



International GEO Workshop on Synthetic Aperture Radar (SAR) to Support Agricultural Monitoring

Workshop: 2 – 4 November 2009
Training Session (by invitation): 31 Oct – 1 Nov 2009

Kananaskis (near Calgary), Alberta, CANADA

Environmental and socio-economic pressures continue to place demands on agricultural production to meet regional and global food and food security needs. Given the importance of this topic, the Group on Earth Observations (GEO) identified the need for a comprehensive, systematic and accurate global agricultural monitoring system of systems and established a Global Agricultural Monitoring Task (AG-0703) to support this development.

A global agricultural monitoring system of systems would comprise mapping and monitoring of changes in the distribution of cropland area, monitoring of agricultural production to support reporting of national agricultural statistics and production forecasts, and effective early warning of famine. Earth observation satellites and *in situ* networks are a vital source of information to support this initiative.

Traditionally, Earth observation for agricultural monitoring has relied upon optical sensing systems but recent advances in synthetic aperture radars (SARs) provide new opportunities within this global agricultural monitoring framework, particularly in regions prone to persistent cloud cover. Agricultural monitoring enables governments and policy makers to understand the state and changes in the location, extent and characteristics of agricultural land use, land management practices, crop condition, crop yield, drought status and the impact of climate variability. Monitoring also supports forecasting to provide a predictive, forward looking perspective to support proactive policy and responsive programs, while efficiently enabling the transfer of discovery science to decision support.

The call for coordinated and sustained observations to support agricultural monitoring comes at an opportunistic time for radar. A new generation of SAR sensors includes RADARSAT-2, ALOS PALSAR, Cosmo-SkyMed, TerraSAR-X, RISAT-1, and Sentinel-1. Access to these multi-frequency, multi-polarization and polarimetric data sets ensures that SAR sensors will play an ever-increasing role in agricultural monitoring.

Workshop Objectives:

The Workshop will explore how information from SAR and SAR/optical sensors can be used to map agricultural land cover/land use and monitor changes, identify crops and estimate crop area, qualitatively and quantitatively assess crop condition and estimate soil properties such as soil moisture. Optical sensors on satellites provide essential observations for agriculture and thus the integration of SAR data with optical data is of particular interest.

The Workshop will also identify and communicate the information and operational needs of the agricultural user community to facilitate coordinated access to Earth observation data. In break-out sessions workshop participants will be asked to articulate these needs, with particular attention to the requirements for SAR data by the agricultural monitoring community. These sessions will address not only technical requirements with respect to SAR and integrated SAR/optical data, but also operational considerations within this community. Participants will be asked to identify impediments to the use of

SAR to support their needs, including data access and technical specifications, and to provide recommendations to facilitate use of SAR for agricultural monitoring.

Specific objectives of the workshop are to:

1. Increase understanding of the capabilities of SAR for agricultural monitoring;
2. Share best practices with respect to processing, analysis and modeling of SAR data for agricultural mapping and monitoring;
3. Increase awareness of software tools, applications and processes for the effective use of SAR for agricultural monitoring;
4. Build capacity within the agricultural user community to exploit SAR data, especially in developing countries; and
5. Initiate a dialogue to identify the needs of the agriculture monitoring community with SAR satellite operators and SAR application software developers.

Participants:

The Workshop is expected to attract up to 150 persons from the global agricultural monitoring user community. Also invited are experts and leaders in applied SAR agricultural applications development and SAR satellite operating organizations.

Organization:

The Workshop is coordinated by member departments of the Canadian Group on Earth Observations (CGEO) and the CGEO Secretariat, under the framework of the GEO Agricultural Monitoring Task (AG0703). An International Technical Committee is developing the agenda and program, identifying speakers and participants, and coordinating other agenda-related requirements.

Sponsors / Partners:



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Workshop Website: www.cgeo.gc.ca

Further Information: cgeo@ec.gc.ca

