Polarimetric SAR Interferometry (Pol-InSAR): Forest

Seed questions

Forest Session

- Interpretation of the impact of seasonal effets (leaves on–leaves off / freeze–thaw) on (especially high frequency as X-band / C-band) Pol-InSAR data? Are there potential new Pol-InSAR applications / products ?

- We have (and in future even more) systems able to track dynamic/seasonal vegetation effects. Do we have the appropriate models to extract and interpret this information?

- What is the robustness of the forest parameter techniques with respect to spatial variation of the forest characteristics ? (resolution – spatial variation)

Forest Session

- Pol-InSAR Acqusition design:

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

    - Optimisation of geometry: Vertical vs Horizontal baselines?

- Error analysis

    - What are the available tools for an accuracy estimation? (End to end estimation)

- What comes after forest height ? What are potential future forest Pol-InSAR products:

    - Vertical Structure: Do we understand what we 'see' ?

    - Biomass ??? Height is not enough ... what else.

    - Forest gaps and gap dynamics;

    - Structure: Do we have the required validation approaches / data bases for the new products?

- Do we understand the effect of frequency on Pol-InSAR? Is there an optimum frequency for forest applications?

1. Temporal decorrelation remains a challenging issue for PolinSAR studies and some proposed missions. Recent work has help to characterize and mitigate its effects particularly at L-band and P-band. Is the there still need for additional controlled experiments? If yes, what would these be?

2. Forest structure/elevation measurements still remains a key focus of polarimetric-interferometry. Is the robustness of these techniques fully characterized between full polarizations and compact polarization modes of operation? If not what remains to complete this characterizations so that this trade space can be dealt with in quantitative fashion?

3. Community tools like POLSARPRO have played an integral role in helping new and old researchers develop facility with polarimetric interferometry. What major enhancements would most benefit the community both from a data processing and modeling perspective (answers should encompass tomography and multi-baseline interferometry)?

4. What are the major gaps in data, airborne and spaceborne, that are limiting continued progress?