

Séminaire jeudi le 6 novembre 2014 11:00h / Seminar Thursday November 6<sup>th</sup> 2014 11:00h

**Sujet/Subject : Spaceborne Synthetic Aperture Radar (SAR) Remote Sensing : Research Achievements and Ongoing Projects**

**Langue/language : Anglais / English**

**Conférencier/Lecturer: Ron McTaggart-Cowan (RPN)**

**Resumé/Abstract :**

Spaceborne Synthetic Aperture Radar (SAR) systems have been widely recognized as a major instrument for enhancing human ability to understand the environment and manage natural resources. It is a rapidly growing technology and one of the important spin-offs of space applications. Data from existing SAR missions, such as the Canadian RADARSAT-2, the Japanese ALOS-2 and the German TanDEM-X and TerraSAR-X satellites, can be used to address important issues in such areas as sea ice type mapping, soil moisture estimation, agriculture monitoring, land cover classification, oil spill detection, surface roughness estimation, etc. SAR systems are active remote sensing systems independent of weather and sun illumination, two factors which usually inhibit the use of optical satellite imagery. A SAR system can acquire single, dual, compact or fully polarized SAR imagery. A Compact Polarimetric (CP) SAR architecture will be included in the future Canadian RADARSAT Constellation Mission (RCM). Research achievements in terms of algorithms developments and investigation of potential SAR applications will be presented. Results of sea ice classification using fully and simulated RCM CP SAR parameters will be discussed. Input simulated data include RCM CP SAR parameters from three different RCM CP modes. In addition, the potential application of the upcoming RCM CP SAR data for wetland monitoring will be illustrated. Results of the capability of the RCM CP high resolution mode for change detection applications within wetlands will be shown. Snapshots on the status of ongoing SAR projects on soil moisture estimation, sea ice classification under different incidence angles and crop monitoring will be presented. The seminar highlights the promising results of the new RCM CP mode and the potential for operational use in many applications. In addition, the high capabilities of the fully polarimetric SAR systems are emphasized.