Justin Braaten

Curriculum vitae
04/25/2020

Santa Cruz, CA, USA
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701-215-0884
jdbcode.github.io

CURRENTLY: working with the Google Earth Engine Developer Outreach Team to improve and expand Earth Engine API guide materials.

EXPERTISE: geographic data science and technical writing; information organization and dissemination; scientific programming

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EDUCATION AND EMPLOYMENT

Education

MS: Geography with an emphasis in remote sensing and biogeography (2009)
University of North Dakota, Department of Geography

BS: Geography with a Geology Minor (2007)
University of North Dakota, Department of Geography

Field Camp: Juneau Icefield Research Program (2003)
University of Idaho, Glaciological and Arctic Science Institute

Employment

Technical Writer (2019-present)
Google via Adecco

Data Scientist (2018-2019)
USDA Forest Service fellowship,
Oakridge Institute for Science and Education

Faculty Research Assistant (2009-2019)
College of Earth, Ocean, and Atmospheric Sciences &
Department of Forest Ecosystems and Society,
Oregon State University

SCHOLARSHIP AND CREATIVE ACTIVITY

Publications

Peer Reviewed Articles

Bright, B. C., Hudak, A. T., Kennedy, R. E., Braaten, J. D., Khalyani A. H. (accepted Nov. 2018). Examining post-fire vegetation recovery with Landsat time series analysis in three western North American forest types. *Fire Ecology*.

Kennedy, R. E., Yang, Z., Gorelick, N., Braaten, J., Cavalcante, L., Cohen, W. B., & Healey, S. (2018). Implementation of the LandTrendr Algorithm on Google Earth Engine. *Remote Sensing*, *10*(5).

Savage, S. L., Lawrence, R. L., Squires, J. R., Holbrook, J. D., Olson, L. E., Braaten, J. D., Cohen, W. B. (2018). Shifts in forest structure in northwest Montana from 1972 to 2015 using the Landsat archive from Multispectral Scanner to Operational Land Imager. *Forests*, 9, 157.

Vogeler, J. C., Braaten, J. D., Slesak, R. A., Falkowski, M. J. (2018). Extracting the full value of the Landsat archive: Inter-sensor harmonization for the mapping of Minnesota forest canopy cover (1973–2015). *Remote Sensing of Environment*, *209*, 363-374.

Kennedy, R. E., Ohmann, J., Gregory, M., Roberts, H., Yang, Z., Bell, D. M., ... & Neeti, N. (2018). An empirical, integrated forest biomass monitoring system. *Environmental Research Letters*, *13*(2), 025004.

Hais, M., Wild, J., Berec, L., Brůna, J., Kennedy, R., Braaten, J., & Brož, Z. (2016). Landsat Imagery Spectral Trajectories—Important Variables for Spatially Predicting the Risks of Bark Beetle Disturbance. *Remote Sensing*, *8*(8), 687.

Braaten, J. D., Cohen, W. B., & Yang, Z. (2015). Automated cloud and cloud shadow identification in Landsat MSS imagery for temperate ecosystems. *Remote Sensing of Environment*, *169*, 128-138.

Kennedy, R. E., Yang, Z., Braaten, J., Copass, C., Antonova, N., Jordan, C., & Nelson, P. (2015). Attribution of disturbance change agent from Landsat time-series in support of habitat monitoring in the Puget Sound region, USA. *Remote Sensing of Environment*, *166*, 271-285.

Sulla-Menashe, D., Kennedy, R. E., Yang, Z., Braaten, J., Krankina, O. N., & Friedl, M. A. (2014). Detecting forest disturbance in the Pacific Northwest from MODIS time series using temporal segmentation. *Remote Sensing of Environment*, *151*, 114–123.

Zald, H. S., Ohmann, J. L., Roberts, H. M., Gregory, M. J., Henderson, E. B., McGaughey, R. J., & Braaten, J. (2014). Influence of lidar, Landsat imagery, disturbance history, plot location accuracy, and plot size on accuracy of imputation maps of forest composition and structure. *Remote Sensing of Environment*, *143*, 26-38.

Kennedy, R. E., Yang, Z., Cohen, W. B., Pfaff, E., Braaten, J., & Nelson, P. (2012). Spatial and temporal patterns of forest disturbance and regrowth within the area of the Northwest Forest Plan. *Remote Sensing of Environment*, *122*, 117-133.

Scientific Visualizations

"The Secret Life of Forests": http://svs.gsfc.nasa.gov/goto?11144. Writer: Ellen Gray. Animators: Greg Shirah, Alex Kekesi, Horace Mitchell. Producer and video editor: Matthew R. Radcliff. Narrator: Robert Kennedy. Scientists: Robert Kennedy, Zhigiang Yang, Justin Braaten. Published 12/11/2012.

Book chapters

Kennedy, Robert E., Yang, Zhiqiang, Braaten, Justin, Nelson, Peder, & Cohen, Warren B. (2011). Monitoring landscape dynamics of national parks in the western United States. Chapter 3 In Remote sensing of protected lands. Editor: Y.Q. Wang. CRC Press.

Professional blog posts

"Monitoring air quality with S5P TROPOMI data". Published 4/17/2020 for Google Earth & Earth Engine's Medium publication. [link]

"Proper use of the "inferno" palette: animating a temperature time series in Earth Engine". Published 1/13/2020 for Google Earth & Earth Engine's Medium publication. [link]

Presentations

Oral Presentations

Braaten, J. D. "Time Series Visualization with Google Earth Engine and Colab". Oral presentation at the Geo for Good Summit, Sunnyvale, CA, September 18, 2019

Braaten, J. D. "LT-GEE: Easy Access to the LandTrendr Spectral-Temporal Segmentation Algorithm". Oral presentation given to the OSU Spatial Data Modeling Group, Corvallis, OR, November 15, 2018

Braaten, J. D., Cohen, W. B., Yang, Z. "Priorities for Landsat MSS Data Improvements". Oral presentation at the *Landsat Science Team Meeting*, Greenbelt, MD, February 4, 2015

Braaten, J. D., Yang, Z., Cohen, W. B. "Integrating MSS Imagery into a Landsat Time Series". Oral presentation at the *Landsat Science Team Meeting*, Corvallis, OR, July 23, 2014

Braaten, J. D., Yang, Z., Cohen, W. B. "Automated Cloud and Shadow Masking of Landsat MSS Imagery: Now You See Them, Now You Don't". Oral presentation at the *Western Forestry Graduate Research Symposium,* Corvallis, OR, April 22, 2014

Poster Presentations

Braaten, J. D., Cohen, W. B. "Spatial-temporal Pattern of Mountain Pine Beetle Outbreaks in Western United States". Poster presentation at the *Western Forestry Graduate Research Symposium,* Corvallis, OR, April 22, 2013

Braaten, J. D., "Mapping Direction and Magnitude of Change in Western Oregon Forest Age Class Composition and Configuration from 1988 to 2008". Poster presented at the *US Regional Association of the International Association for Landscape Ecology meeting*, Portland, OR, April 3, 2011

Software development

LT-GEE. An API to the Google Earth Engine (GEE) implementation of the LandTrendr spectral-temporal algorithm. Written in JavaScript and distributed as GEE require module. Assistant developer, principle maintainer. [Website, GitHub]

MSScvm. An automated system to create cloud and cloud shadow masks for Landsat MSS imagery. Written in R and distributed as an R package. Principle developer and maintainer. [Website, GitHub]

LandsatLinkr. An automated system for processing large volumes of Landsat imagery and building long, spectrally consistent chronologies across MSS, TM/ETM+, and OLI sensors. Written in R and distributed as an R package. Principle developer and maintainer. [Website, GitHub]

LandTrendr. A package of algorithms written in IDL to extract information from time series imagery acquired by the Landsat TM and ETM+ sensors. Assistant developer. [Website, GitHub]

TECHNICAL PROFICIENCY

Operating systems: Windows, Linux
Scripting languages: Python, R, IDL, MATLAB, Bash
Web development: JavaScript, PHP, HTML, CSS, Bootstrap, jQuery, D3.js, plotly.js, Leaflet, Angular
GIS/Remote sensing software: Google Earth Engine, GDAL, OGR, R-Raster, QGIS, ArcGIS, ENVI, ERDAS Imagine
Image/vector editing software: scikit-image, OpenCV-Python, ImageMagick, ImageJ, GIMP, Inkscape
Video editing software: FFmpeg