

CURRICULUM VITAE

Nathan C. Healey, Ph.D.

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ACADEMIC FIELD

Natural Resource Sciences: The use of geographic information systems (GIS) for analysis of surface energy, water, and carbon balances, climatology, limnology, terrestrial ecology, hydrology, and remote sensing (robotic trams, airborne, and spaceborne platforms) data, as well as the wildland-urban interface and wildland fire management.

RESEARCH INTERESTS

Development of comprehensive geographic research focusing on water resource management through satellite, airborne, and ground-based data and drought mitigation. Studying inland water bodies/reservoirs, groundwater and connections to climate change to establish guidelines for improved water management in relation to agriculture and municipalities focused on multiple geographical scales including (1) California, (2) the United States and/or North America, and (3) Global. This research will serve as a foundation to connect numerous facets of Liberal Studies including border studies, biology, and sociology to name a few.

CHRONOLOGY OF EDUCATION

University of Nebraska, PhD (Lincoln, Nebraska)

Natural Resource Sciences - 2011

Specialization: Climate Assessment and Impacts

Dissertation Title: Analyzing the ecohydrology of subirrigated meadow, dry valley, and upland dune ecosystems using remote sensing and in-situ estimations in the semi-arid Sand Hills region of Nebraska, USA.

Dissertation Advisor(s): John D. Lenters, Ayse Kilic

University of Nebraska, MS (Lincoln, Nebraska)

Natural Resource Sciences - 2008

Specialization: Climate Assessment and Impacts

Thesis Title: A spatial analysis of anthropogenically derived and naturally occurring environmental controls on corn-based ethanol production in Nebraska.

Thesis Advisor(s): Kenneth G. Hubbard, Ayse Irmak

Northern Arizona University, BS (Flagstaff, Arizona)

Environmental Science - 2003

Specialization: Environmental Management

CHRONOLOGY OF EMPLOYMENT

Postdoctoral Scholar

NASA Jet Propulsion Laboratory, California Institute of Technology. Fall 2014 - Present

Research Focus: (1) use satellite derived water surface temperatures to characterize the thermal behavior of the 50 largest inland water bodies in the world and 100 largest US water bodies for the last three decades; (2) relate changes in the thermal behavior of the water bodies to global and regional climate change as indicated by surface air temperature data; (3) identify changes in the secondary characteristics of the thermal behavior of inland water bodies that result from climate change as a possible predictors of future change, e.g., timing of freeze-thaw; (4) compare the regional trends in surface temperature climate derived from these observations to those depicted in the 20th Century IPCC climate simulations.

Postdoctoral Research Associate

Florida International University. Spring 2012 – Fall 2014

Research Focus: Design, construction, installation, and maintenance of four state-of-the-art robotic tram systems across the North Slope of Alaska as a contribution to the Arctic Observing Network (AON) – International Tundra Experiment (ITEX), a long-term National Science Foundation funded circumarctic monitoring effort. Also, collect and implement kite aerial photography along with vegetation cover assessments to improve our capability to predict changes to the arctic tundra ecosystems among a wide variety of spatiotemporal scales from plot to landscape level.

Geographic Information Specialist

University of Nebraska. Spring 2012

Aided in the creation of the Global Lake Temperature Collaboration (GLTC) with the aim of establishing a global network of researchers collecting lake temperature data. Compiled and organized data from collaborators then generated a database of lakes represented in the GLTC. A geographic information system (GIS) platform was implemented for professional display of lakes represented by the GLTC on its website and in preparation for future analyses.

Teaching Assistant and Instructor

University of Nebraska. Spring 2010- Fall 2011

Conducted lectures and composed laboratory material for Natural Resource Sciences/Geography 312: Introduction to Geospatial Information Systems. A required course for all natural resource science majors. Enrollment averaged 35-45 students each semester and covered a variety of topics surrounding geographic information systems (GIS), global positioning systems (GPS) and remote sensing technologies.

Teaching Assistant – Doctoral Candidate

University of Nebraska. Summer 2009 – Fall 2011

Research Location: Lincoln, Nebraska

Research Focus: Climate impacts on ecohydrology in a semiarid region. Utilized satellite imagery and in-situ observations for quantitative estimation of the surface energy balance, with a focus on evapotranspiration, over different land cover types in the Sand Hills region of Nebraska. Specifically includes subirrigated meadows, dry valleys and upland sand dune ecosystems. Analyzed energy partitioning using different remote sensing techniques which include and exclude topographic influences.

Research Assistant – Ph.D.

University of Nebraska. Fall 2008 – Summer 2009

Research Location: Various Locations across the North Slope of Alaska

Research Focus: Climate impacts on hydrology on the Arctic Coastal Plain (ACP) of Alaska. Programmed, installed and maintained multiple micrometeorological research stations to estimate surface energy and water balances in and around thermokarst lakes in remote locations on the North Slope of Alaska.

Research Assistant – M.S.

University of Nebraska. Fall 2006 – Summer 2008

Research Location: Lincoln, Nebraska

Research Focus: employed multiple spatial data layers in a GIS framework along with historical corn yield data to determine controls on corn production which ultimately impact the potential for growth of the ethanol industry in Nebraska.

Biological Science Technician (GS-04) – B.S.

U.S. Department of Interior, National Park Service. Summer 2003

Research Location: Zion National Park - Springdale, Utah

Research Focus: Conducted vegetative field surveys with an ecologist in numerous backcountry locations exhibiting extremely harsh conditions. Responsible for GPS navigation, route finding and site analysis in the final stages of the accuracy assessment of the United States Geological Survey-National Park Service Vegetation Mapping Project at Zion National Park.

NOTED PUBLICATIONS AND SCHOLARLY PRESENTATIONS**Publications**

Healey, NC, Oberbauer, SF, Hollister, RD. 2015. Examination of surface temperature modification by open-top chambers along moisture and latitudinal gradients in Arctic Alaska using thermal infrared photography. *Remote Sensing (In press)*.

Peake, C, Riveros-Iregui, D, Lenters, JD, Zlotnik, V, **Healey, NC**, Ong, J. 2015. Energy balance of a shallow, saline lake in the Nebraska Sandhills. *Hydrological Processes. (In Review)*.

Healey, NC, Hook, SJ, Schneider, P. 2015. Analysis of summer temperature trends in the largest lakes in California and Nevada. *(In preparation)*.

Piccolroaz, S, **Healey, NC**, Hook, SJ, Lenters, JD, Schladow, G, Toffolon, M. 2015. On the suitability of air temperature as a predictive tool for lake surface temperature in a changing climate: A case study for Lake Tahoe, USA. *(In preparation)*.

Healey, NC, Piccolroaz, S, Hook, SJ, Lenters, JD, Schladow, G, Toffolon, M. 2015. Impact of Climate on Lake Surface Temperature in the Southwest United States of America. *(In preparation)*.

Healey, NC, Oberbauer, SF, Ahrends, HE, Dierick, D, Welker, JM, Leffler, AJ, Hollister, RD, Vargas, SA, Tweedie, CA. 2014. A mobile instrumented sensor platform for long-term terrestrial ecosystem observation: A case study in the arctic. *Journal of Environmental Informatics* 24, 1: 1-10.

Healey, NC. 2011. Analyzing the ecohydrology of subirrigated meadow, dry valley, and upland dune ecosystems using remote sensing and in-situ estimations in the semi-arid Sand Hills region of Nebraska, USA. Doctoral Dissertation, University of Nebraska-Lincoln.

- Healey, NC**, Irmak, A, Arkebauer, TJ, Billesbach, DP, Lenters, JD, Hubbard, KG, Allen, RG, Kjaersgaard, J. 2011. Remote sensing and in-situ based estimates of evapotranspiration for subirrigated meadow, dry valley, and upland dune ecosystems in the semi-arid Sand Hills of Nebraska. *Irrigation and Drainage Systems*. 25, 3: 151-178.
- Healey, NC**, Irmak, A, Hubbard, KG, Lenters, JD. 2011. Environmental variables controlling site suitability for corn-based ethanol production in Nebraska. *Biomass and Bioenergy*, 35: 52-60.
- Healey, NC**. 2008. A Spatial Analysis of Anthropogenically Derived and Naturally Occurring Environmental Controls on Corn Based Ethanol Production in Nebraska. Master's thesis, University of Nebraska-Lincoln.

Conferences

- Healey, NC**, Piccolroaz, S, Hook, SJ, Toffolon, M, Lenters, JD, Schladow, G. 2015. On the suitability of air temperature as a predictive tool for lake surface temperature in a changing climate: A case study for Lake Tahoe, USA. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Hook, SJ, **Healey, NC**, Lenters, JD, O'Reilly, CM. 2015. Inland Water Temperature and the recent Global Warming Hiatus. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Healey, NC**, Hook, SJ, Lenters, JD, O'Reilly, C, Pinheiro-Privette, A, Gula, J. 2015. Analysis of Large Lake Temperature Trends Across North America Using Satellite Data: A Contribution to the National Climate Assessment. American Fisheries Society Annual Meeting, Portland, OR.
- Lenters, JD, Blanken, P, **Healey, NC**, Hinkel, KM, Ong, J, Peake, C, Potter, BL, Riveros-Iregui, D, Spence, C, Van Cleave, K, Zlotnik, VA. 2014. Physical Drivers of Lake Evaporation Across a Gradient of Climate and Lake Types. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Hook, SJ, Lenters, JD, O'Reilly, C, **Healey, NC**. 2014. Inland Water Temperature: An Ideal Indicator for the National Climate Assessment. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Healey, NC**, Oberbauer, SF, Hollister, RD, Welker, JM, Gould, WA, Tweedie, CE. 2014. Enhancing Ecological Network Collaboration: The International Tundra Experiment and the Arctic Long Term Ecological Research Network. Long Term Ecological Research Network Workshop, Woods Hole, MA.
- Peake, C, Riveros-Iregui, D, Lenters, JD, Zlotnik, V, Ong, J, **Healey, NC**. 2013. Environmental Controls on Evaporation Rates of a Shallow Saline Lake in the Western Sandhills Nebraska, USA. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Healey, NC**, Oberbauer, SF, Ahrends, HE, Dierick, D, Welker, JM, Leffler, AJ, Hollister, RD, Vargas, SA, Tweedie, CA. 2013. A mobile instrumented sensor platform for long-term terrestrial ecosystem observation: A case study in the arctic. International Tundra Experiment Annual Meeting - Conference on Alpine and Arctic Flora, Bergün, Switzerland.
- Healey, NC**. 2012. Analyzing arctic ecology using Networked Inomechanical Systems. American Geophysical Union Annual Fall Meeting, San Francisco, CA.

- Healey, NC**, Irmak, A, Arkebauer, TJ, Billesbach, DP, Lenters, JD, Hubbard, KG. 2011. Seasonal and diurnal cycles of surface energy partitioning in subirrigated meadow, dry valley, and upland dune ecosystems in the semi-arid Sand Hills of Nebraska, USA. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Potter, BL, Lenters, JD, Hinkel, KM, Sheng, Y, Shulski, M, **Healey, NC**, Irmak, A, Jones, S. 2011. The summertime energy balance of a thermokarst lake in northern Alaska: A three-year study of seasonal and interannual variability. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Potter, BL, Lenters, JD, Hinkel, KM, Sheng, Y, Shulski, M, **Healey, NC**, Irmak, A, Jones, S. 2011. Seasonal and interannual variability in the summertime energy balance of a thermokarst lake on the Arctic Coastal Plain of northern Alaska. 54th International Conference on Great Lakes Research, Duluth, MN.
- Healey, NC**, Irmak, A, Allen, RG, Kjaersgaard, J, Arkebauer, TJ, Billesbach, DP, Lenters, JD, Hubbard, KG. 2010. Remote Sensing and In Situ-Based Estimates of Evapotranspiration for Subirrigated meadow, Dry Valley, and Upland Dune Ecosystems in the Semi-Arid Sand Hills of Nebraska, USA. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Potter, BL, Lenters, JD, Hinkel, KM, Sheng, Y, Shulski, M, **Healey, NC**, Irmak, A, Jones, S. 2010. Gazing into Earth's eyes: Unraveling the mysteries of lake-rich landscapes from Nebraska to Alaska. Arctic Schoolyard LTER Seminar, Barrow, AK.
- Healey, NC**, Lenters, JD, Hinkel, KM, Irmak, A, Jones, SL, Maurer, EF, Sheng, Y, Smith, LC, Winston, BS, Potter, BL. 2009. Lake Evaporation on the Arctic Coastal Plain of Alaska: Results From an Energy Balance Study of a Thermokarst Lake Near Barrow, Alaska. American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- Lenters, JD, **Healey, NC**, Hinkel, KM, Jones, SL. 2009. Hydroclimatology of lakes in Arctic Alaska: Preliminary energy balance results, Global Lake Ecological Observatory Network (GLEON) 9th Bi-annual Meeting, Boulder Junction.
- Healey, NC**, Jones, SL, Lenters, JD. 2008. Hydroclimatology of Lakes in Arctic Alaska: Preliminary Energy Balance Results. 3rd Annual Graduate Climate Conference, University of Washington, Pack Forest Research Center, Seattle, Washington.
- Hinkel, KM, Lenters, JD, Sheng, Y, Lyons, EA, Winston, BS, Jones, SL, Shah, CA, Smith, LC, **Healey, NC**, Beck, R. 2008. Hydroclimatology of thaw lakes in Arctic Alaska: Preliminary Results. Association of American Geographers 2009 Annual Meeting. Las Vegas, NV.
- Hinkel, KM, Beck, R, **Healey, NC**, Jones, BM, Jones, SL, Lenters, JD, Lyons, EA, Shah, CA, Sheng, Y, Smith, LC, Winston, BS. 2008. Assessing seasonal lake dynamics in Arctic Alaska: Preliminary results. American Geophysical Union Annual Fall Meeting, San Francisco, CA.

Seminars

- 2010 “Lake Evaporation on the Arctic Coastal Plain of Alaska: Results from an Energy Balance Study of a Thermokarst lake near Barrow, Alaska”. Applied Climate Sciences Departmental Seminar. School of Natural Resources, University of Nebraska, Lincoln, February 8.

- 2009 "Hydroclimatology of Lakes in Arctic Alaska: Preliminary Energy Balance Results". Applied Climate Sciences Departmental Seminar. School of Natural Resources, University of Nebraska, Lincoln, April 7.

SERVICE AND OUTREACH

- 2014 *Journal of Selected Topics in Applied Earth Observations and Remote Sensing* (1 article reviewed).
Judge for the Florida International University, Biology Department Symposium Poster Session.
- 2013 *Arctic, Antarctic, and Alpine Research* (1 article reviewed)
Live interviews (audio and video) recorded in the field, by Liz O'Connell from WonderVisions in connection with FrontierScientists.com for a series titled "*Frontier Scientists Enhanced*".
ITEX: Tram Powered - <http://frontierscientists.com/videos/itex-tram>
Research featured in a Kipp & Zonen newsletter.
<http://www.kippzonen.com/News/402/24th-edition-of-our-newsletter#.Up-PDsRDuSp>
Performed a field campaign to acquire kite aerial photography of a section of the Kuparuk River Basin on the North Slope of Alaska for Dr. Sarah Godsey and Caitlin Rushlow from the University of Idaho.
- 2012 *Journal of Arid Land* (1 article reviewed)
Live interview/journal recorded in the field by Susan Steiner, one of 12 nationally selected public school teachers involved in the PolarTREC program. "A Trolley called NIMS".
<http://www.kippzonen.com/News/410/A-Trolley-called-NIMS#.Up-MJ8RDuSo>
Live interview/journal recorded in the field by Nick LaFave, one of 12 nationally selected public school teachers involved in the PolarTREC program. "Eye in the Sky – 50 meters, 1 hour, 36,814 data values!".
<http://www.polartrec.com/expeditions/predatory-spiders-in-the-arctic-food-web/journals/2012-06-26-0>
- 2011 *Evapotranspiration - Remote Sensing and Modeling* (2 chapters reviewed)
- 2010 Judge for the University of Nebraska-Lincoln Environmentors Program Poster Session.

AWARDS AND DISTINCTIONS

- 2014 Invited to present at the Toolik Lake Biological Field Station, North Slope of Alaska.
- 2012 Invited to present at the Toolik Lake Biological Field Station, North Slope of Alaska.
- 2010 Doctoral research selected as one of 33 featured research projects for the University of Nebraska-Lincoln Office of Research and Economic Development's Annual Report.
Invited to present at the University of Nebraska-Lincoln Research Fair
- 2009 Invited to present at The 3rd Annual Graduate Climate Conference, University of Washington, Seattle, Washington.
- 2008-09 Centennial Fellowship, University of Nebraska-Lincoln. 2008-2009.

PROFESSIONAL COLLABORATIONS

- 2015 Provided support in the deployment/maintenance of four instrumented buoys for the NASA Jet Propulsion laboratory in collaboration with the University of California, Davis' Tahoe Environmental Research Center at Lake Tahoe, CA.

- 2014 – 2015 Provided ground support and validation of methane emissions in the greater Bakersfield, CA area for the HyTES airborne campaign at the NASA Jet Propulsion Laboratory.
- 2014 – 2015 Assisted in the development of ground truth measurements for a prototype automated unmanned aerial vehicle (UAV) through the NASA Jet Propulsion Laboratory and the University of California, Davis at the Russell Ranch Research Facility outside Davis, CA.
- 2012 – 2014 Arctic Observing Networks: Collaborative Research: Sustaining and amplifying the International Tundra Experiment (ITEX)- Arctic Observing Network (AON) through automation and increased interdisciplinarity of observations.
 Florida International University
 University of Texas, El Paso
 Grand Valley State University
- Innovative Design Collaboration: Technological Advancement in Mobile Sensor Platforms.
 Harvard University
 University of California, Berkeley
- 2008 – 2010 Changes in Lake Dynamics on the Arctic Coastal Plain of North America over the Past Half-Century
 University of Nebraska
 University of Cincinnati
 University of California, Los Angeles

PROFESSIONAL ORGANIZATIONS

- 2011 – Present Global Lake Temperature Collaboration
 2008 – Present American Geophysical Union
 2008 – Present American Meteorological Society

COMPUTER PROFICIENCY

Microsoft Office Suite, R, ArcGIS, ERDAS Imagine, ENVI, Matlab, SAS, Campbell Scientific - EdLog, Loggernet, PC400, RefET, GrADS, TopoDrive, ParticleFlow

REFERENCES**Simon J. Hook, Ph.D.**

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