

## Dr. Michael John Willis

Fellow of Cooperative Institute for Research in Environmental Sciences (CIRES).

Assistant Professor of Geodesy and Remote Sensing.

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**RESEARCH INTERESTS** I blend fieldwork with geodetic and remote sensing tools, and big-data to answer questions about the contribution of land based ice to sea level change. I focus most closely on ice dynamics and topographic changes at high latitudes and high elevations. I am also interested in the evolution of megacities, landslides, earthquakes and volcano hazards, how problems scale both spatially and temporally and how computer vision algorithms can be applied to geophysical problems. I am an expert in remote sensing, geodesy, glaciology and geomorphology. I am a regional expert on Antarctica, the Arctic and coastal megacities.

### **EDUCATION**

Ph.D. Ohio State University, Columbus, Geological Sciences

2008

### **RECENT PUBLICATIONS**

Bevis, M.G., Harig, C., Khan, S.A., Brown, A., Simons, F.J., **Willis, M.J.**, Fettweis, X., van den Broeke M.R., Madsen, F.B., Kendrick, E., Caccamise II, D.J., van Dam, T., Knudsen, P., Nylen T. (2019) “Accelerating changes in ice mass within Greenland, and the ice sheet’s sensitivity to atmospheric forcing.” *Proceedings of the National Academies of Sciences*. January 22, 2019 <https://doi.org/10.1073/pnas.1806562116>

**Willis, M.J.**, Zheng, W., Durkin, W.J., Pritchard, M.E., Ramage, J.M., Dowdeswell, J.A., Benham, T.J., Bassford, R.P., Glazovsky, A., Macheret, Y., Stearns, L.E., Porter, C.E. (2018) “Massive destabilization of an Arctic ice cap” *Earth and Planetary Science Letters*. <https://doi.org/10.1016/j.epsl.2018.08.049>. **Generated a large amount of media coverage.**

Barletta, V.R., Bevis, M.G., Smith, B.E., Wilson, T.J., Brown, A., Bordoni, A., **Willis, M.J.**, Khan, S.A., Rovira-Navarro, M., Dalziel, I., Smalley Jr., R., Kendrick, E.C., Konfal, S.A., Caccamise II, D.J., Aster, R.C., Nyblade, A., Wiens, D.A. (2018) “Observed rapid bedrock uplift in Amundsen Sea Embayment promotes ice-sheet stability.” *Science*. <https://doi.org/10.1126/science.aa01447>. **Generated a large amount of media coverage.**

Berthier, E., Larsen, C., Durkin, W.J., **Willis, M.J.**, Pritchard, M.E., (2018). Brief communication: Unabated wastage of the Juneau and Stikine icefields (southeast Alaska) in the early 21st century. *The Cryosphere* 12. <https://doi.org/10.5194/tc-12-1523-2018>

Higman, B., Shugar, D.H., Stark, C.P., Ekström, G., Koppes, M.N., Lynett, P., Dufresne, A., Haeussler, P.J., Geertsema, M., Gulick, S., Mattox, A., Venditti, J.G., Walton, M.A.L., McCal, N., Mckittrick, E., MacInnes, B., Bilderback, E.L., Tang, H., **Willis, M.J.**, Richmond, B., Reece, R.S., Larsen, C., Olson, B., Capra, J., Ayca, A., Bloom, C., Williams, H., Bonno, D., Weiss, R., Keen, A., Skanavis, V., and Loso, M. (2018) “The 2015 landslide and tsunami in Taan Fiord, Alaska.” *Scientific Reports*. <https://doi.org/10.1038/s41598-018-30475-w>

Shugar, D.H., Colorado, K.A., Clague, J.J., **Willis, M.J.** and Best J.L. (2018) “Boundary – Mapping and Visualizing Climatically Changed Landscapes at Kaskawulsh Glacier and Kluane Lake, Yukon” *Journal of Maps*. <https://doi.org/10.1080/17445647.2018.1467349>.

Zheng, W., Pritchard, M.E., **Willis, M.J.**, Tepes, P., Gourmelen, N., Benham, T.J. and Dowdeswell, J.A.

(2018) “Accelerating glacier mass loss on Franz Josef Land, Russian Arctic.” *Remote Sensing of Environment*. <https://doi.org/10.1016/j.rse.2018.04.004>.

Dufresne, A., Geertsema, M., Shugar, D.H., Koppes, M., Higman, B., Haeussler, P.J., Stark, C., Venditti, J.G., Bonno, D., Larsen, C., Gulick, S.P.S., McCall, N., Walton, M., Loso M.G. and **Willis, M.J.** (2017) “Sedimentology and geomorphology of a large tsunamigenic landslide, Taan Fiord, Alaska.” *Sedimentary Geology*, <https://doi.org/10.1016/j.sedgeo.2017.10.004>.

Smith, L.C., Yang, K., Pitcher, L.H., Overstreet, B.T., Chu, V.W.E., Rennermalm, A.K., Ryan, J.C., Cooper, M.G., Gleason, C.G., Tedesco, M., Jeyaratnam, J., van As, D., van den Broeke, M.R., van de Berg, W.J., Noël, B., Langen, P.L., Cullather, R.I., Zhao, B., **Willis, M.J.**, Hubbard, A., Box, J.E., Jenner, B.A. and Behar, A.E. (2017) “Direct Measurements of Meltwater Runoff on the Greenland Ice Sheet Surface” *Proceedings of the National Academies of Science*. December, 114 (50) E10622-E10631. <https://doi.org/10.1073/pnas.1707743114> **Generated a large amount of media coverage.**

Durkin W.J., Bartholomaeus T.C., **Willis M.J.** and Pritchard, M.E. (2017) “Dynamic Changes at Yahtse Glacier, the Most Rapidly Advancing Tidewater Glacier in Alaska.” *Frontiers in Earth Science*, 5. <https://doi.org/10.3389/feart.2017.00021>.

Shugar, D.H., Clague, J.J., Best, J.L., Schoof, C., **Willis, M.J.**, Copland L. and Roe, G.H. (2017) “River piracy and drainage basin reorganization led by climate-driven glacier retreat” *Nature Geosciences*. <https://doi.org/10.1038/ngeo2932> **Generated a large amount of media coverage.**

Stahl, T.A., Clark, M.K., Zekkos, D., Athanasopoulos-Zekkos, A., **Willis, M.J.**, Medwedeff, W., Knoper, L., Kirk, F.T. and Jonson, J. (2017) “Earthquake science in resilient societies” *Tectonics*. <https://doi.org/10.1002/2017TC004604>

### **RECENT DATA PRODUCTS**

2018 ArcticDEM release V7. Publicly available 2m posting version-3 digital surface models of Entire Arctic. <https://Arcticdem.org>.

### **RECENT HONORS**

2018 Carbonbrief.org 15th most featured climate paper in the media in 2017, measured on news and social media exposure as measured using altmetrics score.  
2017 WIRED – High performance computing innovation team award.  
2017 Hyperion Research - High Performance Computing Innovation Excellence Award.  
2017 Recognition from Government of Greenland for coordinating US science response to Karrat Fjord Landslide and Tsunami, West Greenland – June 2017.

### **RECENT SERVICE**

2019 spring **National Academy of Sciences** expert panel to identify key connections between geodesy and priority Earth science questions from the 2018 Decadal Survey and to explore how to improve geodetic infrastructure to meet new science needs.

2018 fall **Session Convener** Geodesy Section at Fall AGU.

2018 fall **Invited Speaker** - Cryosphere Section at Fall AGU.

2018 fall Local TEDx Salon speaker on cryospheric change.

- 2018 summer      **Invited talk** on Structure from Motion in the Geosciences, University of Santa Cruz de la Sierra, Bolivia.
- 2018 summer      **Keynote Speaker** at Community Surface Dynamics Modeling System Annual Conference and Workshop. University of Colorado, Boulder.
- 2018 summer      Co-Mentor, RESESS Student - University of Colorado, Boulder. *My Postdoc and I supervised an intern recruited from a historically underrepresented group via the UNAVCO RESESS program.*
- 2018 spring      **Keynote Speaker** at International Glaciological Society Meeting, University of Colorado, Boulder. Observations of Cryosphere changes in Russia and Greenland.
- 2017 - present    **NASA Sea Level Team.**
- 2017                **Invited speaker** at Institute of Alpine and Arctic Research, University of Colorado, Boulder.
- 2017                **Keynote speaker** at Geological Society of America Meeting, Seattle, Oct, 2017. Hazard and Cryosphere.