

# Jeffery A. Thompson

## CURRICULUM VITAE

### EDUCATION

- 2016 Post-doc in Arctic & Global Change, U. Colorado, Boulder
- 2015 Post-doc in Polar Remote Sensing, U. Colorado, Boulder
- 2013 Ph.D. in Geography, U. New South Wales, Australia
- 2009 M. of Resource Science, U. New England, Australia
- 2006 M. of Geographic Information Science, U. New England, Australia
- 1994 B.A. in Politics, U. California, Santa Cruz

### PROFESSIONAL APPOINTMENTS AND EMPLOYMENT

- 2018 – curr. High Performance Computing Geospatial Analyst, Supercomputing Institute, University of Minnesota
- 2016 – 2018 Post-doctoral Research Associate, Cooperative Institute for Research in Environmental Sciences, University of Colorado at Boulder
- 2015 – 2016 Visiting Post-doctoral Fellow, Earth System Science, Cooperative Institute for Research in Environmental Sciences, University of Colorado at Boulder
- 2015 Senior Remote Sensing Analyst, Astron Environmental Consulting, Western Australia.
- 2014 Consultant, Online Services, Map Collection, National Library of Australia.
- 2014 Remote Sensing and Geography Instructor, University of New South Wales, Australia.
- 2010–2013 Remote Sensing Graduate Student Researcher, University of New South Wales, Australia
- 2009 Graduate Student Researcher, University of Technology Sydney
- 2007–2009 Remote Sensing Graduate Student Researcher, University of New England
- 2006 Remote Sensing Research Associate, University of New England
- 2005–2008 IT Manager and GIS Support Officer, Institute for Rural Futures

### PUBLICATIONS

#### Refereed Journal Articles

- Thompson JA, Brodzik MJ, Silverstein KAT, Hurley MA, Carlson NL (2022). EASE-DGGS: a hybrid discrete global grid system for Earth sciences, *Big Earth Data*, DOI: 10.1080/20964471.2021.2017539.
- Onsongo G, Fritsche S, Nguyen T, Belemlih A, Thompson JA, Silverstein KAT (2022). ITALLIC: A tool for identifying and correcting errors in location based plant breeding data, *Computers and Electronics in Agriculture*, 197, 106947. DOI: 10.1016/j.compag.2022.106947.
- Lewis NS, Koenig LS, Grant G, Gallaher D, Schaefer K, Thompson JA, Campbell GG (2019). Sea ice detection from persistent single-channel shortwave infrared satellite data, *Ecological Informatics*, 52, 139-149, DOI: 10.1016/j.ecoinf.2019.05.013.
- Thompson JA and Koenig, LS (2018). Land surface phenology in Greenland and links to

cryospheric change, *Annals of Glaciology*, 59(77), p 59-68, p59-68, DOI: 10.1017/aog.2018.24.

- Thompson JA and Paull DJ (2017). Assessing spatial and temporal patterns in land surface phenology for the Australian Alps (2000 – 2014), *Remote Sensing of Environment*, 199, p1-13. DOI: 10.1016/j.rse.2017.06.032
- Thompson JA (2016). A MODIS-derived snow climatology (2000 – 2014) for the Australian Alps, *Climate Research*, 68, 25–38, DOI: 10.3354/cr01379
- Thompson JA, Paull DJ and Lees BG (2015). Using phase-spaces to characterize land surface phenology. *Remote Sensing of Environment*, 166, p178–190, DOI: 10.1016/j.rse.2015.04.008
- Thompson JA, Paull DJ and Lees BG (2015). An improved liberal cloud-mask for addressing snow/cloud confusion with MODIS. *Photogrammetric Engineering and Remote Sensing*, 81(2), p119–129, DOI: 10.14358/PERS.81.2.119
- Thompson JA and Lees BG (2014). Applying object-based segmentation in the temporal domain to characterise snow seasonality, *ISPRS Journal of Photogrammetry and Remote Sensing*, 97 p98–110, DOI: 10.1016/j.isprsjprs.2014.08.010
- Thompson JA, Lamb DW, Frazier PS and Ellem B (2011). Monitoring the effects of longwall mine-induced subsidence of vineyards. *Environmental Earth Sciences*, 62(5), p. 973–984. DOI: 10.1007/s12665-010-5820-7

### **Datasets**

- Thompson JA (2017). MODIS derived, gap-filled and daily snow cover observations for the Australian Alps from 2000 – 2014, *Pangea*. DOI: 10.1594/PANGAEA.884355

### **Books**

- Brunckhorst D, Reeve I, Morley P, Coleman M, Barclay E, McNeill J, Stayner R, Glencross-Grant R, Thompson J and Thompson L (2011). Hunter and Central Coasts, New South Wales - Vulnerability to Climate Change Impacts. *Department of Climate Change and Energy Efficiency, Australia*, ISBN: 978-1-921298-83-7.

### **Conference Proceedings**

- Thompson JA, Frazier PS, Lamb DW (2007). Evaluating the impacts of longwall mine subsidence on vineyards in the Broke Region of New South Wales: The challenges of analysing multi-scale field data. *2007 Conference of the Mine Subsidence Technical Society*, University of Wollongong, Australia.

### **Other Publications**

- Brunckhorst D, Reeve I, Moreley P, Coleman M, Barclay E, McNeill J, Stayner R, Glencross-Grant R, Thompson J and Thompson L (2009). Case studies to support a 'first pass' national climate change coastal vulnerability Assessment. Case Study 6: Hunter and Central Coasts. *Report to Land and Water Australia*, Canberra.
- Reeve I, Bock K, Thompson J, van der Meulen A. and Coleman M (2006). Increasing wool profits by working with the environment. 1st and 2nd survey results. *Report to Land and Water Australia*, Canberra.

## **CONFERENCE ACTIVITY**

### **Presentations**

- Thompson JA and Paull DJ (2013). The spatial and temporal dynamics of snow and vegetation within Australia's alpine bioregions: A remote sensing analysis using MODIS, *Annual meeting of the Association of American Geographers*, Los Angeles, USA.
- Thompson JA (2012). Assessing the Accuracy of the MODIS Daily Snow-Cover Products over the Australian Alps. *Annual meeting of the Association of American Geographers*, New York, USA.
- Thompson JA (2010). Remote sensing of Australia's Alpine bioregions: The spatial and temporal dynamics of snow and vegetation, *Annual meeting of the Ecological Society of Australia*, Canberra, Australia.

### **Posters**

- Willis MJ, Barba M, Tiampo KF, Lynett PJ, Mätzler E, Thorsøe K, Higman BM, Thompson JA and Morin PJ (2017). Geodetic Imaging and Tsunami Modeling of the 2017 Coupled Landslide-Tsunami Event in Karrat Fjord, West Greenland, *American Geophysical Union Fall Meeting*.
- Schaefer KM, Chen A, Chen J, Chen RH, Jafarov E, Liu L, Michaelides RJ, M, Andy Parsekian A, Tabatabaenejad A, Thompson JA and Zebker HA (2017). Combining geophysical techniques to measure soil moisture in permafrost regions, *American Geophysical Union Fall Meeting*.
- Lewis NS, Serreze MC, Gallaher DW, Koenig LS, Schaefer KM, Campbell GG, Thompson JA, Grant G and Fetterer FM (2017). Emerging Use of Dual Channel Infrared for Remote Sensing of Sea Ice, *American Geophysical Union Fall Meeting*.
- Thompson JA and Koenig LS (2016). Evidence for increasing desiccation of vegetation in Greenland. *American Geophysical Union Fall Meeting*.
- Thompson JA and Koenig LS (2016). Exploring cryospheric changes and land surface phenology in Greenland, *Cooperative Institute for Research in Environmental Science Rendezvous Conference*.
- Thompson JA, Koenig LS and Cullather R (2015). Exploring links between hydrologic changes and land surface phenology in Greenland, *American Geophysical Union Fall Meeting*.
- Thompson JA (2012). A remote analysis of the spatial and temporal dynamics of snow and vegetation within Australia's alpine bioregions, *Australian Academy of Sciences' Second Australian Earth System Outlook Conference*, Canberra.
- Thompson JA and Paull DJ (2010). Using remote sensing and landscape phenology to explore the spatial and temporal dynamics of snow and vegetation within the Australian Alpine Bioregions, *Australian Academy of Sciences' First Australian Earth System Outlook Conference*, Canberra.

## **GRANTS & AWARDS**

### **Successful**

- 2018      Monitoring Global Change by Advancing Deep Learning, National Science

- Foundation, \$1,430,398, Senior Personnel
- 2017 An Overhead Persistent Infrared (OPIR) Ice Characterization in Arctic Regions for Transportation Applications (ICARTA), United States Air Force, \$397,711, Co-Investigator
- 2016 The Airborne InSAR and PolSAR Permafrost Dynamics Observatory (PDO), National Aeronautics and Space Administration, Arctic – Boreal Vulnerability Experiment, \$832,074, Co-Investigator
- 2013 Postgraduate Research Student Travel Grant, University of New South Wales Australia \$2500
- 2010 – 2013 Australian Post-graduate Award, University of New South Wales Australia \$55,000
- 2010 – 2013 University College Postgraduate Research Scholarship, University of New South Wales Australia \$3,600
- 2009 PhD Fellowship, University of Technology Sydney \$20,000
- 2009 Postgraduate Travel Grant, University of Technology Sydney \$5,000
- 2007 – 2008 Beltana Highwall Mining Scholarship, University of New England Australia \$54,000

### **INVITED TALKS**

- 2015 AGU Session B24E Lightning Talk – Linking phenology to ecosystem function.

### **INVITED PANNELS**

- 2017 Cryosphere Technical User Group, Copernicus Global Land Service
- 2015 AGU Session B31G – Understanding phenology across scales and improving linkages to ecosystem functions IV. Invited to fill in for Julio Betancourt, who was unable to attend.

### **STUDENT SUPERVISION**

- 2017 Ksenia Lepikhina, Undergraduate student intern, University of Colorado Boulder, Earth Lab Student Intern Program.
- 2016 Amy Decastro, Graduate student intern, University of Colorado Boulder, Earth Lab Student Intern Program.

### **HONOURS AND AWARDS**

- 2009 Golden Key International Honour Society, University of New England, Australia

### **CAMPUS AND DEPARTMENTAL ACTIVIES**

#### **Service**

- 2018 Inaugural CIRES Diversity and Inclusion Culture Survey Committee
- 2016 – 2018. Post-doctoral chair of the CIRES Graduate Association, University of Colorado Boulder

#### **Talks**

- 2016 Evidence for drying vegetation in Greenland? IGNITE Talk, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder
- 2015 Perspective from the periphery: Linking vegetation phenology and cryospheric

- change in Greenland, Cryosphere and Polar Processes Seminar, University of Colorado Boulder
- 2015 Land surface phenology and the spatial and temporal dynamics of snow-cover and vegetation, Geography Colloquium, University of Colorado Boulder
- 2015 Linking land surface phenology and ice sheet run-off in Greenland, Polar Geospatial Center, University of Minnesota
- 2014 A remote sensing exploration of land surface phenology in the Australian Alps, School of Physical, Environmental and Mathematical Sciences Seminar Series, University of New South Wales
- 2008 Monitoring the impacts of longwall mining induced subsidence on vineyards - Broke, NSW, Department of Geography and Planning Seminar Series, University of New England

### **Workshops organized**

- 2017 - 2018 Workshop Series, 'Leadership in the science,' CIRES Graduate Association.
- 2017 Job panel, 'Alternative research careers: Exploring jobs in government, industry and the non-profit sectors,' CIRES Graduate Association.
- 2017 Open forum on 'Science Policy vs. Science Advocacy,' Joint workshop, CIRES Graduate Association and CU Forum on Science Ethics and Policy.
- 2016 Job panel, 'Is academia right for me?' CIRES Graduate Association.
- 2016 Grant writing workshop, CIRES Graduate Association.
- 2016 Job panel, 'Exploring non-academic careers,' CIRES Graduate Association
- 2016 Building Digital Elevation Models from WorldView Imagery Using the Ames Stereo Pipeline, University of Colorado Boulder
- 2010 A Window on the Australian Alps: Research Horizons, Present and Future. School of Physical, Environmental and Mathematical Sciences, University of New South Wales Australia

### **SERVICE ACTIVITIES**

#### **Technical Reviewer**

Copernicus Global Land Service 2018 Cryospheric Products Review Panel

#### **Journal Reviewer**

International Journal of Geographical Information Sciences, ISPRS Photogrammetry & Remote Sensing, Journal of Hydrometeorology, Photogrammetric Engineering & Remote Sensing, Remote Sensing of Environment

### **TEACHING EXPERIENCE**

#### **University of New South Wales Australia**

Contemporary Global Change (S2014, S2011, S2010)  
 Introduction to GIS and Remote Sensing (F2014, F2011)  
 Introduction to Global Change (F2014, F2011)

#### **University of New England Australia**

Remote Sensing and Image Analysis, (F2008)

#### **University of California Santa Cruz**

Organic Chemistry Laboratory (Su1995, F1995, W1996, S1996)

## **RESEARCH EXPERIENCE**

- 2018 – curr. Moving matters, climate risk in agro-ecological systems; Improved monitoring of global change with deep learning, Minnesota Super Computing Institute, University of Minnesota
- 2016 – 2018. Postdoctoral research using big data to characterize the relationships between changing snow cover, vegetation, fire, and permafrost in the Arctic, Earth Lab, University of Colorado at Boulder.
- 2015 – 2016 Post-doctoral research in polar remote sensing and climate impacts in the Arctic, Cooperative Institute for Research in Environmental Sciences, University of Colorado at Boulder.
- 2010 – 2013 Post-graduate research in remote sensing and land surface phenology of mountain environments, University of New South Wales Australia.
- 2009 Post-graduate research in evapotranspiration estimation using remote sensing, University of Technology Sydney, Australia.
- 2007 – 2008 Post-graduate research using geospatial methods for environmental impact detection, University of New England Australia.
- 2006 Research associate, applying remote sensing and image analysis to quantify vineyard productivity, University of New England Australia.

## **PROFESSIONAL SKILLS**

Course Development

Geographic Information Systems: ArcGIS, IDRISI, QGIS

Programming Languages: Python, R, MATLAB, UNIX shells, PERL, HTML, C, IDL, Java

Remote Sensing Software: Python, xarray, rasterio, dask, ERDAS Imagine, ERMapper, ENVI, IDRISI, MATLAB, Monteverdi2, OrfeoToolbox

Statistical Packages: Prism, R, SPSS

Research Development

## **SOCIETIES AND MEMBERSHIPS**

American Geophysical Union (AGU)

American Society for Photogrammetry and Remote Sensing (ASPRS)

Association of American Geographers (AAG)

Golden Key International Honour Society

## **PROFESSION AFFILIATIONS**

Earth Science and Observation Center, University of Colorado, Boulder

Earth Lab, University of Colorado, Boulder