



Press Release

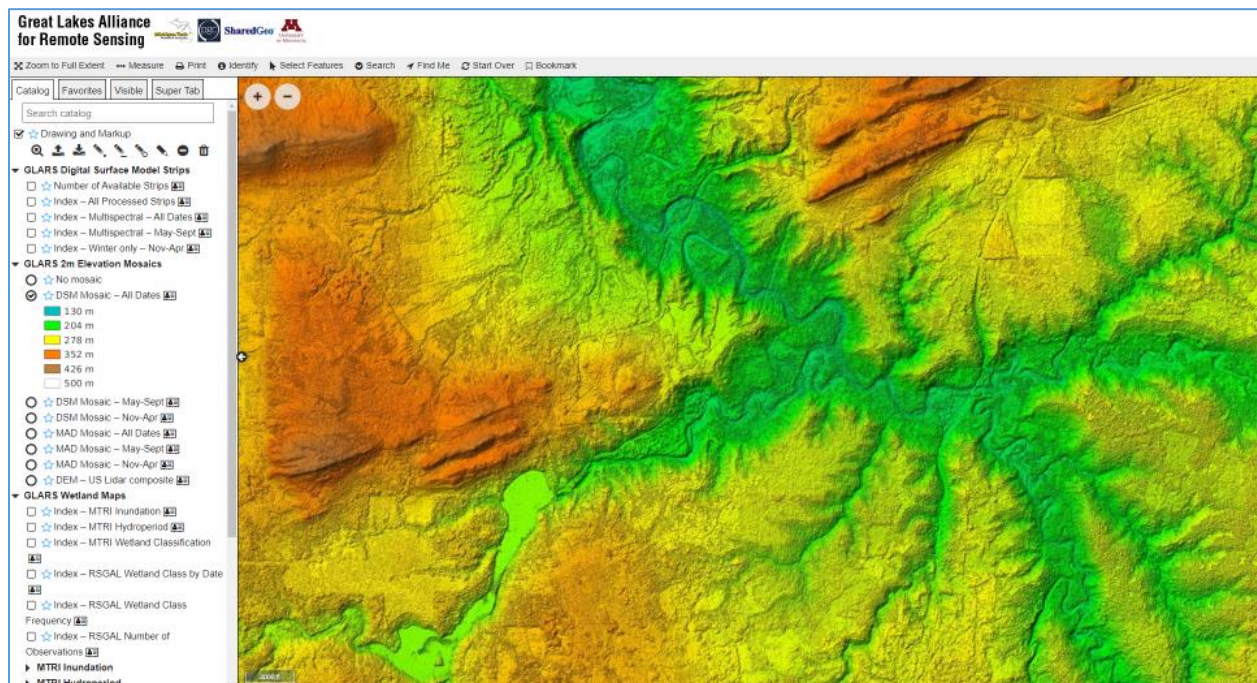
For Immediate Release

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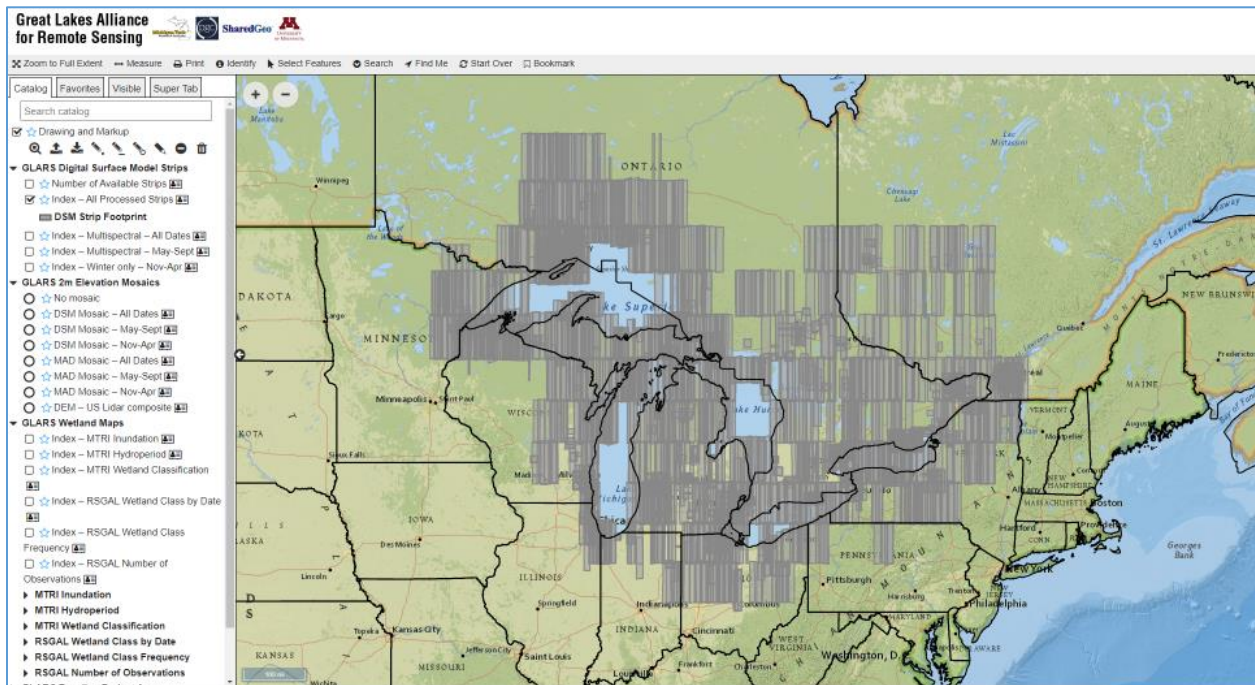
Great Lakes Digital Surface Model Products Released to the Public

St. Paul, Minnesota, May 12, 2022 – The Great Lakes Alliance for Remote Sensing (GLARS) is pleased to announce Digital Surface Model (DSM) strips and mosaics covering 85% of the Great Lakes Basin are now available for use by researchers, conservationists, natural resource managers and the public for free. An example DSM mosaic view for northern Michigan is shown below.



Produced by GLARS partner SharedGeo in collaboration with the [University of Minnesota's Polar Geospatial Center](#) (PGC), these DSM strips and mosaics for the first time provide a uniform, three-dimensional understanding of upland watershed and coastal regions of the Great Lakes at 2-meter resolution. To create these products, SharedGeo requested and received more than 70 TBs of DigitalGlobe stereo imagery through the National Geospatial-Intelligence Agency's (NGA) NextView program. SharedGeo staff then generated the DSMs by applying fully automated, stereo auto-correlation techniques to overlapping pairs of the high-resolution optical satellite images using open-source Surface Extraction from TIN-based Search space Minimization (SETSM) software as modified by PGC and SharedGeo. This processing used over one million node hours on one of the world's fastest supercomputers, the National Science Foundation's (NSF) "Blue

Waters” at the University of Illinois Urbana-Champaign. The resulting derived product DSM strips and mosaics create a foundation for monitoring and better understanding of a wide range of Great Lakes climatic change issues through regional or basin-wide visualization. Some potential future uses of this technology include evaluating changes in watershed vegetation from non-point source pollution, assessing carbon mitigation activities, managing wetland/habitat restoration, monitoring cliff erosion, and similar environmental protection efforts. Work by other GLARS partners which have already been enhanced by these DSM products include invasive species and hydrologic level monitoring. The gray rectangles in the graphic below represent areas which are now available for download.



In addition to the substantial science required to produce the SharedGeo DSMs, the effort is significant in at least three other ways. First, it is the first public domain release of DSM products covering an expansive area (eight states and two Canadian provinces) outside the polar regions. Second, it demonstrates the potential for units of government to have access to frequently acquired DSM data without the high cost of similar LiDAR products. And third, because this approach relies on satellite imagery that is being frequently collected, short period, time-sequenced visualization of climate change impact, and the results of mitigation are possible.

Funding for creation of the SharedGeo DSM products was provided by the Department of the Interior’s U.S. Fish and Wildlife Service (USFWS) through the U.S. Congress directed Great Lakes Restoration Initiative (GLRI). GLRI is championed and managed by U.S. Environmental Protection Agency (EPA)’s Great Lakes National Program Office in Chicago, IL. Blue Waters supercomputer time was paid for by two awards from the Great Lakes Consortium for Petascale Computing. NextView imagery was provided by Maxar Technologies Inc. subsidiary DigitalGlobe through a National Reconnaissance Office (NRO) funded program managed by NGA. NSF funding supported [SETSM software](#) development by M.J. Noh and Ian Howat at The Ohio State University.

Review and download of the SharedGeo DSMs strips, mosaics, and other products produced by GLARS partners is available from the Data section of the GLARS website: www.glars.org

About GLARS: Creating, collaborating and sharing geospatial data across the Great Lakes Basin is a challenge due to the fractured and limited remote sensing capabilities of the public and private entities operating in this international setting. To overcome this limitation, in 2016 the U.S. Environmental Protection Agency (EPA) and U.S. Fish and Wildlife Service (USFWS) began funding a collaboration between Michigan Tech Research Institute (MTRI), Polar Geospatial Center, Remote Sensing and Geospatial Analysis Lab at the University of Minnesota (RSGAL) and SharedGeo to develop and test the potential for creating value-added geospatial products from high resolution satellite imagery which could be used to remotely monitor changes in the Great Lakes Basin ecosystem. Joining this effort over time have been several Canadian partners and other U.S. academic institutions. This group of organizations working together has adopted the name of Great Lakes Alliance for Remote Sensing (GLARS).

The near-term goal of the GLARS effort is to build an integrated, ongoing, remote sensing program for basin-wide mapping, monitoring, management and protection of Great Lakes coastal wetlands. The effort has initially focused on developing accurate elevation measurement of coastal wetland features and water level changes across time using two main data sources with frequent collection dates: submeter optical satellite imagery from the NextView program and RADARSAT-2 satellite imagery. www.glars.org

About SharedGeo: Founded in September 2008, SharedGeo is a federally recognized Minnesota based 501(c)3 geospatial research and development nonprofit dedicated to helping government, nonprofit, education, and corporate entities use mapping technologies and share geographic data for the public good. SharedGeo's initial focus was on disaster response and relief operations in the United States but has since become engaged in a wide variety of related activities – including environmental, public safety and specialized software development. Past and current collaborative partners include federal, state, tribal, county, municipal, nonprofit, and corporate entities. www.sharedgeo.org