

- *Polarimetric Decomposition Analysis of Sea Ice Data*
- *On the Interpretation of L- and P-Band PolSAR Signatures of Polithermal Glaciers*
- *Snow Property Extraction based on Polarimetry and Differential SAR Interferometry*
- *On Dual-Polarized SAR Measurements of the Ocean Surface*
- *Marine Bacteria Monitoring via Polarimetric SAR*

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

Seed questions - Application on ocean and cryosphere

1. *What applications within the fields of ocean and cryosphere justify polarimetry compared to less complex systems? What benefits can be obtained using polSAR data (scattering mechanisms, estimation of multiple parameters,)*
2. *How can cooperative missions benefit PolSAR applications (multiple sensors, multiple frequencies)? For which applications is combining of data beneficial? What are the strategies for data fusion?*
3. *Are there any major inadequacies with respect to e.g. frequency, polarisation, and repeat cycle that can be identified with the present and near future satellite SAR systems for operational applications within the fields of ocean and cryosphere?*
4. *Are the tools available today, i.e. decompositions methods, classification methods, filtering methods, etc. sufficient, or are there serious deficiencies for the applications within the fields of ocean and cryosphere?*
5. *Are there any operational benefits of polarimetry? How much has been done? How much is still to do?*
6. How can data availability can match the requirements of real time services?

The benefit of polarimetric SARs with respect to single-pol SARs is clear for its unique capability to extract, by proper modeling, relevant geophysical parameters. In some cases, such as wind field estimation, tropical cyclone tracking, ice monitoring, oil slick monitoring, coastal monitoring, the benefit of polSAR has been proved by scientific results.

In order to have full benefit of full polarimetric SAR measurements it is mandatory that sensors ensure a good SNR, especially for HV measurements and for some applications. For example this is particularly true for oil slick monitoring and wind field estimation.

Sea Ice and continental ice classification is greatly enhanced by polarimetric SAR measurements as witnessed by several scientific papers and by the COREH20 EE7 mission proposal. This is for example witnessed by Ice Service in Canada which is one of the primary users of polarimetric RADARSAT-2 data.

Although in the long term, it is desirable to have more polarimetric SAR missions, at the present state-of-art the scientific community agrees that virtual constellation combining different frequency and polarimetric modes can be of scientific and operational interest.

The scientific community agrees that full polarimetric SAR measurements contain more information to be extracted and are suitable to several applications.

The scientific community welcomes the forthcoming polarimetric SAR missions, and their application to ocean and cryosphere, such as CosmoSkyMed second generation, TerraSAR second generation, ALOS-Palsar 2, RCM constellation, RISAT-1 and the Chinese SAR constellation.

Moving to operational outcomes it is desirable to enhance the swath coverage, i.e. revisit time (particularly critical when dynamic physical processes must be monitored) by using the most appropriate technology.