

# MICHAEL G. SUTHERLAND

## EDUCATION

Master of Science, Environmental Studies; 2010  
College of Charleston, Charleston, SC

Bachelor of Arts, Political Science; Minor, Environmental Studies; 2005  
University of Florida, Gainesville, FL

Additional graduate level coursework in remote sensing, geomatics, geospatial programming, and data analytics taken at the University of Colorado (Boulder and Denver campuses) and Pennsylvania State University between 2011 and 2020.

## PROFESSIONAL EXPERIENCE

Great Lakes Observing System, Ann Arbor, MI

Marine Geospatial Analyst; April 2024-Present

- Technical subject matter expert supporting GLOS bathymetric mapping programs and projects (e.g. crowd-sourced bathymetry, Lakebed2030, etc.)
- Support GLOS communications team via development of geospatial visualizations
- Provide operational support to GLOS DMAC team regarding geospatial data processing, visualization and data management of observational assets

Cooperative Institute for Research in Environmental Sciences (CIRES),

National Snow and Ice Data Center, Boulder, CO

Associate Scientist III; May 2022-April 2024

- Data Management Team Lead at the NASA Distributed Active Archive Center (DAAC)
- Coordinated day to day activities of a matrixed data management team supporting the NASA SMAP satellite mission and cryospheric data products
- Developed and achieved data management goals and deliverables through coordination with internal and external stakeholders
- Ensured data products were ingested, archived, and distributed according to NASA and NSIDC DAAC requirements
- Ensured data and supporting metadata and documentation conform to NASA and NSIDC DAAC data standards and best practices (i.e. FAIR data principles)
- Provided on-site data management support during the 2023 NASA SnowEx Campaign (Fairbanks, AK)

Dewberry, Denver, CO

Senior Geospatial Analyst; May 2019-April 2022

- Technical subject matter expert supporting airborne lidar bathymetry acquisition projects for federal partners (NOAA, USGS, USACE)

- Led topo-bathymetric lidar data preparation team responsible for exploratory data analysis and initial processing of acquired lidar data
- Developed operational decision support tools for topo-bathymetric lidar projects to ensure optimal data acquisition conditions
- Responsible for quality control review on acquired raw data to determine adequacy for subsequent production processing
- Conceived and developed new and improved data processing workflows/tools to improve processing efficiency
- Performed final quality control review on client deliverables to ensure contract compliance

Cooperative Institute for Research in Environmental Sciences (CIRES),  
 NOAA National Centers for Environmental Information (NCEI), Boulder, CO  
 Associate Scientist II/III; October 2012–April 2019

- Technical task lead for coastal digital elevation model (DEM) development projects at NOAA NCEI
- Helped design and implement an improved framework for the creation of coastal DEMs on a national scale (e.g. CUDEM Program)
- Developed and improved open-source data processing workflows to enable automated DEM development and facilitate continuous data updates to support NOAA mission critical activities (operational hydrodynamic modeling, hazards mapping)
- Represented NOAA NCEI in various inter- and intra-agency coastal mapping working groups to establish elevation data processing best practices, facilitate data sharing and avoid duplication of effort
- Coordinated the transfer of coastal lidar data from federal providers to NOAA NCEI's long term data repository
- Validated and packaged received data for long term archive
- Created and improved data documentation (i.e. standards-compliant metadata)

I.M. Systems Group (contracted to the NOAA Coastal Services Center), Charleston, SC Geospatial Analyst; January 2010-August 2012

- Technical staff member supporting various elevation mapping and coastal hazards related projects
- Created lidar-derived coastal DEMs in support of the NOAA Sea Level Rise Viewer web mapping application
- Processed airborne lidar data for public dissemination via the NOAA Digital Coast Data Access Viewer
- Helped develop and implement raster modeling workflows to depict various inundation scenarios for the NOAA Sea Level Rise Viewer web mapping application
- Performed quality control of subcontracted lidar data and associated DEMs
- Participated in multiple GNSS field surveys to support accuracy assessment of contracted lidar acquisitions

## **TECHNICAL SKILLS**

Operating Systems: Windows, Linux

Programming/Scripting Languages: Python, bash

Geospatial Software: Python Geospatial Stack (e.g. GDAL, geopandas, rasterio), ArcGIS Pro, QGIS, Global Mapper, Generic Mapping Tools (GMT)

Elevation Mapping Software: LAStools, LP360, PDAL, MB-System, Terrascan, Qimera, Fledermaus

## **HONORS AND AWARDS**

Dewberry At Work Award (Peer Recognition), Dewberry, October 2021

Silver Medal for Meritorious Service to Science in support of Advances in Coastal Digital Elevation Model Development, CIRES/CU-Boulder, July 2020

Outstanding Achievement Award in support of Coastal Elevation/Inundation projects, NOAA Coastal Services Center, November 2011

Outstanding Achievement Award in support of Marine Spatial Planning and Coastal Elevation/Inundation projects, NOAA Coastal Services Center, December 2010

## **PUBLICATIONS**

Amante, C.J., Love M, Carignan K, Sutherland MG, MacFerrin M, Lim E. Continuously Updated Digital Elevation Models (CUDEMs) to Support Coastal Inundation Modeling. Remote Sensing. 2023; 15(6):1702. <https://doi.org/10.3390/rs15061702>

Westington, M., Varner, J., Johnson, P., Sutherland, M., Armstrong, A., and Jencks, J. 2019. Assessing Gaps via Bathymetric Sounding Density. The International Hydrographic Review, 20, 41-44.

Sutherland, M.G., Amante, C.J., Carignan, K. and Love, M. 2019. NCEI Continuously Updated Digital Elevation Models. Coastal Geotools Conference, February 11-14, Myrtle Beach, SC.

Sutherland, M.G., Amante, C.J. and Stroker, K. 2017. Towards an Accurate and Consistent National Coastal Digital Elevation Dataset. Coastal Geotools Conference, February 6-9, Charleston, SC.

Sutherland, M.G., McLean, S.J., Eakins, B., Beasley, L. and Love, M. 2015. High-Resolution Modeling of Coastal Elevations along Hurricane Sandy-Impacted Coasts: New Methods and Early Results. Coastal Geotools Conference, March 30-April 2, Charleston, SC.

Eakins, B.W., Danielson, J.J., Sutherland, M.G. and McLean, S.J. 2015. A Framework for a Seamless Depiction of Merged Bathymetry and Topography along U.S. Coasts. Proceedings of U.S. Hydro, March 16-19, National Harbor, MD.

Love, M.R., Sutherland, M.G., Eakins, B., Marcy, D. and McLean, S. 2013. Development of High Resolution, Lidar-Derived Digital Elevation Models for the U.S. Great Lakes. Geological Society of America, Abstracts with Programs, 45(7), 755.

Eakins, B.W., Danielson, J., Sutherland, M.G. and McLean, S. 2013. Creating a Framework for Integrated U.S. Digital Elevation Models. Geological Society of America, Abstracts with Programs, 45(7), 649.

Marcy, D., Brooks, W., Draganov, K., Hadley, B., Haynes, C., Herold, N., McCombs, J., Pendleton, M., Ryan, S., Schmid, K., Sutherland, M. and Waters, K. 2011. New Mapping Tool and Techniques for Visualizing Sea Level Rise and Coastal Flooding Impacts. Solutions for Coastal Disasters 2011, American Society of Civil Engineers, pp. 474-490. [https://doi.org/10.1061/41185\(417\)42](https://doi.org/10.1061/41185(417)42)

Sutherland, M.G. and Sautter, L.R. 2010. Monitoring of a Discrete Shoal Bypassing Event and Resultant Effects upon Beach Morphology, Dewees Island, SC. Geological Society of America, Abstracts with Programs, 42(1), 94.

Levine, N.S., Kaufman, C.C., Sutherland, M. and Renaud, L. 2008. Adapting HAZUS-MH to Assess Sea Level Rise. Geological Society of America, Abstracts with Programs, 40(6), 84.