

Johan Nilsson

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Relevant Experience:

Johan Nilsson has 7-years of experience and expertise in remote sensing of glacier mass balance, ice sheet dynamics and sea level rise using satellite and airborne altimetry. His research is mainly focused on measuring dynamic topography, by developing high-resolution and long-term time series of elevation change of complex glaciated terrain, from multi-mission radar and laser altimetry. He applies novel statistical-and signal processing, using large scale parallel processing techniques and advanced data analysis of complex systems, to study geophysical problems related to ice sheets and glaciers contribution to sea-level rise. Further, he has experience and interest in areas of GNSS, imaging and gravimetry, related to the fields of geodesy and geodynamics.

Professional Experience:

2018 – Present *Scientist* – NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, United States.
2015 - 2018 *Postdoctoral Scholar* - NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, United States.
2011 (5m) *Staff Associate* - Lamont-Doherty Earth Observatory, Columbia University of New York City, New York, United States.
2008 (3m) *Measurement System Designer and Test Engineer* - Saab Defense and Security,
2009 (3m) Gothenburg, Sweden.

Education:

PhD - 2015 *Cryosphere Monitoring from Satellites and Aircrafts* - DTU Space, National Space Institute, Technical University of Denmark, Copenhagen, Denmark.
MSc - 2011 *Engineering Physics, Radio and Space Science* - Chalmers University of Technology, Gothenburg, Sweden
BSc - 2008 *Electrical Engineering* - Chalmers University of Technology, Gothenburg Sweden

External Stays:

2013 Geological Survey of Canada, Ottawa, Ontario, Canada.
2013 The University Centre in Svalbard, Longyearbyen, Norway.
2009 Physics Department - ERASMUS, University of Aberdeen, Aberdeen, Scotland.

Research Projects:

2018 NASA MEaSURES – “Inter-mission Time Series of Land Ice Velocity and Elevation” (Co-I)
2017 NASA Cryosphere – “West Antarctic response to Ocean Variability” (Co-I)
2017 NASA ICESat-2 Science Team (collaborator)
2016 NASA NSLCT – “Global interconnections of Cryosphere and Solid Earth, Sea-level Change and Ice Mass Balance” (postdoc)
2016 Black and Bloom Project (field assistant)
2012 ESA CryoVex Airborne Validation Campaign (PhD)

2011 - 2015 Stability and Variations of Arctic Land Ice Project (PhD)

Fieldwork:

2016	Black and Bloom Project	(Greenland)
2013	Glaciology Course	(Svalbard)
2012	ESA CryoVex Project	(Greenland and Svalbard)

Publications:

1. Caron, L., E.R. Ivins, E. Larour, S. Adhikari, **J. Nilsson** and G. Blewitt (2018), GIA model statistics for GRACE hydrology, cryosphere and ocean science, *Geophys. Res. Lett.*, in press.
2. Cook, J. M., Hodson, A. J., Gardner, A. S., Flanner, M., Tedstone, A. J., Williamson, C., Irvine-Fynn, T. D. L., **Nilsson, J.**, Bryant, R., and Tranter, M.: Quantifying bioalbedo: a new physically based model and discussion of empirical methods for characterising biological influence on ice and snow albedo, *The Cryosphere*, 11, 2611-2632, <https://doi.org/10.5194/tc-11-2611-2017>, 2017.
3. Gardner, A. S., Moholdt, G., Scambos, T., Fahnestock, M., Ligtenberg, S., van den Broeke, M., and **Nilsson, J.**: Increased West Antarctic ice discharge and East Antarctic stability over the last seven years, *The Cryosphere Discuss.*, <https://doi.org/10.5194/tc-2017-75>, Accepted, 2017.
4. **Nilsson, J.**, Gardner, A., Sandberg Sørensen, L., and Forsberg, R.: Improved retrieval of land ice topography from CryoSat-2 data and its impact for volume change estimation of the Greenland Ice Sheet, *The Cryosphere*, 10, 1–17, doi: 10.5194/tc-10-1-2016, 2016.
5. **Nilsson, J.**, Vallelonga, P., Simonsen, S.B., Sørensen, L.S., Forsberg, R., Dahl Jensen, D., Hirabayashi, M., GotoAzuma, K., Hvidberg, C.S., Kjær, H.A. and Satow, K., 2015. Greenland 2012 melt event effects on CryoSat2 radar altimetry. *Geophysical Research Letters*, 42(10), pp.3919-3926.
6. **Nilsson, J.**, Sandberg Sørensen, L., Barletta, V.R. and Forsberg, R., 2015. Mass changes in Arctic ice caps and glaciers: implications of regionalizing elevation changes. *The Cryosphere*, 9(1), pp.139-150.
7. Forsberg, R, Sørensen, LS, Fredenslund Levinsen and **Nilsson J.**, 2013, Mass loss of Greenland from GRACE, IceSat and CryoSat. in *Proceedings of the CryoSat Workshop*. European Space Agency, ESA, Dresden
8. Skourup, H, Einarsson, I, Forsberg, R, Haas, C, Helms, V, Hvidegaard, SM, **Nilsson, J**, Olesen, AV and Olesen, AK 2012, ESA CryoVEx 2012: Airborne field campaign with ASIRAS radar, EM induction sounder and laser scanner. DTU Space, Kgs. Lyngby, Technical Report, no. 2.

Talks:

- 2018 (invited) European Geophysical Union (EGU), Vienna, Austria:
Monthly estimates of Antarctic Ice Sheet elevation change from a quarter-century of combined radar and laser altimetry
- 2017 American Geophysical Union (AGU), New Orleans, USA:
Synthesis of a quarter-century of satellite and airborne altimetry records to resolve long-term ice sheet elevation change
- 2017 North-American CryoSat Science Meeting, Banff, Canada:
On a Path Towards the Reassessment of Antarctic Volume Change: Synthesis of ESA CryoSat-2 Radar and NASA Airborne and Satellite Laser Altimetry Observations.
- 2015 (Invited) Ilulissat Climate Days, Ilulissat, Greenland:
Surface elevation change of the Greenland ice sheet from CryoSat-2 altimetry
- 2014 European Geophysical Union (EGU), Vienna, Austria:
Greenland 2012 melt event effects on CryoSat radar altimetry.