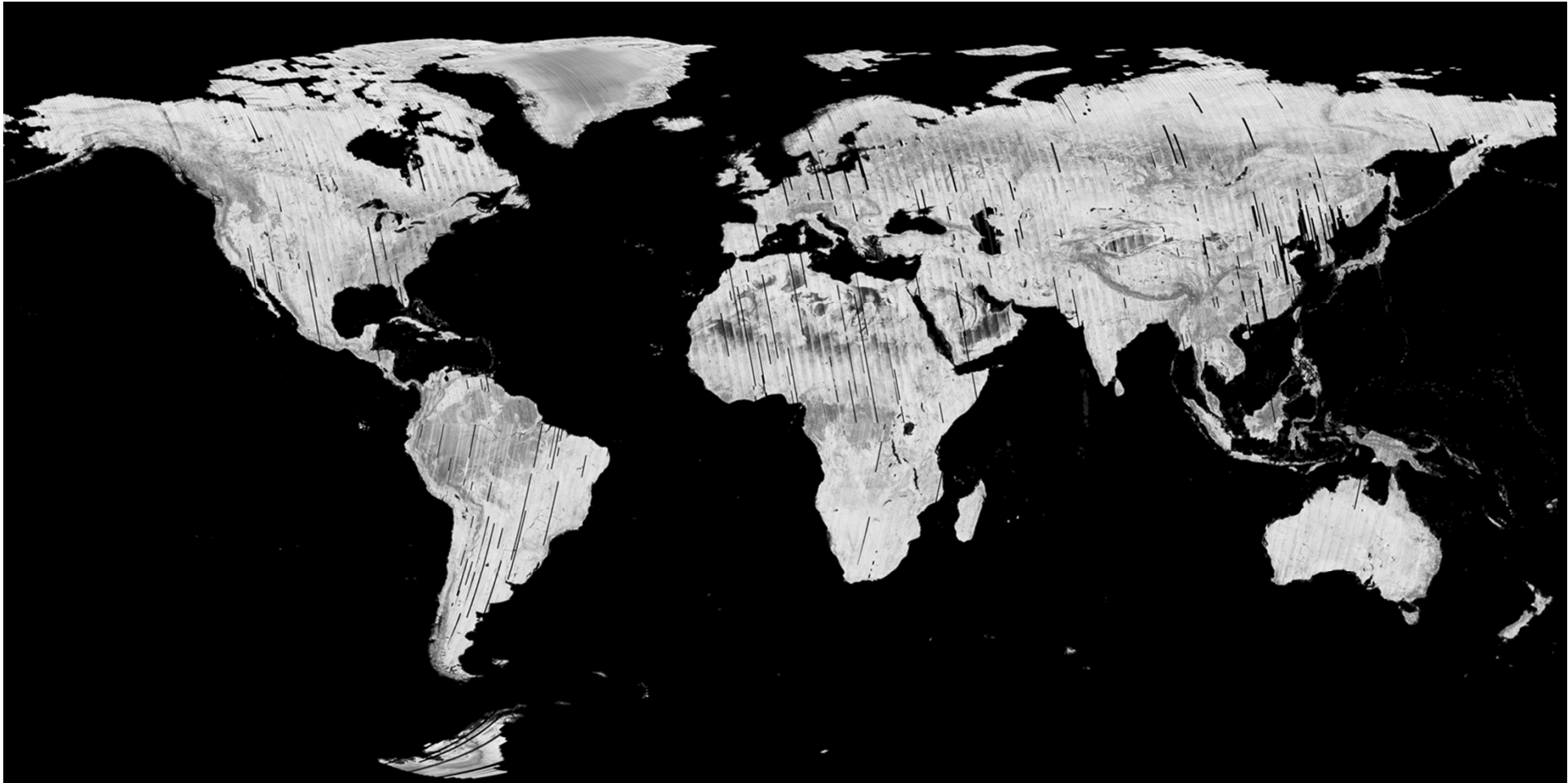
Depends on:

- the total number of baselines to be realised;
- the objective of the experiment;
- Large(r) vertical baselines may be limited by flight regulations (i.e. may require operation at multiple flight levels).

Forest Session



Fact: There is a need of an ESA Pol-InSAR mission !



TANDEM 

By DLR-HR-STL

500x500 m² resolution

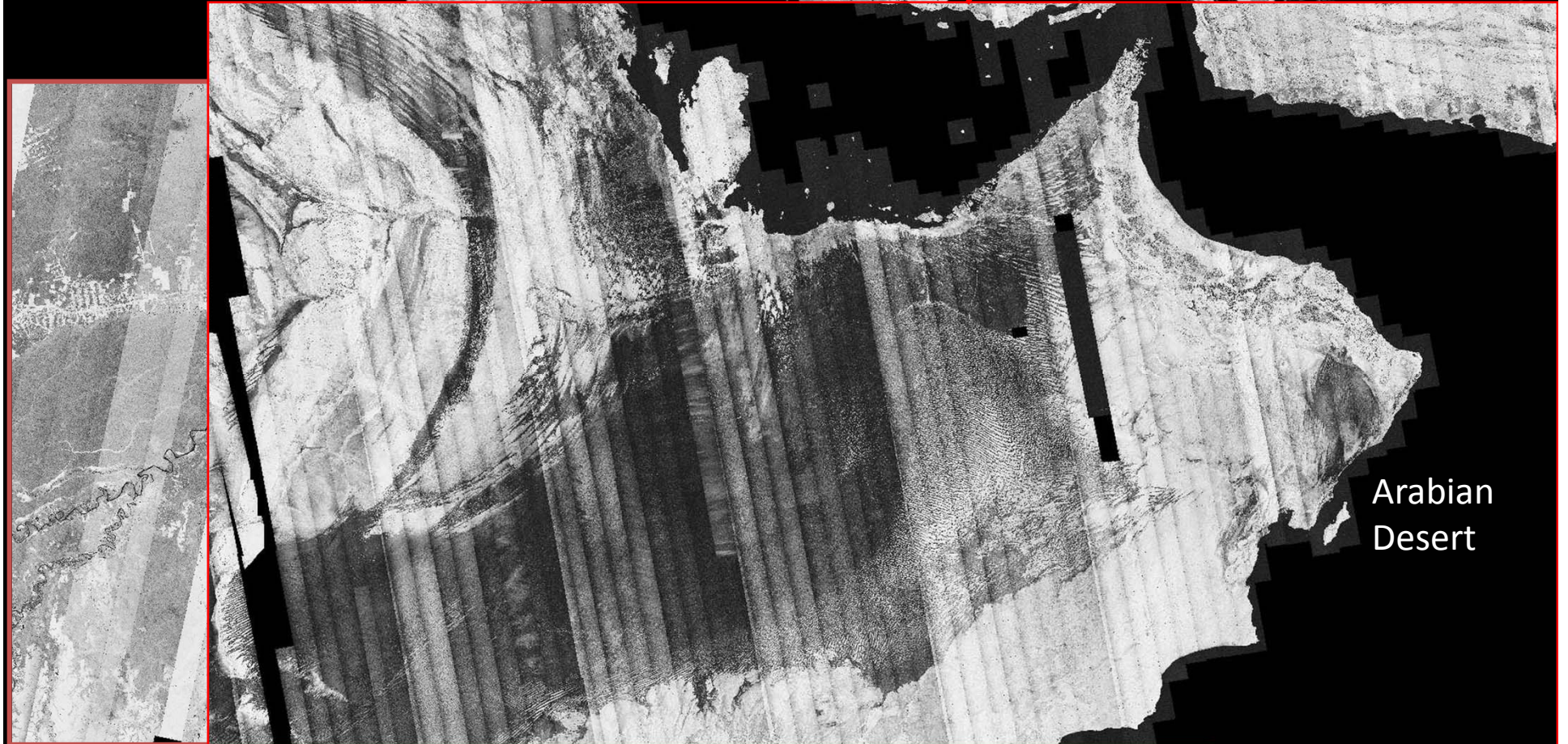
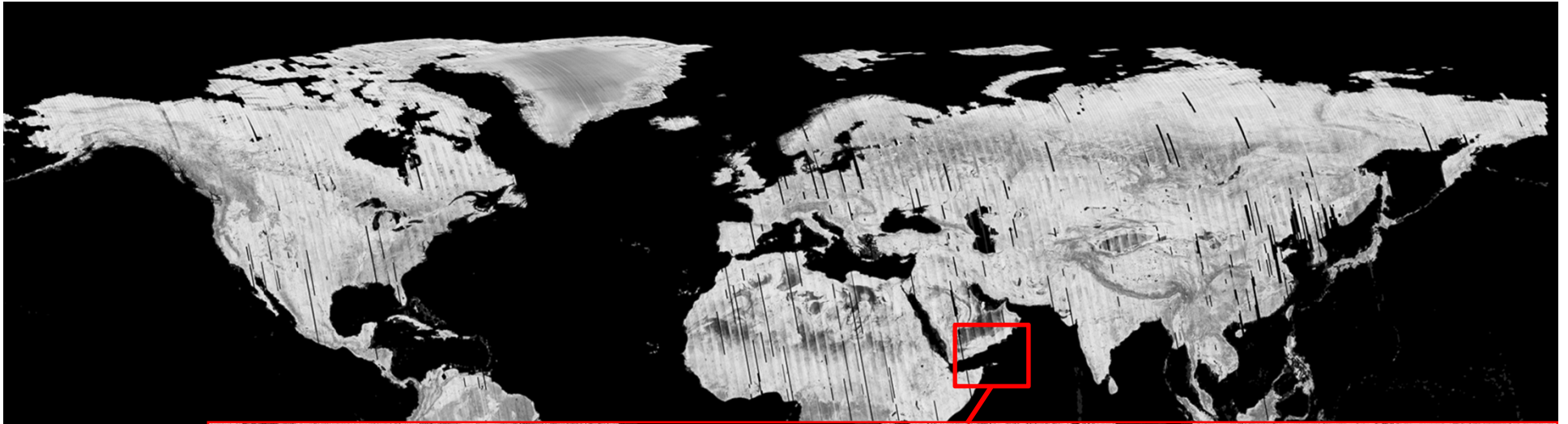


Clear cuts over
Amazonas



By DLR-HR-STL

500x500 m² resolution



Arabian
Desert