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VALIDATION OF SPACEBORNE RADAR SURFACE WATER MAPPING WITH OPTICAL sUAS IMAGES

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Abstract. The Canada Centre for Remote Sensing (CCRS) has over 40 years of experience with airborne and spaceborne sensors and is now starting to use small Unmanned Aerial Systems (sUAS) to validate products from large coverage area sensors and create new methodologies for very high resolution products. Wetlands have several functions including water storage and retention which can reduce flooding and provide continuous flow for hydroelectric generation and irrigation for agriculture. Synthetic Aperture Radar is well suited as a tool for monitoring surface water by supplying acquisitions irrespective of cloud cover or time of day. Wetlands can be subdivided into three classes: open water, flooded vegetation and upland which can vary seasonally with time and water level changes. RADARSAT-2 data from the Wide-Ultra Fine, Spotlight and Fine Quad-Pol modes has been used to map the open water in the Peace-Athabasca Delta, Alberta using intensity thresholding. We also use spotlight modes for higher resolution and the fully polarimetric mode (FQ) for polarimetric decomposition. Validation of these products will be done using a low altitude flying sUAS to generate optical georeferenced images. This project provides methodologies which could be used for flood mapping as well as ecological monitoring.

[Conference paper](#) (PDF, 1216 KB)

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