Coherence Normalization for Wetland Mapping using multiple SAR Systems.

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ABSTRACT

Mapping of wetlands is especially suited to SAR due to the sensitivity to water and penetration through low density vegetation. Wetland maps are important to hydrology, meteorology, ecology, and agronomy. The use of Coherence Change Detection for mapping wetlands can be improved by increasing the number of observations. One method to achieve this is to use multiple SAR systems such as RADARSAT-2, TerraSAR-X, PALSAR, and COSMO-SkyMed. The different platforms have different operating parameters including wavelength, polarization, spatial resolution, and revisit time. To combine the coherences from multiple platforms they need to be normalized. This is more difficult due to the low detail in land cover maps which do not separate wetland areas which have very different responses in SAR. The Peace Athabasca Delta (PAD), in north-east Alberta, will be used as a study site. The PAD is the largest boreal delta in the world and a UNESCO world heritage site with a diversity of wetland habitats. Combinations of acquisitions from single and multiple systems will be compared to model the effect of operating parameters. Differential coherence will be used to overcome the lack of sufficiently accurate land cover information. The goal of this project is to provide a temporally dense series of wetland maps which accurately capture the dynamic changes from water level changes.