

Boreal Peatland probability – metadata

“PeatlandProbabilityOS.tif”

“PeatlandOS.tif”

ABMI Geospatial Centre

March, 2018



Photo credit: Travis Muir



Contents

1. Overview	3
1.1 Summary.....	3
1.2 Description.....	3
1.3 Credits.....	3
1.4 Citation.....	3
1.5 Contact Information	3
1.6 Keywords	3
2. Use Limitations	3
2.1 Proprietary Sourced Data.....	3
2.2 Open Sourced Data	4
2.3 Exclusive ABMI Sourced Data	4
3. Data Product Specifications	5
3.1 Spatial resolution.....	5
3.2 Processing Environment.....	5
3.3 Extents	5
3.4 Resource Maintenance	5
3.5 Spatial Reference	5
4. Lineage.....	5
5. Methods and results.....	6
6. References	7

1. Overview

1.1 Summary

The Boreal Peatland probability data set represent the probability of a pixel being a peatland (bog or fen) for each 10m pixel in the Boreal Forest Natural Region.

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). This layer represents the open source version of the product calculated without the use of LiDAR.

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. 2018. "Boreal Peatland probability - metadata." Edmonton, Alberta, Canada.

1.5 Contact Information

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

Geospatial Centre

Alberta Biodiversity Monitoring Institute

CW 405 Biological Sciences Centre

University of Alberta Edmonton, Alberta, Canada, T6G 2E9

Email: abmigc@ualberta.ca

1.6 Keywords

Alberta, Boreal Natural Region, remote sensing, spatial modelling, boosted regression trees, wetlands, Synthetic Aperture Radar, Sentinel-1, Sentinel-2, LiDAR, ALPHA, machine learning, cloud computing, Google Earth Engine.

2. Use Limitations

This dataset was based on freely available open source Sentinel-1, -2, and SRTM data. The LiDAR DEM was provided by the Government of Alberta and is proprietary data. This data set, ALPHA, may be freely used if cited properly.

2.1 Proprietary Sourced Data

This dataset contains data originating from proprietary sources, which has subsequently been enhanced through computer processing. The Proprietary Sourced Data shall not be used or reproduced in whole or in part or in any form. By accessing the Proprietary Sourced Data, you agree to indemnify and hold harmless the ABMI and the ABMI's subsidiaries, affiliates, related parties, officers, directors, employees, agents, independent contractors, advertisers, partners, and co-branders, from any and all actions, proceedings, claims, demands, liabilities, losses, damages, and expenses which may be brought against

or suffered by the ABMI or which it may sustain, pay or incur, arising or resulting from your violation of this clause. The Proprietary Sourced Data is provided on an “As Is” and “As Available” basis and the ABMI does not guarantee that the Proprietary Sourced Data will be suitable for your purposes or requirements. The ABMI further states that the Proprietary Sourced Data is subject to change, and the ABMI gives no guarantee that the content is complete, accurate, error or virus free, or up to date. The ABMI disclaims all warranties, conditions, and other terms of any kind, whether express or implied, whether in contract, tort (including liability for negligence) or otherwise, including, but not limited to any implied term of satisfactory quality, fitness for a particular purpose, and any standard of reasonable care and skill.

2.2 Open Sourced Data

This dataset contains data originating from open sources, which has subsequently been enhanced through computer processing. The Open Sourced Data may be reproduced in whole or in part and in any form for educational, data collection or non-profit purposes without special permission from the ABMI provided acknowledgement of the source is made. No use of the Open Sourced Data may be made for resale without prior permission in writing from the ABMI. By accessing the Open Sourced Data, you agree to indemnify and hold harmless the ABMI and the ABMI’s subsidiaries, affiliates, related parties, officers, directors, employees, agents, independent contractors, advertisers, partners, co-branders, and Open Sourced Data sources from any and all actions, proceedings, claims, demands, liabilities, losses, damages, and expenses which may be brought against or suffered by the ABMI or which it may sustain, pay or incur, arising or resulting from your violation of this clause. The Open Sourced Data is provided on an “As Is” and “As Available” basis and the ABMI does not guarantee that the Open Sourced Data will be suitable for your purposes or requirements. The ABMI further states that the Open Sourced Data is subject to change, and the ABMI gives no guarantee that the content is complete, accurate, error or virus free, or up to date. The ABMI disclaims all warranties, conditions, and other terms of any kind, whether express or implied, whether in contract, tort (including liability for negligence) or otherwise, including, but not limited to any implied term of satisfactory quality, fitness for a particular purpose, and any standard of reasonable care and skill.

2.3 Exclusive ABMI Sourced Data

This dataset contains data created by the ABMI through active visual interpretation and computer processing. The ABMI Sourced Data may be reproduced in whole or in part and in any form for educational, data collection or non-profit purposes without special permission from the ABMI provided acknowledgement of the source is made. No use of the ABMI Sourced Data may be made for resale without prior permission in writing from the ABMI. By accessing the ABMI Sourced Data, you agree to indemnify and hold harmless the ABMI and the ABMI’s subsidiaries, affiliates, related parties, officers, directors, employees, agents, independent contractors, advertisers, partners, and co-branders, from any and all actions, proceedings, claims, demands, liabilities, losses, damages, and expenses which may be brought against or suffered by the ABMI or which it may sustain, pay or incur, arising or resulting from your violation of this clause. The ABMI Sourced Data is provided on an “As Is” and “As Available” basis and the ABMI does not guarantee that the ABMI Sourced Data will be suitable for your purposes or requirements. The ABMI further states that the ABMI Sourced Data is subject to change, and the ABMI gives no guarantee that the content is complete, accurate, error or virus free, or up to date. The ABMI disclaims all warranties, conditions, and other terms of any kind, whether express or implied, whether in contract, tort (including liability for negligence) or otherwise, including, but not limited to any implied term of satisfactory quality, fitness for a particular purpose, and any standard of reasonable care and skill.

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 (Goerlick et al., 2017), R 3.3.1 (R Core Team, 2016), 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

North_American_1983_Transverse_Mercator

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 Peatland 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 for an example on how the spatial modelling was performed.

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.
- Elith, J., Leathwick, J.R., and Hastie, T. 2008. "A working guide to boosted regression trees." *Journal of Animal Ecology*. Vol. 77(No.4), pp. 802-813.
- Gorelick, N., Hancher, M., Dixon, M., Ilyushchenko, S., Thau, D., Moore, R. 2017. "Google Earth Engine: Planetary-scale geospatial analysis for everyone." *Remote Sensing of Environment*, Vol. 202: pp. 18-27.
- Government of Alberta. 2006. Provincial LiDAR dataset. Edmonton, Alberta.
- R Core Team. 2013. "R: A language and environment for statistical computing." R Foundation for Statistical Computing, Vienna, Austria. URL <http://www.R-project.org/>.
- SAGA, System for Automated Geoscientific Analyses. <http://www.saga-gis.org/>.
- USGS. 2006. "Shuttle Radar Topography Mission." Global Land Cover Facility, University of Maryland.