



WetlandWATCH

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DETECTING WATER BELOW THE SURFACE MAKES WetlandWATCH A VALUABLE MAINTAINENCE AND PLANNING TOOL

Satellite sensors can collect electromagnetic (EM) spectrum data that is invisible to the human eye. People only see optical (red, green and blue) light which is only a tiny fraction of the entire electromagnetic (EM) spectrum that consists of x-rays, ultraviolet light, infrared light, thermal infrared, microwaves and radio waves. WetlandWATCH utilizes satellite sensors that can collect EM spectrum data that's invisible to the human eye with wavelengths 500,000 times longer than optical wavelengths allowing it to see past surface wetland vegetation and reach the substrate hydrology. Our remote sensing scientists use

Synthetic Aperture RADAR (SAR) L-Band imagery to identify wetland hydrology extent and saturation levels otherwise not possible.

WetlandWATCH can monitor construction effects throughout vast wetland complexes providing a reliable, continuous, and complete picture of wetland hydrology ideal for change detection analyses.

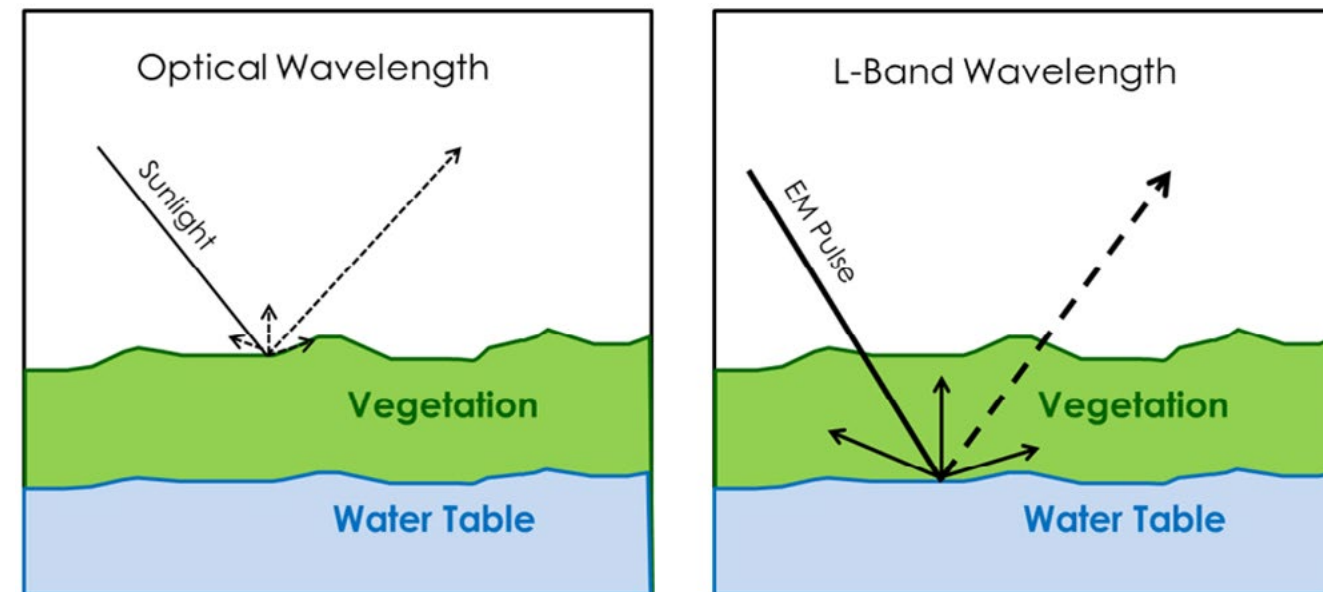


Synthetic Aperture RADAR (SAR) image of a wetland complex in Alaska demonstrating a range of wetland hydrological conditions



HOW DOES IT WORK?

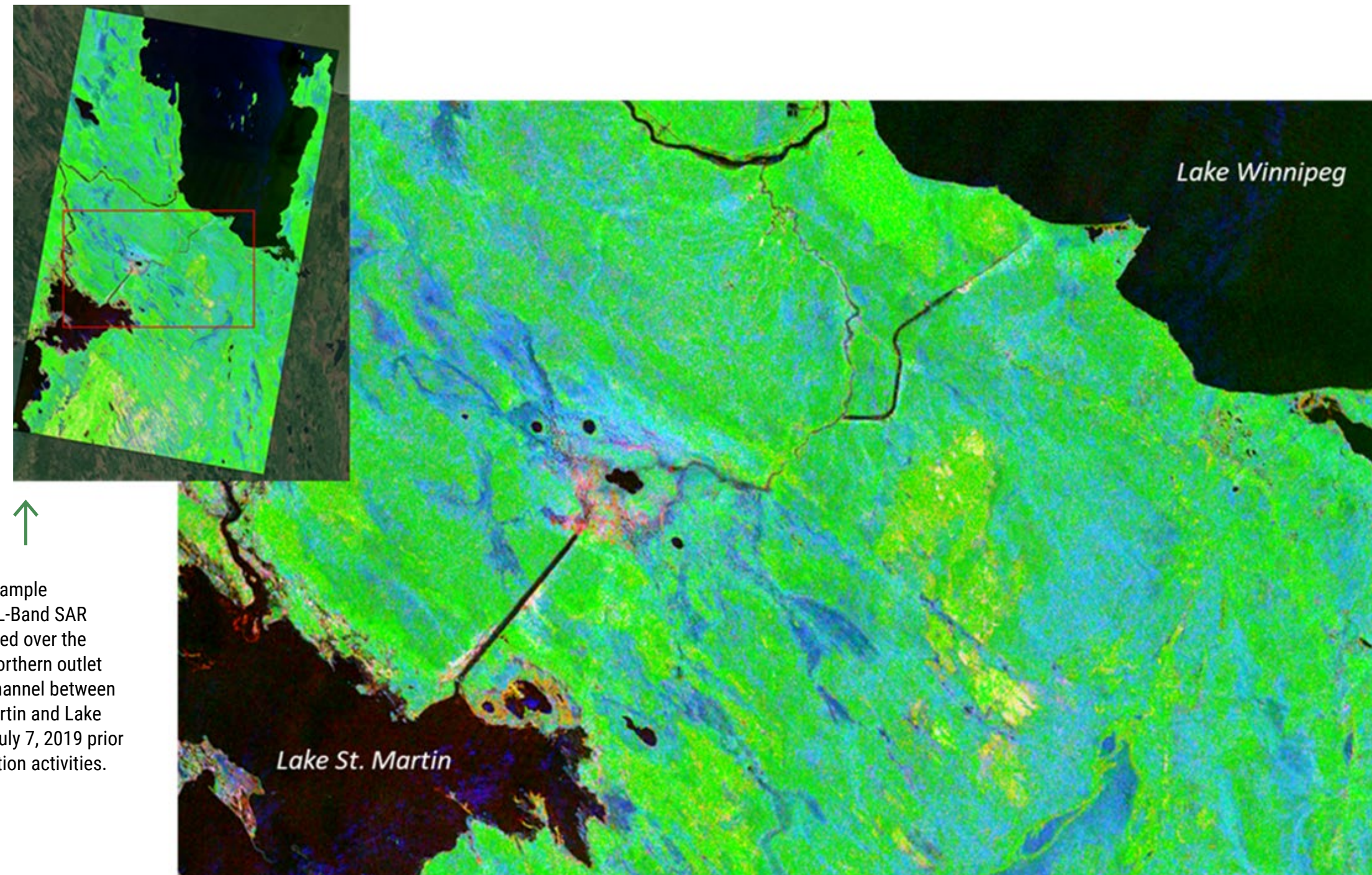
All SAR imagery is highly sensitive to the dielectric constant of water and is strongly reflected. L-Band imagery provides wetland hydrological information in a continuous snapshot that cannot be collected in any other way (Figure 1).



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Figure 1. Optical wavelengths are short and cannot penetrate past surface wetland vegetation and cannot detect the underlying water table (left). L-Band wavelengths are much longer and can penetrate through surface wetland vegetation reaching the wetland's water table (right).

VALUE

L-Band SAR image analysis provides quantifiable baseline conditions of wetland hydrology through the entire wetland complex prior to construction. L-Band data can monitor the effects of construction on a wetland's hydrology over time reliably and consistently through change detection analysis (Figure 3).



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Figure 2. Example imagery of L-Band SAR data collected over the proposed northern outlet diversion channel between Lake St. Martin and Lake Winnipeg, July 7, 2019 prior to construction activities.

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Figure 3. L-Band imagery captures the effect of pre-existing flood diversion channels NE of Lake St. Martin, July, 2019. Areas in white and light pink represent dewatering (red oval); areas in green and yellow are terrestrial uplands; areas in blue and purple are wetlands; areas in orange and dark pink are overly saturated wetlands (black circle); areas in black are open waterbodies.

CONTACT US

Send us an email at remotesensing@stantec.com to learn more about remote sensing and how it relates to ground water.

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