POLinSAR 2009 Sorted Recommendations

Categories

- New Studies
- Campaigns, coordination and super-sites
- Products, Sensors and Missions

Sessions

- Pol-InSAR Missions
- Cal/Val
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- Tomography
- Forests (POLSAR/Pol-InSAR Forestry)
- Urban Applications
- Compact/Hybrid Polarimetry
- Soil Moisture
- Cryosphere/Oceans
- Agriculture/Wetlands

Recommendations related to: New Studies

No	Recommendation	From Session	Comments
1	Identify robust applications that could support reliable service provision.	Pol-InSAR Missions	
2	Study of time-series of quad-pol data.	POLSAR Forestry	
3	Study the impact of frequency on the information content of POLSAR data	POLSAR Forestry	
4	Studies in vertical forest structure retrieval are needed including development and validation of the inversion methodology.	Pol-InSAR Forestry	
5	Study ice with low-frequency Pol-InSAR in order to gain better understanding of the surface/volume scattering balance.	Pol-InSAR; Cryosphere/Oceans	
6	Develop vertical structure estimation techniques using multi-baseline Pol-InSAR.	Pol-InSAR	
7	Exploit and study fully polarimetric techniques and sensors for urban applications.	Urban Applications	
8	Establish a theoretical unified basis for Compact Polarimetry Pol-InSAR, in the same	Compact/Hybrid Polarimetry	

No	Recommendation	From Session	Comments
	fashion as the founding basis for (quad-pol) Pol-InSAR		
9	Conduct system-engineering level analyses of Compact Polarimetry issues (e.g., required dynamic range, strengths and weaknesses of self-calibration, cross-talk, ambiguity levels vis-à-vis H&V quad-pol, etc.).	Compact/Hybrid Polarimetry	
10	Conduct a quantitative study of the influence of the different POLSAR decompositions used to estimate soil properties.	Soil Moisture	
11	Carry on further Pol-InSAR studies for surface/volume component separation and analysis in order to establish sensor/accuracy requirements.	Soil Moisture	
12	Further develop physical scattering models for ice.	Cryosphere/Oceans	
13	Scatterometer data or/and EMSL/JRC controlled laboratory data should be used for model validation.	Agriculture/Wetlands	
14	Strong need for further development in modelling in terms of: • Local incidence angle variation; • Combination of different wavelengths; • Polarimetry and Pol-InSAR; • Different polarimetric decompositions; • Vegetation structural changes in time; • Validation of EM models.	Agriculture/Wetlands	
15	Bi-static observations should be investigated.	Agriculture/Wetlands	
16	Vertical forest structure and terrain reflectivity under vegetated canopies should be studied.	Tomography	
17	Inversion methodologies should be developed and validated	Tomography	
18	Exploring tomography and its transition to Pol-InSAR is strongly recommended.	Tomography, Pol-InSAR Forestry	

Recommendations related to: Campaigns, coordination and super-sites

No	Recommendation	From Session	Comments
19	Establish super-test sites for all existing sensors	POLSAR Forestry	
20	Objective quantitative comparisons of Compact/Hybrid polarimetric modes and full polarimetry for all super-sites should be done	Compact/Hybrid Polarimetry	

No	Recommendation		Comments
	by multiple PIs.		
21	A larger number of research teams should be using the available ESA campaign data more extensively.	Soil Moisture	
22	Efforts should be made to allow a synchronization of acquisitions from different spaceborne sensors (inter-space agency coordination)	Soil Moisture	
23	It is recommended to support one or several ice super-sites and coordinate multi-frequency polarimetric SAR data collection and distribution to scientists.	Cryosphere/Oceans	
24	It is recommended to combine fully polarized Radarsat-2 data with ALOS L-band data.	Cryosphere/Oceans	
25	Continuous and systematic polarimetric SAR data acquisitions at X-, C-, & L-bands using TerraSAR-X, Radarsat-2 and ALOS are urgently needed.	Agriculture/Wetlands	
26	Need for continuous/systematic polarimetric SAR data acquisition @ X-,C-, & L-and P band using airborne SARs	Agriculture/Wetlands	
27	The potential of polarimetric SAR at different frequencies on selected super-sites using ALOS/PALSAR, RadarSAT-2, TerraSAR-X needs to be demonstrated.	Agriculture/Wetlands	

Recommendations related to: Products, Sensors and Missions

No	Recommendation	From Session	Comments
28	All future SAR missions should include polarimetric operational modes.	Pol-InSAR Missions	
29	Study the feasibility of fully or hybrid/compact polarimetric operational modes for systems currently designed for single or dual polarisation (e.g. Sentinel-1 and RADARSAT Constellation Mission).	Pol-InSAR Missions	
30	Implement experimental quad-/compact-pol modes in future SAR missions	POLSAR Forestry	
31	Study the potential of TanDEM-X for forestry and agricultural applications.	Pol-InSAR Forestry, Pol-InSAR	
32	The spaceborne POLSAR sensors should operate at larger incidence angles in order to increase POLSAR retrieval efficiency in terms of sensitivity and diversity.	Soil Moisture	
33	A revisit time of 1 week should be guaranteed for efficient soil characterization.	Soil Moisture	

34	Exploit the experimental products from TerraSAR-X. HV-polarized data should be acquired in spotlight mode.	Cryosphere/Oceans	
35	Radarsat-II standard mode (24 m resolution) images are provided in 25x25 km frames to meet the severe requirement of a -30 dB noise floor. This requirement is very severe, and can/should be relaxed to -25 dB. There is an immediate need of the 50x50 km scene for better exploitation of polarimetric information with larger coverage.	Agriculture/Wetlands	
36	There is a need for improved high quality airborne test platforms: F-SAR (DLR) UAVSAR (JPL) multi-bands (P, L, C, X, Ku …) including S-Band	POLSAR	
37	Phase calibration requirements need to be addressed.	Tomography	
38	Exploration of the following issues is needed: • Addressing estimation requirements for different applications; • Assessment of the measurement/instrument/mission requirements.	Pol-InSAR Forestry	