

# Boreal Fen probability - metadata

“FenProbabilityOS.tif”

“FenOS.tif”

ABMI Geospatial Centre

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Photo credit – Emily Upham-Mills and Bayne Lab



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# 1. Overview

## 1.1 Summary

The Boreal Fen probability is a raster-based dataset describing the probability of Fen occurrence in a 10-m pixel. It can be used to assess the current extent of fen in the Boreal Natural 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 digital elevation model (DEM) data from LiDAR (Government of Alberta, 2006), and 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. 2018. "Boreal Fen probability – technical documentation." Edmonton, Alberta, Canada.

## 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, fen, Synthetic Aperture Radar, Sentinel-1, Sentinel-2, LiDAR.

# 2. Use Limitations

This dataset was based on freely available open source Sentinel-1, -2, ALOS, and SRTM data. The LiDAR DEM was provided by the Government of Alberta and is proprietary 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, the LiDAR DEM has a spatial resolution of 1m, 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: -120.73°

East: -109.08°

North: 60.10°

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 Fen 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 Fen probability – technical documentation.

## 6. References

- Alberta Biodiversity Monitoring Institute Remote Sensing Group. 2016. "ABMI Photo-Plot Quality Control Manual." Edmonton, Alberta.
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