

# Boreal Wetland probability - metadata

“WetlandProbability\_OS.tif”

“Wetland\_OS.tif”

ABMI Geospatial Centre

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Photo credit: Sara Venskaitis



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## 1. Overview

### 1.1 Summary

The Boreal Wetland probability is a raster-based dataset describing the probability of wetland occurrence in a 10-m pixel. It can be used to assess the current extent of wetlands in the Boreal, Lower Athabasca Region, or Lower Peace Region and /or be used in spatial modelling to help estimate species abundance or wildfire probability, among other examples.

### 1.2 Description

This layer was developed from Sentinel-1 and -2 imagery (Copernicus Sentinel data [2016, 2017]), and a Digital Elevation Model (DEM) from SRTM (USGS, 2006). Results are based on a boosted regression tree model (Elith *et al.*, 2008) that was trained and validated with ABMI 3x7 photo-plots (ABMI, 2016).

### 1.3 Credits

This dataset was developed and generated by the ABMI's Geospatial Centre Research Team.

### 1.4 Citation

This product should be cited with the following document:

Alberta Biodiversity Monitoring Institute Geospatial Centre. 2017. "Boreal Wetland probability – technical documentation." Edmonton, Alberta, Canada.

An additional scientific publication citation can also be given:

Hird, J., DeLancey, E.R., McDermid, G.J., and Kariyeva, J. 2017. "Google Earth Engine, Open-Access Satellite Data, and Machine Learning in Support of Large-Area Probabilistic Wetland Mapping." *Remote Sensing*, Vol. 9(No.12): pp. 1315.

### 1.5 Contact Information

If you have questions or concerns about the data, please contact:

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### 1.6 Keywords

Alberta, Boreal Natural Region, remote sensing, spatial modelling, boosted regression trees, wetlands, Synthetic Aperture Radar, Sentinel-1, Sentinel-2.

## 2. Use Limitations

This dataset was based on freely available open source Sentinel-1, -2, SRTM data. This data set, Boreal Wetland probability, may be freely used if cited properly.

### 2.1 Proprietary Sourced Data

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# 3. Data Product Specifications

## 3.1 Spatial resolution

The Sentinel visible and near infrared data has a resolution of 10m, and the SRTM DEM has a resolution of 30m. All layers were resampled to a common resolution of 10m for spatial modelling.

### 3.2 Processing Environment

Google Earth Engine code editor (Google Earth Engine Team, 2015), R 3.3.1 (R Core Team, 2013), and Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.3.0.4322.

### 3.3 Extents

West: -120.72°

East: -109.07°

North: 60.19°

South: 51.43°

### 3.4 Resource Maintenance

Maintenance will be implemented as needed if errors are noticed. New versions will be completed for future years with improvements to the modelling or variable inputs.

### 3.5 Spatial Reference

NAD\_1983\_10TM\_AEP\_Forest

WKID: 3400 Authority: EPSG

Projection: Transverse Mercator

False Easting: 500000.0

False Northing: 0.0

Central Meridian: -115.0

Scale Factor: 0.9992

Latitude of Origin: 0.0

Linear Unit: Meter (1.0)

Geographic Coordinate System: GCS\_North\_American\_1983

Angular Unit: Degree (0.0174532925199433)

Prime Meridian: Greenwich (0.0)

Datum: D\_North\_American\_1983

Spheroid: GRS\_1980

Semimajor Axis: 6378137.0

Semiminor Axis: 6356752.314140356

Inverse Flattening: 298.257222101

## 4. Lineage

The Boreal Wetland probability data set was built and processed mainly with open source data, within a freely available, cloud-based processing environment. This is the first version of this dataset, and this methodology is intended to be improved and enhanced in future versions. Results will be released for other areas of Alberta as they become available.

## 5. Methods and results

Please refer to the Boreal Wetland probability – technical documentation.

## 6. References

- Alberta Biodiversity Monitoring Institute Remote Sensing Group. 2016. "ABMI Photo-Plot Quality Control Manual." Edmonton, Alberta.
- Copernicus Sentinel-1 and -2 data [2016, 2017], European Space Agency.
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