# Justin D. Braaten

Curriculum vitae
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Laboratory for Applications of Remote Sensing in Ecology
Department of Forest Ecosystems & Society
Oregon State University
321 Richardson Hall, Corvallis, OR  97331
justin.braaten@oregonstate.edu

## SUMMARY

Change is a fundamental reality of the universe and without it things would be pretty boring. However, for Earth ecosystems, exceptional or unusual change can apply stress to the natural balances between and among organisms and environments. My professional interests are aimed at documenting patterns of spatiotemporal change of ecological players and identifying change drivers. My primary focus has been on monitoring and identifying changes in forest vegetation as a function of climate and disturbance using Landsat imagery. Through my education and work experience I have established a broad understanding of ecosystem processes and acquired a strong and diverse analytical skill set, including research-oriented programming, data visualization, algorithm development and machine learning, statistical analysis, geospatial analysis, data management, system automation, time series analysis, and application of remote sensing and GIS. I have demonstrated collegiality and scholarship through my record of publication contributions and presentations. I consider myself a data scientist who's highly effective in the role of technical and analytical support for ecological research and monitoring programs.

## EDUCATION AND EMPLOYMENT
### Education

PhD: Forest Ecosystems and Society (Current)
Oregon State University, Department of Forest Ecosystems and Society,
Thesis topic: Spatiotemporal pattern of mountain pine beetle outbreaks and their drivers
Advisor: Dr. Warren Cohen

MS: Geography with an emphasis in biogeography and geospatial analysis (2009)
University of North Dakota, Department of Geography
Thesis title: Landscape change in the multi-use, multi-ownership forests of the Olympic Peninsula, Washington 1988-2006
Advisor: Dr. Bradley Rundquist

BS: Geography with a Geology Minor (2007)
University of North Dakota, Department of Geography
Thesis title: A statistical evaluation of the relationship between western prairie fringed orchid (*Plantanthera praeclara*) blooms and regional climate variables
Advisors: Dr. Bradley Rundquist (Geography) & Dr. Philip Gerla (Geology)

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

*Employment*

Graduate Research Assistant (2012-Current)
    Department of Forest Ecosystems and Society, Oregon State University

Faculty Research Assistant (2009-2012)
    Department of Forest Ecosystems and Society, Oregon State University

Field Research Assistant (Summers 2008 & 2009)
    College of Forest Resources, University of Washington

Graduate Teaching Assistant (2007-2009)
    Department of Geography, University of North Dakota

Program Coordinator (2007-2009)
    North Dakota View, University of North Dakota

Biological Technician (Summer 2007)
    Student Conservation Association, Olympic National Park, WA

# SCHOLARSHIP AND CREATIVE ACTIVITY
*Publications*
*Peer Reviewed Articles*

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, <u>Braaten, Justin</u>, 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.

**Publications in revision, review, or preparation**

<u>Braaten, J. D.,</u> Cohen, W. B., & Yang, Z. Automated cloud and cloud shadow identification in Landsat MSS imagery. *In review, Remote Sensing of Environment*

Kennedy, R. E., Yang, Z., <u>Braaten, J. D.,</u> Copass, C., Antonova, N., Jordan, C., Cohen, W. B. Attribution of change agent using Landsat time series data. *In review, Remote Sensing of Environment*

**Presentations**
*Volunteered Oral Presentations*

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

<u>Braaten, J. D.,</u> 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

<u>Braaten, J. D.,</u> 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

*Volunteered Poster Presentations*

<u>Braaten, J. D.,</u> 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

<u>Braaten, J.</u> 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**

LandsatLinkr. An automated system for processing large volumes of Landsat imagery and building long spectrally consistent chronologies across MSS and TM/ETM+ 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

***Programming languages*:** R, IDL, Python, MATLAB

***GIS/Remote sensing software*:** ArcGIS, ENVI, ERDAS Imagine, QGIS, GDAL, eCognition