

Yara Mohajerani

CURRICULUM VITAE

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EDUCATION

- **Ph.D.** in Earth System Science, University of California Irvine (CGPA 4.00/4.00) 12/2019
 - Dissertation: Understanding Regional Ice Sheet Mass Balance: Remote Sensing, Regional Climate Models, and Deep Learning
 - International Summer School in Glaciology, McCarthy, Alaska 06/2018
- **M.S.** in Earth System Science, University of California Irvine (CGPA: 4.00/4.00) 12/2016
- **H.B.Sc.** in Physics and Mathematics with High Distinction, U of Toronto (CGPA: 3.89/4.00) 06/2014

CERTIFICATES

- Data Science Certificate - UC Irvine Data Science Program 06/2017
- Scientific Writing and Publishing - Nature Journal Masterclasses 05/2017

ACADEMIC POSITIONS AND EXPERIENCE

- **Postdoctoral Scholar – University of Washington** 08/01/2020 – Present
 - Under the supervision of Dr. David Shean, Civil and Environmental Engineering, and Dr. Anthony Arendt, eScience Institute
- **Postdoctoral Scholar – UC Irvine** 02/10/2020 – 07/31/2020
 - Under the supervision of Dr. Isabella Velicogna, Earth System Science
- **Graduate Student Researcher – UC Irvine** 09/2014 – 12/2019
 - Advisor: Dr. Isabella Velicogna, Earth System Science
- **Undergraduate Thesis Research – University of Toronto** 09/2013 – 04/2014
 - Under the supervision of Dr. Paul Kushner, Dept. of Physics
- **Centre for Global Change Science (CGCS) Internship** 05/2013 – 08/2013
 - Under the supervision of Dr. Paul Kushner, Dept. of Physics, University of Toronto
- **Undergraduate Researcher – University of Toronto** 05/2011 – 12/2011, 05/2012 – 08/2012
 - Under the supervision of Dr. Kenneth Burch, Dept. of Physics
- **Researcher at Research Mentorship Program** 12/2009 – 08/2010
 - Under the supervision of Dr. John Percy, Astronomy and Astrophysics, University of Toronto

PEER-REVIEWED PUBLICATIONS

- Velicogna, I. **Mohajerani, Y.**, A, G., Landerer, F., Mouginot, J., Noel, B., Rignot, E., Sutterley, T., van den Broeke, M., van Wessem, J.M., Wiese, D. "Continuity of ice sheet mass loss in Greenland and Antarctica from the GRACE and GRACE Follow-On missions" *Geophysical Research Letters*. 47.8 (2020): e2020GL087291.
- **Mohajerani, Y.**, Velicogna, I., Rignot, E. "Evaluation of Regional Climate Models using Regionally-Optimized GRACE Mascons in the Amery and Getz ice shelves basins, Antarctica" *Geophysical Research Letters*. 46 (2019): 13,883–13,891.
- Britten G.L., **Mohajerani Y.**, Primeau L., Aydin M., Garcia C., Wang W., Pasquier B, Cael B, Primeau F.W. "Bayesian research synthesis models in environmental science: a case study of marine organic carbon fluxes" *Frontiers in Environmental Science*. In review.
- Shepherd, A., et al. [including **Mohajerani, Y.**] "Mass balance of the Greenland Ice Sheet from 1992 to 2018." *Nature* 579, no. 7798 (2019): 233-239.

- **Mohajerani, Y.**, Wood, M., Velicogna, I., Rignot, E. “Detection of Glacier Calving Margins with Convolutional Neural Networks: A Case Study.” *Remote Sensing* 11.1 (2019): 74.
- **Mohajerani, Y.**, Velicogna, I., Rignot, E. "Mass Loss of Totten and Moscow University Glaciers, East Antarctica, Using Regionally Optimized GRACE Mascons" *Geophysical Research Letters* 45.14 (2018): 7010-7018.
- Pangaluru, K., Velicogna, I., **Mohajerani, Y.**, Ciraci, E., Cpepa, S., Basha, G., & Rao, S. "Soil Moisture Variability in India: Relationship of Land Surface–Atmosphere Fields Using Maximum Covariance Analysis." *Remote Sensing* 11.3 (2019): 335.
- WCRP Global Sea Level Budget Group [including **Mohajerani, Y.**] “Global sea-level budget 1993–present”, *Earth Syst. Sci. Data*, 10, (2018) 1551-1590.
- Shepherd, A., et al. [including **Mohajerani, Y.**] "Mass balance of the Antarctic Ice Sheet from 1992 to 2017." *Nature* 556 (2018): 219-222.
- Kishore, P., Velicogna, I., Sutterley, T. C., **Mohajerani, Y.**, Ciraci, E., & Madhavi, G. N. "A case study of mesospheric planetary waves observed over a three-radar network using empirical mode decomposition." *Annales Geophysicae*. Vol. 36. No. 3. Copernicus GmbH, (2018).
- Kishore, P., Jayalakshmi, J., Lin, P.L., Velicogna, I., Sutterley, T.C., Ciraci, E., **Mohajerani, Y.**, Kumar, S.B. "Investigation of Kelvin wave periods during Hai-Tang typhoon using Empirical Mode Decomposition." *Journal of Atmospheric and Solar-Terrestrial Physics* 164 (2017): 192-202.
- **Mohajerani, S.**, Percy, J.R. "Do Eclipsing Variable Stars Show Random Cycle-to-cycle Period Fluctuations?" *Journal of the American Association of Variable Star Observers (JAAVSO)* 39 (2011).

INVITED TALKS

- **Mohajerani Y.** “Machine Learning and Glaciological Remote Sensing: A New Era” – eScience Institute, University of Washington, Seattle, WA. February 25, 2020.
- **Mohajerani Y.** “Understanding Regional Ice Sheet Mass Balance: GRACE/GRACE-FO and Regional Climate Models” – University of Washington, Seattle, WA. February 25, 2020.
- **Mohajerani Y.** “Gravity Recovery and Climate Experiment Follow-On” – Space Studies Board Fall Meeting, National Academies of Sciences, Engineering, and Medicine. Irvine, CA. November 6, 2019.
- **Mohajerani Y.**, “Mass Balance Estimates from GRACE”. International Summer School in Glaciology, McCarthy, Alaska, June 2018.

CONFERENCE PRESENTATIONS

- **Mohajerani, Y.**, Velicogna I., Rignot E., “Regional Atmospheric Climate Model Evaluation in Getz and Amery Ice Shelf Basins using GRACE.” American Geophysical Union (AGU) Fall Meeting, ABSTRACT C23B-1544, San Francisco, CA., Dec. 2019
- **Mohajerani, Y.**, Velicogna I., Sutterley T., Rignot E., Wiese D., “Evaluation of GRACE and GRACE-FO continuous solution on the ice sheets: harmonic inter-comparison and tailored regional analysis.” – GRACE-FO Science Team Meeting (GFO-STM) Continuity & Analysis Techniques, Pasadena, CA., Oct. 2019
- Velicogna I., **Mohajerani Y.**, Ciraci E, A. Geruo, Sutterley T., “Continuity of measurements of time-variable gravity across the GRACE and GRACE-FO missions over Greenland, Antarctica and the world’s glaciers and ice caps” – GRACE-FO Science Team Meeting (GFO-STM) Cryosphere, Pasadena, CA., Oct. 2019
- He Z., Velicogna I., Ciraci E, Hsu C. **Mohajerani Y.**, Rignot E., “Reconstruction of 40-Year Measurement-Based Sea Level Fingerprints from Land-Ice Mass Changes” – GRACE-FO Science Team Meeting (GFO-STM) Oceanography, Pasadena, CA., Oct. 2019
- **Mohajerani Y.**, Velicogna I., Rignot E., “Regional Optimization of GRACE and GRACE-FO Processing and Inter-comparison with Regional Climate Models across the Antarctic Ice Sheet.” American Geophysical Union (AGU) Fall Meeting, ABSTRACT C51A-07, Washington D.C., Dec. 2018
- **Mohajerani Y.**, Velicogna I., Rignot E., “Optimized Basin-Scale GRACE Harmonic Processing and Inter-comparison of GRACE Gravity Solutions in Antarctica.” GRACE/GRACE-FO Science Team Meeting (GSTM) B.2 Cryosphere GSTM-2018-81-1, Potsdam, Germany, Oct. 2018

- Velicogna I., **Mohajerani Y.**, Ciraci E., A. Geruo, Sutterley T., “Time-variable gravity studies of ice sheets and glacier mass balance and partitioning of the water cycle in high mountain environment.” GRACE/GRACE-FO Science Team Meeting (GSTM) B.2 Cryosphere GSTM-2018-71, Potsdam, Germany, Oct. 2018
- **Mohajerani Y.**, Velicogna I., Sutterley T.C., Rignot E., “Regionally Optimized GRACE Processing and Inter-Comparison on the Antarctic Ice Sheet”. Program for Arctic Regional Climate Assessment (PARCA) Meeting, College Park, Maryland, Jan. 2018
- Velicogna I., **Mohajerani Y.**, Sutterley T., “Glacier mass balance and surface mass balance evaluation with laser altimetry and other data.” Program for Arctic Regional Climate Assessment (PARCA) Meeting, College Park, Maryland, Jan. 2018
- **Mohajerani Y.**, Velicogna I., Sutterley T.C., Rignot E., “Regionally Optimized GRACE Processing and Inter-Comparison on the Antarctic Ice Sheet.” American Geophysical Union (AGU) Fall Meeting, ABSTRACT G31B-0907, New Orleans, LA, Dec. 2017
- Kishore P, Velicogna I., Ciraci E., **Mohajerani Y.**, “Evaluating the High Asia Reanalysis (HAR) using Gauge-based and Satellite Precipitation Data over High Mountain Asia.” American Geophysical Union (AGU) Fall Meeting, ABSTRACT H43D-1975, New Orleans, Louisiana, Dec 2017
- **Mohajerani Y.**, Velicogna I., Rignot E., Sutterley T.C. “Regionally Optimized GRACE Processing on Totten and Moscow University Glaciers.” GRACE Science Team Meeting (GSTM) B.3 Cryosphere, Austin, Texas, Oct. 2017
- **Mohajerani Y.**, Velicogna I., Sutterley T.C. “Optimization of Spherical Cap Mascon Processing on the Ice Sheets for the GRACE and GRACE-FO Missions.” Canadian Geophysical Union (CGU) and Canadian Society of Agricultural and Forest Meteorology (CSAFM) Annual Joint Meeting G03, Vancouver, Canada, May 2017
- **Mohajerani Y.**, Velicogna I., Sutterley T.C. “Optimization of Spherical Cap Mascon Processing on the Ice Sheets for the GRACE and GRACE-FO Missions.” American Geophysical Union (AGU) Fall Meeting, ABSTRACT G13A-1092, San Francisco, CA, Dec. 2016
- **Mohajerani Y.**, Sutterley T.C., Velicogna I., Van den Broeke M.R., Fettweis X. “Reducing Uncertainties in Greenland Surface Mass Balance Using IceBridge and ICESat Altimetry, GRACE Data and Regional Atmospheric Climate Model Outputs.” American Geophysical Union (AGU) Fall Meeting, ABSTRACT C23C-0803, San Francisco, CA, Dec. 2015
- **Mohajerani S.**, Kushner P., Derksen C. “October Eurasian Snow and its Effects on Wintertime Atmospheric Parameters.” Center for Global Change Science, University of Toronto, Toronto, Ontario, Aug. 2013

TEACHING EXPERIENCE, DIVERSITY, AND OUTREACH

- Instructor at the University of Washington ICESat-2 Hackweek 06/2020
 - <https://github.com/ICESAT-2HackWeek/Machine-Learning>
 - Anthony Arendt, Jessica Scheick, David Shean, Ellen Buckley, Shane Grigsby, Charley Haley, Lindsey Heagy, **Yara Mohajerani**, Tom Neumann, Johan Nilsson, Thorsten Markus, Fernando Paolo, Fernando Perez, Alek Petty, Axel Schweiger, Ben Smith, Amy Steiker, Sebastian Alvis, Scott Henderson, Nick Holschuh, Zheng Liu, Tyler Sutterley. (2020). ICESAT-2HackWeek/2020_ICESat-2_Hackweek_Tutorials (Version 1.0). Zenodo. <http://doi.org/10.5281/zenodo.3966463>.
- Teaching and Outreach at UC Irvine as a Minority Serving Institution (MSI), Asian American and Native American Pacific Islander-Serving Institution (AANAPISI) and Hispanic-Serving Institution (HSI):
 - Workshop on Web Development and Tools for Advancement of Student Careers 2018
 - Developed content and instructed workshop for graduate students, particularly minorities and first-generation students, on developing student website and promoting their careers
 - Earth System Science graduate student retreat workshop
 - Introduction to Spatial-Temporal Statistics *Data Science Initiative, 2017*
 - Developed content, organized, and instructed course to graduate students at UC Irvine on key concepts and computational tools in spatial and temporal statistics
 - <https://github.com/yaramohajerani/Introduction-to-Spatial-Temporal-Statistics>

- Modelling the Earth (*ESS19*) *Earth System Science, 2017*
 - Teaching Assistant, Earth system modeling using STELLA
- Sustainable Oceans (*ESS27*) *Earth System Science, 2016*
 - Teaching Assistant, concepts in sustainability, ocean pollution, and marine life
- Oceanography (*ESS3*) *Earth System Science, 2016*
 - Teaching Assistant – general undergraduate introductory course in oceanography
- Data Analysis (*ESS116*) *Earth System Science, 2015, 2016*
 - Teaching Assistant, scientific programming in earth system science using MATLAB – higher level undergraduate course
- Training in inclusive teaching and active-learning techniques
 - ESS Teaching Topics (*ESS280A*) *UC Irvine, Fall 2015*
- Undergraduate-level physics tutoring *Toronto, Canada, 2013*
- High school senior-level math tutoring for women in STEM *Toronto, Canada, 2012- 2013*
- Physics peer-tutoring *A.Y. Jackson S.S, 2009-2010*
- Mathematics peer-tutoring *A.Y. Jackson S.S & Zion Heights J.H.S, 2006-2008*
- Mentorship roles:
 - Executive member on the Physics and Astronomy Student Union (PASU) council at the University of Toronto *November 2012 - April 2014*
 - President of Physics Club *A.Y. Jackson S.S, 2009-2010*
 - Captain of Robotics Team *A.Y. Jackson S.S, 2009-2010*

ACHIEVEMENTS AND AWARDS

- Certificate for One of Top Downloaded Papers on Geophysical Research Letters in 2018-19 *05/2020*
- Altmetric's Top 100 Publications of 2018 *12/2018*
- Jenkins Family Graduate Fellowship - Earth System Science, UC Irvine *10/2014*
- KEGS Foundation Scholarship - Canadian Exploration Geophysical Society *07/2014*
- Don Salt Memorial Scholarship - Canadian Exploration Geophysical Society *03/2014*
- Hymie and Roslyn Mida Student Award in Theoretical Physics *01/2014*
- The Dean's List - University of Toronto *06/2011 – 06/2014*
- Arthur Leonard Schawlow Scholarship - University of Toronto *06/2010 – 06/2013*
- Queen Elizabeth II Aiming for the Top Scholarship *09/2010 – 09/2013*
- The 3T0 M&P and Associates Scholarship - University of Toronto *11/2012*
- Leslie Langbord Saunders Scholarship - University of Toronto *11/2011*
- Dr. John Knowles Colling Memorial Scholarship - University of Toronto *08/2011*
- University of Toronto Scholar Scholarship *09/2010*

TECHNICAL SKILLS

- Proficient in Python (NumPy, SciPy, MPI parallel processing, Matplotlib, Pandas, Shapely, rpy2, scikit-learn, scikit-image, etc.)
- Neural Networks and Deep Learning with TensorFlow and Keras (DNN, CNN, RNN)
- Bash, HPC, Slurm, Cloud Computing, Distributed Computing, Parallel Processing (MPI, multi-threading)
- Linux/UNIX systems
- Project management with Git/Github
- Bayesian Stochastic Modeling in Stan, familiarity with PyMC3
- Familiarity with MATLAB, R, STELLA
- Geospatial data analysis (CDO, NCO, Ncview, NetCDF, Shapefile, GDAL, etc.)
- Geographic Information System (GIS)
- Latex, Markdown, and familiarity with HTML

OTHER PUBLICATIONS AND MEDIA HIGHLIGHTS

- **Mohajerani, Y.** “Record Greenland Mass Loss.” *Nature Climate Change – News and Views* (2020): doi:10.1038/s41558-020-0887-9.
- Research featured on several news outlets:
 - **The New York Times:** “Loss of Greenland Ice Sheet Reached a Record Last Year” August 20, 2020
 - **The Guardian:** “Greenland Ice Sheet Lost a Record 1m Tonnes of Ice Per Minute in 2019” August 20, 2020
 - **The Washington Post:** “Greenland lost a near-record 600 billion tons of ice last summer, raising sea levels” March 18, 2020
 - **NewScientist:** “Antarctica's shock new loss” August 11, 2018
 - **Gizmodo:** “Even One of the Most Stable Parts of Antarctica Is Losing Ice” July 31, 2018
 - **American Geophysical Union Press Release:** “Glaciers in East Antarctica Also Imperiled By Climate Change, Researchers Find” July 26, 2018
 - **National Geographic:** “We Know West Antarctica Is Melting. Is the East In Danger, Too?” August 9, 2018