

→ POLINSAR 2013

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Seed Questions for Polarimetry and Tomography

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1. Estimation performance

The forest vertical structure can be **imaged** using several baselines or **estimated** using a few, with all intermediate possibilities in between.

To what extent the performance of current estimation algorithms operating with few baselines can be compared to multibaseline imaging (for example, forest height estimation is OK with 1 or two baselines, but what about radiometric accuracy, robustness to temporal decorrelation, other....) ?

2. Temporal decorrelation

Temporal decorrelation is crucial in repeat-pass scenarios (spaceborne).

Multiple baselines and physical modeling can be employed to counteract its effects for the retrieval of physical parameters.

In terms of theoretical developments, validation from real data, info about volume statistics, campaign requirements, etc. etc. what is now needed to make these methods established tools in forest analysis ?

3. Polarimetric modeling

For estimation purposes, a lot of physical modeling has been done about forest vertical structure, whereas ground and volume polarimetric signatures are not so well considered. To what extent would forest structure estimation be improved if we pushed on polarimetric modeling?

4. General methodological applications of polarimetric SAR tomography

Various polarimetric techniques (applicable to air/spaceborne data sets) have been developed to separate **volume/non volume** contributions based on arbitrary, and often hardly verifiable hypothesis. Estimation of important features (underlying ground characteristics, types of trees, ...) is generally conditioned by the choice of a decomposition method.

On the other hand PolTomSAR offers unique **3-D polarimetric imaging** possibilities, requires specific campaigns, and could be used to validate working hypothesis for large scale POLSAR applications.

Should we favor this type of cross-validation? Should we define a working group, specific sites and campaigns?