

RENATO PRATA DE MORAES FRASSON

Curriculum Vitae

Scientist at the Terrestrial Hydrology Group	Telephone:	+1 (626) 318-7115
Jet Propulsion Laboratory	E-mail:	rfrasson@jpl.nasa.gov
California Institute of Technology	ORCID ID:	0000-0003-4299-1730
4800 Oak Grove Drive	Google Scholar	22
Pasadena, CA 91109	h-index	

EDUCATION

Ph.D. Civil and Environmental Engineering (Water Resources), The University of Iowa, December 2011.

Thesis title: Understanding the partitioning of rainfall by the maize canopy through computational modeling and physical measurements.

Thesis advisor: Witold F. Krajewski

M.S. Civil and Environmental Engineering (Water Resources), The University of Iowa, May 2007.

Thesis title: Observational studies of rainfall interception by corn

Thesis advisor: Witold F. Krajewski

B.S. Civil Engineering, Federal University of Espirito Santo, Brazil and Karlsruhe University (TH), Germany, May 2004.

RESEARCH AND PROFESSIONAL EXPERIENCE

2020-present	Scientist at the Jet Propulsion Laboratory, California Institute of Technology.
2015-2020	Senior research associate at the Ohio State University under the supervision of Prof. Michael Durand.
2012-2015	Postdoctoral researcher at the Ohio State University under the supervision of Prof. Gil Bohrer.
Sept-Nov 2013	Consultant for Robson Sarmiento Consultoria, Estudos e Projetos de Engenharia Ltda. Vitoria, Espirito Santo, Brazil.
2005-2011	Graduate research assistant at IIHR-Hydrosience and Engineering under the supervision of Prof. Witold Krajewski.
May-Dec 2004	Consultant for NEXES (Portuguese acronym for Steelmaking Slag Excellence Center) under the supervision of Dr. Robson Sarmiento.
Jun-Dec 2004	Consultant for Robson Sarmiento Consultoria, Estudos e Projetos de Engenharia Ltda. Vitoria, Espirito Santo, Brazil.
Apr-July 2002	Civil engineering trainee for Metron Engenharia.

Jun-Dec 2001 Undergraduate research assistant for the Research Centre for Steel, Timber and Masonry, (Versuchsanstalt für Stahl, Holz und Steine, KIT) under the supervision of Dr.-Ing. Martin Schmid.

FLIGHT PROJECT AND PROGRAMATIC ACTIVITIES

2022-present NASA Western Water Applications Office (WWAO) Science Team member

2022-present Observational Products for End-users Remote sensing Analysis (OPERA) project Science Team member.

2020-2024 Surface Water and Ocean Topography (SWOT) Science Team member

2015-2022 SWOT Algorithm Definition Team member

TEACHING EXPERIENCE

Spring 2019 Lecturer: Exploring Water Issues
School of Earth Sciences, The Ohio State University

Spring 2018 Lecturer: Water, Ice, & Energy in the Earth System
School of Earth Sciences, The Ohio State University

Spring 2016 Lecturer: Water, Ice, & Energy in the Earth System
School of Earth Sciences, The Ohio State University

Spring 2015 Lecturer: Numerical Analysis Methods for Civil and Environmental Engineering Applications
Civil, Environmental and Geodetic Engineering, The Ohio State University

Spring 2014 Guest lecturer: Water Resources Engineering,
Civil, Environmental and Geodetic Engineering, The Ohio State University

Spring 2011 Teaching Assistant: Principles of Hydraulics and Hydrology,
Department of Civil and Environmental Engineering, The University of Iowa:

2008-2010 Teaching Assistant: Fundamentals of Engineering: Statics,
Department of Civil and Environmental Engineering, The University of Iowa:

FUNDED GRANTS

NASA Advanced Information Systems Technology
P.I.: Matthias Katzfuss
Total Budget: \$790,156
Year: 2024

“A software tool for probabilistic calibration and data assimilation for geophysical models”. Frasson is a Co-I.

NASA Earth Science Applications: Water Resources P.I.: R. Frasson Total Budget: \$716,938 Year: 2022	“Harmonizing multiplatform spaceborne water surface observations to support the US Army Corps of Engineers-Engineer Research and Development Center water intelligence assessments”
NASA SWOT Science Team P.I.: M. Durand Total Budget: \$797,597 Year: 2019	“Comprehensive evaluation of the SWOT discharge data product: What will we learn about the world’s rivers?” Frasson is a Co-I.
NASA SWOT Science Team P.I.: E. Rodriguez Total Budget: \$701,656 Year: 2019	“SWOT Discharge Estimation for Multichannel Rivers” Frasson is a Co-I.
Jet Propulsion Lab P.I.: M. Durand Total Budget: \$357,362.00 Year: 2018	“Surface Water and Ocean Topography (SWOT) algorithm definition team hydrology activities, phase 3” Frasson is a Co-I.
NASA Terrestrial Hydrology P.I.: M. Durand Total Budget: \$409,691 Year: 2017	“Estimating Arctic River Discharge from ArcticDEM” Frasson is a Co-I.
Jet Propulsion Lab P.I.: M. Durand Total Budget: \$249,998.00 Year: 2016	“Surface Water and Ocean Topography (SWOT) algorithm definition team hydrology activities” Frasson is a Co-I.

SUBMITTED GRANTS

NASA SWOT Science Team P.I.: R. Frasson Status: Not funded Total Budget: \$1,154,992.00 Year: 2024	“Amplifying SWOT's potential for river science through multi-mission merging”.
NASA Terrestrial Hydrology Status: Not funded P.I.: M. Bonnema	“Improving SWOT Discharge for Environmental Justice in the Developing World” Frasson is a Co-I.

Total Budget: \$641,118
Year: 2022

NASA SERVIR
Status: Not funded
P.I.: C. David
Total Budget: \$709,013
Year: 2022

“Lower Mekong River Management in a New Satellite Era” Frasson is a Co-I.

NASA AIST
Status: Not funded
P.I.: M. Durand
Total Budget: \$769,289
Year: 2017

“Confluence: Combining Fluvial datasets for User-Defined Scalable Discharge Estimation” Frasson is a Co-I.

NASA AIST
Status: Not funded
P.I.: G. Schumann
Total Budget: \$899,995
Year: 2017

“Increasing interoperability of EO flood products and global flood hazard computations for better decision support” Frasson is a Co-I.

NIWR National
Competitive Grants
Program (104g)
Status: Not funded
P.I.: R. Frasson
Total Budget: \$455,725
Year: 2017

“Creating a framework for the assimilation of future NASA SWOT data into hydrologic and flood prediction models.”

NASA ROSES
Status: Not Funded
P.I.: G. Bohrer
Total Budget: \$957,429
Year: 2016

“Improving Earth-system models' wetland carbon-cycle representation and responses using multi-scale remote sensing and flux observations” Frasson is a Co-PI.

NIWR National
Competitive Grants
Program (104g)
Status: Not funded
P.I.: M. Durand
Total Budget: \$452,560
Year: 2016

“Using NASA SWOT data to improve hydrologic and flood prediction models.” Frasson is a Co-PI.

SCHOLARSHIPS AND AWARDS

2023 Voyager award (JPL).

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| 2021 | NASA Early Career Achievement Medal. |
| 2011 | Travel grant awarded by the Center for Global and regional Environmental Research (CGRER) in the value of \$750. |
| 2010 | Travel grant awarded by CGRER (\$500). |
| 2009 | Travel grant awarded by CGRER (\$500). |
| 2007-2008 | Seed grant awarded by CGRER (\$30,000). |
| 2006 | Travel grant awarded by CGRER (\$600). |
| 2003-2004 | Undergraduate research assistant scholarship granted by the Brazilian Council for Scientific and Technological Development (CNPq). |
| 2001-2002 | Sandwich undergraduate studies in civil engineering funded by Coordination for the Improvement of Higher Education Personnel (CAPES) and the German Academic Exchange Service (DAAD). |
| 1999-2001 | Undergraduate research assistant scholarship granted by the Brazilian Council for Scientific and Technological Development (CNPq). |

PUBLICATIONS

IN PREPARATION

41. Munasinghe, D., **Frasson, R.P.M.**, David, C. H., Wei, R., Bonnema, M., Chan, S., Handwerger, A., Bekaert, D., Shiroma, G., Jones, J.W., Tavakoly, A., A river diagnostics system for detection of hydrologic extremes based on spaceborne data. Proof of concept using the 2022 floods in Pakistan. To be submitted to *Water Resources Research*.
40. **Frasson, R.P.M.**, Dai, C., Durand, M., Howat, I., Yadav, B., Wadkowski, K., Estimating discharge in Arctic Rivers using the satellite imagery and ArcticDEM. To be submitted to *Water Resources Research*.

IN REVIEW

39. Cerbelaud, A., David, C. H., Biancamaria, S., Wade, J., Tom, M., **Frasson, R.P.M.**, Allen, G.H., Thurman, H.R., Blumstein, D., Spatial Hydrographs of River Flow and their Analysis for Peak Event Detection in the Context of Satellite Sampling. Submitted to *Water Resources Research*.

38. Andreadis, K., Coss, S., Durand, M., Gleason, C., Simmons, T., Tebaldi, N., Malaterre, P.O., Oubanas, H., Larnier, K., **Frasson, R.P.M.**, Bates, P., David, C., Pavelsky, T., A first look at river discharge from SWOT satellite observations. Submitted to *Water Resources Research*.
37. Ke, S., M., Tourian, M.J., Sneeuw, N., **Frasson, R.P.M.**, Paiva, R.C.D., Durand, M., Gleason, C., Elmi, O., Malaterre, P.O., David, C.H., A method for estimating daily discharge using space-based discharge. Submitted to *Water Resources Research*.

ACCEPTED

36. Wade, J., David, C. H., Collins, E. L., Denbina, M. W., Cerbelaud, A., Tom, M., Reager, J.T., **Frasson, R.P.M.**, Famiglietti, J., Lee, T., Gierach, M.M., Intrinsic spatial scales of river stores and fluxes and their relative contributions to the global water cycle. Accepted by *Geophysical Research Letters*.
35. Durand, M., Dai, C., Moortgat, J., Yadav, B., **Frasson, R.P.M.**, Ziwei, L., Wadkowski, K., Howat, I., Pavelsky, T., Using river hypsometry to improve remote sensing of river discharge. Accepted by *Remote Sensing of Environment*.
34. **Frasson, R.P.M.**, Ardila, D., Pease, J., Hestir, E., Bright, C., Malthus, T., Thompson, D., Green, R., Roelfsema, C., Carter, N., Dekker, A., The Impact of Ground Resolution Distance on the Characterization of Water Bodies from Space. Accepted by *Environmental Research Communications*.
33. Cerbelaud, A., David, C. H., Biancamaria, S., Wade, J., Tom, M., **Frasson, R.P.M.**, Blumstein, D., Peak Flow Event Durations in the Mississippi River Basin, and Implications for Temporal Sampling Requirements to Capture River Dynamics. Accepted by *Geophysical Research Letters*.

PUBLISHED

32. Munasinghe, D., **Frasson, R.P.M.**, David, C. H., Bonnema, M., Schumann, G., Brakenridge, R., (2023). A multi-sensor approach for increased measurements of floods and their societal impacts from space. *Nature Communications Earth and Environment*, 4 (1), doi: 10.1038/s43247-023-01129-1.
31. Durand, M., Gleason, C., Pavelsky, T., **Frasson, R.P.M.**, Turmon, M., David, C.H., et al., (2023). A framework for estimating global river discharge from the Surface Water and Ocean Topography satellite mission. *Water Resources Research*, 59 (4), doi: 10.1029/2021WR031614
30. Lin, P., Feng, D., Gleason, C., Pan, M., Brinkerhoff, C., Yang, X., Beck, H. E., **Frasson, R.P.M.**, (2023). Inversion of river discharge from remotely sensed river widths: a critical

- assessment at three-thousand global river gauges. *Remote Sensing of Environment*, 287, doi: 10.1016/j.rse.2023.113489
29. David, C. H., & **Frasson, R. P. d. M.** (2023). Blame the river not the rain. *Nature Geoscience*, 16 (4), 282-283, doi:10.1038/s41561-023-01163-w
28. **Frasson, R.P.M.**, Turmon, M.J., Durand, M., David, C.H. (2023). Estimating the relative impact of measurement, parameter, and flow law errors on discharge from the Surface Water and Ocean Topography mission. *Journal of Hydrometeorology*, 24 (3), doi: 10.1175/JHM-D-22-0078.1.
27. Bonnema, M., David, C.H., **Frasson, R.P.M.**, Oaida, C., Yun, S.H. (2022). The global surface area variations of lakes and reservoirs as seen from satellite remote sensing. *Geophysical Research Letters*, 49 (15), e2022GL098987, doi: 10.1029/2022GL098987.
26. Altenau, E.H., Pavelsky, T., Durand, M., Yang, X., **Frasson, R.P.M.**, Bendezu, L. (2021). The Surface Water and Ocean Topography (SWOT) Mission River Database (SWORD): A Global River Network for Satellite Data Products. *Water Resources Research*, 57 (7), e2021WR030054, doi: 10.1029/2021WR030054.
25. **Frasson, R.P.M.**, Durand, M., Larnier, K., Gleason, C., Andreadis, K.M., Hagemann, M., Dudley, R., Bjerklie, D., Oubanas, H., Garambois, P.A., Malaterre, P.O., Lin, P., Pavelsky, T., Monier, J., Brinkerhoff, C., David, C. H. (2021). Exploring the factors controlling the error characteristics of the Surface Water and Ocean Topography mission discharge estimates. *Water Resources Research*, 57 (6), e2020WR028519, doi: 10.1029/2020WR028519.
24. Nickles, C., Beighley, E., Durand, M., **Frasson, R.P.M.** (2020), Integrating lateral inflows into SWOT Mission river discharge algorithm. *Water Resources Research*, 56 (10), doi: 10.1029/2019WR026589.
23. Durand, M., Curtis, C., **Frasson, R.P.M.**, Pavelsky, T., Williams, B., Yang, X., Fore, A. (2020). How will radar layover impact SWOT measurements of water surface elevation and slope, and estimates of river discharge? *Remote Sensing of Environment*, 247, doi: 10.1016/j.rse.2020.111883.
22. Rodríguez, E., Durand, M., **Frasson, R.P.M.** (2020). Observing rivers with varying spatial scales. *Water Resources Research*, 56 (9), doi: 10.1029/2019WR026476.
21. Lin, P., Pan, M., Allen, G. H., **Frasson, R.P.M.**, Zeng, Z., Wood, E. F. (2020). Global reach-level bankfull river width leveraging big-data geospatial analysis. *Geophysical Research Letters*, 47 (7), doi: 10.1029/2019GL086405.

20. **Frasson, R.P.M.**, Schumann, G., Ketner, A.J., Brackenridge, G.R., Krajewski, W.F. (2019). Will the Surface Water and Ocean Topography mission observe floods? *Geophysical Research Letters*, 46 (17-18), 10435-10445, doi: 10.1029/2019GL084686.
19. Lin, P., Pan, M., Beck, H., Yang, Y., Yamazaki, D., **Frasson, R.P.M.**, David, C.H., Durand, M., Pavelsky, T., Allen, G., Gleason, C., Wood, E. (2019). Global reconstruction of naturalized river flows at 2.94 million reaches, *Water Resources Research*, 55 (8), 6499-6516, doi: 10.1029/2019WR025287.
18. Tuozzolo, S., Langhorst, T., **Frasson, R.P.M.**, Pavelsky, T., Durand, M. T., & Schobelock, J. J. (2019). The impact of reach averaging Manning's equation for an in-situ dataset of water surface elevation, width, and slope. *Journal of Hydrology*, 578, 123866, doi:10.1016/j.jhydrol.2019.06.038.
17. Langhorst, T., Pavelsky, T.M., **Frasson, R.P.M.**, Wei, R., Domeneghetti, A., Altenau, E., Durand, M., Wegmann, K., Fuller, M. (2019). Anticipated improvements to in-river DEMs from the Surface Water and Ocean Topography mission, *Frontiers in Earth Science*, 7 (102), doi: 10.3389/feart.2019.00102.
16. **Frasson, R. P. M.**, Pavelsky, T.M., Fonstad, M.A., Durand M., Allen, G.H., Schumann, G., Lion, C., Beighley, R.E., and Yang, X. (2019). Global relationships between river width, slope, catchment area, meander wavelength, sinuosity, and discharge, *Geophysical Research Letters*, 46 (6), 3252-3262, doi: 10.1029/2019GL082027.
15. Tuozzolo, S., Lind, G., Overstreet, B., Mangano, J., Fonstad, M., Hagemann, M., **Frasson, R.P.M.**, Larnier, K., Garambois, P.-A., Monnier, J., & Durand, M. T. (2019). Estimating River Discharge With Swath Altimetry: A Proof of Concept Using AirSWOT Observations. *Geophysical Research Letters*, 46(3), 1459-1466, doi: 10.1029/2018GL080771.
14. Domeneghetti, A., Schumann, G., **Frasson, R.P.M.**, Wei, R., Pavelsky, T.M., Castellarin, A., Brath, A., Durand, M. (2018). Characterizing water surface elevation under different flow conditions for the upcoming SWOT mission: application to the Po River. *Journal of Hydrology*, 561, 848-861, doi: 10.1016/j.jhydrol.2018.04.046.
13. Oubanas, H., Gejadze, I., Malaterre, P-O., Durand, M., Wei, R., **Frasson, R.P.M.**, Domeneghetti, A. (2018). Discharge estimation in ungauged basins through variational data assimilation: The potential of the SWOT mission. *Water Resources Research*, 54 (3), doi: 10.1002/2017WR021735.
12. **Frasson, R.P.M.**, Wei, R., Durand, M., Minear, J. T., Domeneghetti, A., Schumann, G., Williams, B.A., Rodríguez, E., Picamilh, C., Lion, C., Pavelsky, T. (2017). Automated river reach definition strategies: applications for the Surface Water and Ocean Topography Mission. *Water Resources Research*, 53 (10), 8164-8186, doi: 10.1002/2017WR020887

11. Mirfenderesgi, G., Bohrer, G., Matheny, A.M., Fatichi, S., **Frasson, R.P.M.**, Schäfer, K.V.R. (2016). Tree-level hydrodynamic approach for modeling aboveground water storage and stomatal conductance illuminates the effects of tree hydraulic strategy. *Journal of Geophysical Research: Biogeosciences*, 121 (7), 1792-1813, doi: 10.1002/2016jg003467.
10. Durand, M., Gleason, C.J., Garambois, P.A., Bjerklie, D., Smith, L.C., Roux, H., Rodríguez, E., Bates, P.D., Pavelsky, T.M., Monnier, J., Chen, X., Di Baldassarre, G., Fiset, J.-M., Flipo, N., **Frasson, R.P.M.**, Fulton, J., Goutal, N., Hossain, F., Humphries, E., Minear, J.T., Mukolke, M.M., Neal, J.C., Ricci, S., Sanders, B.F., Shumann, G., Schubert, J.E., Vilmin, L. (2016). An intercomparison of remote sensing river discharge estimation algorithms from measurements of river height, width, and slope. *Water Resources Research*, 52 (6), 4527–4549, doi: 10.1002/2015wr018434.
9. Treep, H., Bohrer, G., Shamoun-Baranes, J., Duriez, O., **Frasson, R.P.M.**, Bouten, W. (2016). Using high resolution GPS tracking data of bird flight for meteorological observations. *Bulletin of the American Meteorological Society*, 97 (6), 951-961, doi:10.1175/BAMS-D-14-00234.1.
8. **Frasson, R.P.M.**, Bohrer, G., Medvigy, D., Matheny, A.M., Morin, T.H., Vogel, C.S., Gough, C.M., Maurer, K.D., Curtis, P.S. (2015). Modeling forest carbon cycle response to tree mortality: effects of plant functional type and disturbance intensity. *Journal of Geophysical Research: Biogeosciences*, 120 (11), 2178-2193, doi:10.1002/2015JG003035.
7. Matheny, A.M., Bohrer, G., Vogel, C.S., Morin, T.H., Lingli, H., **Frasson, R.P.M.**, Mirfenderesgi, G., Schäfer K.V.R., Gough, C.M., Ivanov, V.Y., Curtis, P.S. (2014). Species-specific transpiration responses to intermediate disturbance in a northern hardwood forest. *Journal of Geophysical Research: Biogeosciences*, 119 (12), 2292–2311, doi:10.1002/2014jg002804.
6. Morin, T.H., Bohrer, G., **Frasson, R.P.M.**, Naor-Azreli, L., Mesi, S., Stefanik, K., Schäfer, K.V.R. (2014). Environmental drivers of methane fluxes from an urban temperate wetland park. *Journal of Geophysical Research: Biogeosciences*, 119 (11), 2188–2208, doi: 10.1002/2014JG002750.
5. Chatziefstratiou, E.K., Bohrer, G., Bova, A.S., Subramanian, R., **Frasson, R.P.M.**, Scherzer, A., Butler, B.W., Dickinson, M.B. (2013). FireStem2D – A Two-Dimensional Heat Transfer Model for Simulating Tree Stem Injury in Fires. *PLoS ONE*, 8 (7), e70110, doi: 10.1371/journal.pone.0070110.
4. **Frasson, R.P.M.** & Krajewski, W.F. (2013). Rainfall interception by maize canopy: Development and application of a process-based model. *Journal of Hydrology*, 489, 246-255, doi: 10.1016/j.jhydrol.2013.03.019.

3. **Frasson, R.P.M.** & Krajewski, W.F. (2011). Characterization of the drop-size distribution and velocity–diameter relation of the throughfall under the maize canopy. *Agricultural and Forest Meteorology*, 151 (9), 1244-1251, doi: 10.1016/j.agrformet.2011.05.001.
2. **Frasson, R.P.M.**, Cunha, L.K., & Krajewski, W.F. (2011). Assessment of the Thies optical disdrometer performance. *Atmospheric Research*, 101, 237-255, doi: 10.1016/j.atmosres.2011.02.014.
1. **Frasson, R.P.M.** & Krajewski, W.F. (2010). Three-dimensional digital model of a maize plant. *Agricultural and Forest Meteorology*, 150 (3), 478-488, doi: 10.1016/j.agrformet.2010.01.003.

BOOK CHAPTERS

1. **Frasson, R. P. M.** (2021). Using the Surface Water and Ocean Topography Mission data to estimate river bathymetry and channel roughness. In G. Schumann (Ed.), *Earth Observation for Flood Applications: Progress and Perspectives*: Elsevier.

DATASETS

2. **Frasson, R. P. d. M.** (2020). Synthetic river datasets built for testing and development of the Surface Water and Ocean Topography mission discharge algorithms. Available at: <https://zenodo.org/record/3817818>
1. **Frasson, R. P. d. M.**, Pavelsky, T. M., Fonstad, M. A., Durand, M. T., Allen, G. H., Schumann, G., Lion, C., Beighley, R. E., & Yang, X. (2019). Global database of river width, slope, catchment area, meander wavelength, sinuosity, and discharge. Available at: <https://doi.org/10.5281/zenodo.2579161>

CONFERENCES ABSTRACTS AND PAPERS

79. Kim, H.J., Lee, J.H., **Frasson, R.P.M.**, Chung, E.S., Graph Neural Network-Based Runoff Prediction for Large Sets of Catchments, A.G.U. Fall Meeting, Washington D.C., December 9-13, 2024.
78. Wade, J., David, C.H., **Frasson, R.P.M.**, Cerbelaud, A., Tom, M., Global-Scale SWOT Observations of Total River Storage, A.G.U. Fall Meeting, Washington D.C., December 9-13, 2024.
77. David, C.H., Pavelsky, T., Biancamaria, S., Picot, N., Cretaux, J.F., Benveniste, J., Allen, G.H., **Frasson, R.P.M.**, Bonnema, M., Cerbelaud, A., Wade, J., Tom, M., Durand, M.T., Gleason, C.J., Garambois, P.A., Tourian, M.J., Yamazaki, D., Andraedis, K., Oubanas, H., Schumann, G., Bates, D., Larnier, K., Paris, A., Feng, D., Malaterre, P.O., Bauer-Gottwein,

- P., Kittel, C.M.M., Dasgupta, A., Tarpanelli, A., Schwatke, C., Hossain, F., Rodriguez, E., Mischel, S., Progress towards Satellite and Model Requirements to capture Water Propagation in Earth's Rivers, A.G.U. Fall Meeting, Washington D.C., December 9-13, 2024.
76. **Frasson, R.P.M.**, Wade, J., Munasinghe, D., David, C.H., Chan, S., Handwerger, A.L., Bekaert, D.P., Bonnema, M., Shiroma, G.H.X., Tavakoly, A.A., A Proof of Concept for a Remote Sensing powered Global River Width Diagnostics System, A.G.U. Fall Meeting, Washington D.C., December 9-13, 2024.
75. Prior, E.M., **Frasson, R.P.M.**, Durand, M.T., Informing River Discharge Friction from SWOT observations, A.G.U. Fall Meeting, Washington D.C., December 9-13, 2024.
74. Munasinghe, D., **Frasson, R.P.M.**, David, C.H., Bonnema, M., Chan, S., Bekaert, D.P., Shiroma, G.H.X., Handwerger, A.L., Jones, J., Tavakoly, A.A., A Novel River Processor for Extracting River Widths using Multi-Source Images, Chapman Conference on Remote Sensing of the Water Cycle, Honolulu, HI, February 13-16, 2024.
73. Bonnema, M., Jones, J.W., Shiroma, G.H.X., Marshak, C., Niemoeller, S.C., Handwerger, A.L., Bato, M.G., Fattahi, H., **Frasson, R.P.M.**, Munasinghe, D., Chan, S., Bekaert, D.P., OPERA DSWx: Analysis Ready Data for Monitoring Surface Water Extent Dynamics with Near Global Scope, Chapman Conference on Remote Sensing of the Water Cycle, Honolulu, HI, February 13-16, 2024.
72. Coss, S.P., Durand, M.T., Gleason, C.J., Simmons, T.T., Tebaldi, N., Wei, R., **Frasson, R.P.M.**, Assessing SWOT Discharge Accuracy During the Fast-sample Orbit Period, A.G.U. Fall Meeting, San Francisco, December 11-15, 2023.
71. **Frasson, R.P.M.**, Chan, S., Handwerger, A.L., Bekaert, D.P., Bonnema, M., Shiroma, G.H.X., Munasinghe, D., Observing the dynamics of surface water bodies through merged optical and radar imagery, A.G.U. Fall Meeting, San Francisco, December 11-15, 2023.
70. Munasinghe, D, **Frasson, R.P.M.**, David, C.H., Bonnema, M., Chan, S., Bekaert, D., Shiroma, G.H.X., Handwerger, A.L., Tavakoly, A.A., An Algorithm for Extraction of River Width from Harmonized Multi-platform Spaceborne Sensors, , A.G.U. Fall Meeting, San Francisco, December 11-15, 2023.
69. Munasinghe, D, **Frasson, R.P.M.**, David, C.H., Bonnema, M., Chan, S., Bekaert, D., Shiroma, G., Jones, J., An Algorithm for Extraction of River Width from Harmonized Multi-platform Spaceborne Sensors, Cooperative Institute for Research to Operations in Hydrology (CIROH) Annual Training and Developers Conference, Salt Lake City, May 16-19, 2023.
68. Arena, N., Bato, M.G., Bekaert, D., Bonnema, M., Chan, S., Chapman, B., **Frasson, R.P.M.**, Handwerger, A., Jones, J., Lewandowski, A., Marshak, N., Sangha, S.,

- Venkataramani, K., OPERA Dynamic Surface Water Extents (DSWx) Validation Activities, International Geoscience and Remote Sensing Symposium, Pasadena, July 16-21, 2023.
67. Bright, C., Ardilla, D., Green, R., Thompson, D., Held, A., Matthews, M., Hestir, E., Kravitz, J., Wojtasiewicz, B., Dekker, A., Carter, N., Pease, J., **Frasson, R.P.M.**, Malthus, T., Joehnk, K., Seubert, C., The AQUASAT-1 Mission Concept: Actionable Information on Water Quality for Australia and Western USA, International Geoscience and Remote Sensing Symposium, Pasadena, July 16-21, 2023.
 66. Munasinghe, D, **Frasson, R.P.M.**, David, C.H., Evaluation of the Potential of Multi-sensor Fusion for Global Flood Observation, A.G.U. Fall Meeting, Chicago, December 12-16, 2022.
 65. Durand, M. T., Gleason, C. J., Pravelsky, T. **Frasson, R.P.M.**, Turmon, M., David, C.H., Altenau, E.H., Tebaldi, N., Larnier, K., Monnier, J., Malaterre, P.O., Oubanas, H., Allen, G.H., Bates, P.D., Bjerklie, D.M., Brinkerhoff, C.B., Coss, S.P., Dudley, R.W., Fenoglio-Marc, L., Garambois, P.A., Getirana, A., Lin, P., Margulis, S.A., Minear, J.T., Muhebwa, A., Riggs, R., Tarpanelli, A., Schulze, K., Sikder, Md.S., Stuurman, C., Taneja, J., Tourian, M.J., and SWOT Science Team Discharge Algorithm Working Group, A global framework for SWOT discharge, A.G.U. Fall Meeting, Chicago, December 12-16, 2022.
 64. **Frasson, R.P.M.**, Rodriguez, The Tanana multi-threaded river discharge estimation, SWOT Science Team Meeting, Chapel Hill, June 27-30, 2022.
 63. Munasinghe, D, **Frasson, R.P.M.**, David, C.H., Augmenting SWOT mission temporal sampling using a multi-sensor fusion approach, A.G.U. Frontiers in Hydrology, San Juan, Puerto Rico, June 19-24, 2022.
 62. Bonnema, M., David, C.H., **Frasson, R.P.M.**, Global surface area variations of large lakes and reservoirs from SAR observations, A.G.U. Fall Meeting, New Orleans, December 13-17, 2021.
 61. Rodriguez, E., Durand, M. T., **Frasson, R.P.M.**, Observing rivers with varying spatial scales, A.G.U. Fall Meeting, San Francisco, December 1-17, 2020.
 60. Durand, M. T., Gleason, C. J., **Frasson, R.P.M.**, Pavelsky, T., Allen, G.H., Bates, P. D., Dudley, R. W., Emery, C. M., Fenoglio-Marc, L., Garambois, P., Hossain, F., Larnier, K., Lin, P., Matte, P., Monnier, J., Oubanas, H., Pan, M., Rodriguez, E., Schaperow, J., Tarpanelli, A., Tourian, M.J., Wang, J., A global framework for SWOT discharge, A.G.U. Fall Meeting, San Francisco, December 1-17, 2020.
 59. **Frasson, R.P.M.**, Durand, M. T., Dai, C., Wadkowski, K., Rodriguez, E., Lin, P., Yadav, B., Evaluating the applicability of SWOT discharge inversion algorithms in multichannel

rivers using satellite imagery-derived time series of water surface height, slope, and river width, A.G.U. Fall Meeting, San Francisco, December 1-17, 2020.

58. Lin, P., Pan, M., **Frasson, R.P.M.**, Allen, G.H., Zeng, Z., Wood, E.F., Data-driven prediction of global river width, A.G.U. Fall Meeting, San Francisco, December 9-13, 2019.
57. Yadav, B., Dai, C., Durand, M., Howat, I., **Frasson, R.P.M.**, Measurement of river widths and heights from ArcticDEM and high-resolution satellite imagery, A.G.U. Fall Meeting, San Francisco, December 9-13, 2019.
56. Langhorst, T., Pavelsky, T.M., Topp, S., Ross, M., Dai, C., Durand, M., **Frasson, R.P.M.**, Howat, I., Remotely sensed discharge and sediment flux on the Sagavanirktok River, A.G.U. Fall Meeting, San Francisco, December 9-13, 2019.
55. Durand, M., Gleason, C.J., Pavelsky, T.M., **Frasson, R.P.M.**, Expected contribution of SWOT to estimates of global river discharge, A.G.U. Fall Meeting, San Francisco, December 9-13, 2019.
54. Wei, R., Durand, M., **Frasson, R.P.M.**, Expected performance of the upcoming Surface Water and Ocean Topography (SWOT) mission measurements of river height, width, slope, cross-sectional area change, and discharge on Sacramento River, A.G.U. Fall Meeting, San Francisco, December 9-13, 2019.
53. **Frasson, R.P.M.**, Oubanas, H., Larnier, K., Gleason, C. J., Durand, M., How well can we estimate river discharge based on the Surface Water and Ocean Topography (SWOT) mission observations? The ungaged basin scenario, A.G.U. Fall Meeting, San Francisco, December 9-13, 2019.
52. Oubanas, H., **Frasson, R.P.M.**, Larnier, K., Gejadze, I., Malaterre, P.O., Goutal, N., El Garroussi, S., de Lozzo, M., Andreadis, K., Discharge algorithms intercomparison coming algorithms: Pepsi Challenge 1, Surface Water and Ocean Topography 4th Science Team Meeting, Bordeaux, France, June 17-20, 2019.
51. **Frasson, R.P.M.**, Durand, M., Oubanas, H., Larnier, K., What have we learned from the second discharge algorithm intercomparison Experiment? Surface Water and Ocean Topography 4th Science Team Meeting, Bordeaux, France, June 17-20, 2019.
50. Larnier, K., **Frasson, R.P.M.**, Oubanas, H., Monnier, J., Garambois, P.A., The intercomparison challenge Pepsi-2: context, objectives, and datasets, Surface Water and Ocean Topography 4th Science Team Meeting, Bordeaux, France, June 17-20, 2019.
49. **Frasson, R.P.M.**, Larnier, K., Oubanas, H., Unwrapping the discharge algorithm intercomparison study, Surface Water and Ocean Topography 4th Science Team Meeting, Bordeaux, France, June 17-20, 2019.

48. Langhorst, T., Pavelsky, T., **Frasson, R.P.M.**, Wei, R., Domeneghetti, A., Altenau, E. H., Durand, M. T., Minear, J. T., Wegmann, K. W., Fuller, M., Anticipated Improvements to in-river DEMs from the Surface Water and Ocean Topography mission, A.G.U. Fall Meeting, Washington D.C., December 10-14, 2018.
47. Altenau, E. H., Pavelsky, T., Allen, G. H., Yamazaki, D., Durand, M., **Frasson, R.P.M.**, Yang, X., Lion, C., Beighley, E., Enhancing the SWOT a priori global river database, A.G.U. Fall Meeting, Washington D.C., December 10-14, 2018.
46. Durand, M., **Frasson, R.P.M.**, Tuozzolo, S., Gleason, C. J., Garambois, P. A., Malaterre, P. O., A first estimate of the expected distribution of SWOT river discharge accuracy, A.G.U. Fall Meeting, Washington D.C., December 10-14, 2018.
45. Lin, P., Pan, M., Durand, M., **Frasson, R.P.M.**, Yamazaki, D., Fisher, C. K., Beck, H., Yang, Y., Wood, E. F., Toward spatiotemporally continuous global discharge estimation by synthesizing SWOT-like observations, high-resolution terrain analysis, and hydrologic modeling, A.G.U. Fall Meeting, Washington D.C., December 10-14, 2018.
44. **Frasson, R.P.M.**, Durand, M., Pavelsky, T., Chen, C. W., Williams, B. A., Fore, A., Yang, X., How well will the Surface Water and Ocean Topography Mission measure water surface heights and slopes in complex terrain?, A.G.U. Fall Meeting, Washington D.C., December 10-14, 2018.
43. **Frasson, R.P.M.**, Durand, M., Wei, R., Next steps for developing the SWOT consensus algorithm, Surface Water and Ocean Topography 3rd Science Team Meeting, Montreal, Canada, June 26-29, 2018.
42. **Frasson, R.P.M.**, The Pepsi 2 datasets, Surface Water and Ocean Topography 3rd Science Team Meeting, Montreal, Canada, June 26-29, 2018.
41. **Frasson, R.P.M.**, Durand, M., Wei, R., River data products: What comes next?, Surface Water and Ocean Topography 3rd Science Team Meeting, Montreal, Canada, June 26-29, 2018.
40. Durand, M., Wei, R., **Frasson, R.P.M.**, River products from RiverObs, Surface Water and Ocean Topography 3rd Science Team Meeting, Montreal, Canada, June 26-29, 2018.
39. **Frasson, R.P.M.**, Durand, M., Callahan, P., Turk, J., Pottier, C., Biancamaria, S., Williams, B., Wei, R., River vector product status, Surface Water and Ocean Topography 3rd Science Team Meeting, Montreal, Canada, June 26-29, 2018.
38. Pottier, C., Turk, J., **Frasson, R.P.M.**, Durand, M., Hydrology product status, Surface Water and Ocean Topography 3rd Science Team Meeting, Montreal, Canada, June 26-29, 2018.

37. Tuozzolo, S., **Frasson, R.P.M.**, Durand, M., Multi-temporal AirSWOT elevations on the Willamette river: error characterization and algorithm testing, A.G.U. Fall Meeting, New Orleans, December 11-15, 2017.
36. Oubanas, H., Gejadze, I., Malaterre, P.O., Durand, M., Wei, R., **Frasson, R.P.M.**, Domeneghetti, A., Discharge estimation in ungauged basins through variational data assimilation: The potential of the SWOT mission, A.G.U. Fall Meeting, New Orleans, December 11-15, 2017.
35. Wei, R., **Frasson, R.P.M.**, Williams, B.A., Rodríguez, E., Pavelsky, T., Altenau, E.H., Durand, M., Expected performance of the upcoming Surface Water and Ocean Topography mission measurements of river height, width, and slope, , A.G.U. Fall Meeting, New Orleans, December 11-15, 2017.
34. **Frasson, R.P.M.**, Schumann, G., How frequently will the Surface Water and Ocean Topography mission observe floods?, A.G.U. Fall Meeting, New Orleans, December 11-15, 2017.
33. **Frasson, R.P.M.**, Durand, M., River layover assessment, Surface Water and Ocean Topography Algorithm Definition Team Meeting, Chapel Hill, North Carolina, September 26-28, 2017.
32. Durand, M, **Frasson, R.P.M.**, Tuozzolo, S., Wei, Development of methods for estimating reach-averaged discharge: Theoretical considerations and empirical analysis, Surface Water and Ocean Topography Science Team Meeting, Toulouse, France, June 26-29, 2017.
31. Domeneghetti, A., Schumann, G., Wei, R., **Frasson, R.P.M.**, Durand, M., Pavelsky, T., Castellarin, A., Brath, A., Water surface elevation from the upcoming SWOT mission under different flow conditions, E.G.U. General Assembly, Vienna, Austria, April 23-28, 2017.
30. Durand, M, **Frasson, R.P.M.**, Wei, River database and single-pass processing, Surface Water and Ocean Topography Algorithm Definition Team Workshop, Strasbourg, France, March 22-24, 2017.
29. Durand, M, **Frasson, R.P.M.**, Wei, River average processing, Surface Water and Ocean Topography Algorithm Definition Team Workshop, Strasbourg, France, March 22-24, 2017.
28. **Frasson, R.P.M.**, Wei, R., Minear, J.T., Tuozzolo, S., Domenghetti, A., Durand, M., Impacts of river segmentation strategies on reach-averaged product uncertainties for the upcoming Surface Water and Ocean Topography (SWOT) mission, A.G.U. Fall Meeting, San Francisco, December 12-16, 2016.
27. Tuozzolo, S., Durand, M., Overstreet, B., Mangano J., Minear, J.T., Stringham, C., Chen, C., Pavelsky, T., **Frasson, R.P.M.**, Fonstad, M., Wei, R., Characterizing AirSWOT water

- elevation accuracy on the Willamette River, A.G.U. Fall Meeting, San Francisco, December 12-16, 2016.
26. **Frasson, R.P.M.**, Wei, R., Durand, M., Producing reach-averaged data products, Surface Water and Ocean Topography (SWOT) Science Team Meeting, Pasadena, California, June 13-16, 2016.
 25. Wei, R., **Frasson, R.P.M.**, Durand, M., Application of RiverObs to SWOT instrument simulator data, Surface Water and Ocean Topography (SWOT) Science Team Meeting, Pasadena, California, June 13-16, 2016.
 24. **Frasson, R.P.M.**, Wei, R., Picamilh, C., Durand, M., How well can we classify SWOT-derived water surface profiles?, A.G.U. Fall Meeting, San Francisco, December 14-18, 2015.
 23. Mirfenderesgi, G., Bohrer, G., Matheny, A., Fatichi, S., **Frasson, R.P.M.**, Schäfer K.V.R., Application of a tree-level hydrodynamic model to simulate plot-level transpiration in the upland oak/pine forest in New Jersey, A.G.U. Fall Meeting, San Francisco, December 14-18, 2015.
 22. **Frasson, R.P.M.**, Mirfenderesgi, G., Bohrer, G., Schäfer K.V.R., How does the definition of plant functional types affect the modeling of carbon and water fluxes on a mixed pine/oak forest, Joint DOE-TES/DOE-SBR PI Meeting, Potomac, Maryland, April 28-29, 2015.
 21. **Frasson, R.P.M.**, Bohrer, G., Medvigy, D., Vogel, C., Gough, C.M., Curtis, P.S., Representing sub-plot canopy heterogeneity improves model prediction of net ecosystem exchange in a mixed-deciduous forest, A.G.U. Fall Meeting, San Francisco, December 15-19, 2014.
 20. **Frasson, R.P.M.**, Bohrer, G., Curtis, P.S., Predicting the impact of disturbances on the carbon cycle of a mixed-deciduous forest in the upper Midwest., Joint DOE-TES/DOE-SBR PI Meeting, Potomac, Maryland, May 5-8, 2014.
 19. **Frasson, R.P.M.**, Bohrer, G., Medvigy, D., Ivanov, V.Y., Vogel, C., Curtis, P.S., Modeling the impact of disturbances on the carbon cycle of a mixed-deciduous forest in the upper Midwest., A.G.U. Fall Meeting, San Francisco, December 9-13, 2013.
 18. **Frasson, R.P.M.**, Bohrer, G., Matheny, A., *et al.*, Exploring the influence of time and spatial resolution on the prediction of latent heat fluxes., Joint DOE-TES/DOE-SBR PI Meeting, Potomac, Maryland, May 14-15, 2013.
 17. **Frasson, R.P.M.**, Bohrer, G., Maurer, K.D., *et al.*, Resolving scale-dependencies in the effects of canopy structure on carbon, water, and energy fluxes in a mixed deciduous forest., Joint DOE-TES/DOE-SBR PI Meeting, Potomac, Maryland, May 14-15, 2013.

16. **Frasson, R.P.M.**, Bohrer, G., Frasson, C.D., *et al.*, Effects of intermediate disturbances on the carbon cycle in the upper Midwest., 4th NACP All-Investigators Meeting, Albuquerque, New Mexico, February 4-7, 2013.
15. Bohrer, G., Gough, C., Ivanov, V. Maurer, K. **Frasson, R.P.M.**, *et al.*, Forecasting carbon stocks in Eastern forests: joining experimental and tree-level modeling approaches to understand structure-function dynamics with ecological succession and disturbance., 4th NACP All-Investigators Meeting, Albuquerque, New Mexico, February 4-7, 2013.
14. **Frasson, R.P.M.**, Bohrer, G., Frasson, C.D., *et al.*, Understanding the effects of intermediate disturbances on evapotranspiration in the upper Midwest., A.G.U. Fall Meeting, San Francisco, December 3-7, 2012.
13. Matheny, A.M., Bohrer, G., Thompsen, J., **Frasson, R.P.M.**, A framework for incorporating the effects of hydrodynamic stresses on forest photosynthesis and evaporation., A.G.U. Fall Meeting, San Francisco, December 3-7, 2012.
12. **Frasson, R.P.M.**, Krajewski, W.F., Understanding rainfall interception and the transformation of the drop-size distribution by the maize canopy through semi-empirical modeling., A.G.U. Fall Meeting, San Francisco, December 5-9, 2011.
11. **Frasson, R.P.M.**, Krajewski, W.F., Transformation of the rainfall drop-size distribution and diameter-velocity relation by the maize canopy., E.G.U. General Assembly, Vienna, Austria, April 3-8, 2011.
10. **Frasson, R.P.M.**, Krajewski, W.F., Modification of rainfall characteristics by the maize canopy., ASABE Annual International Meeting, Pittsburgh, Pennsylvania, June 20-23, 2010.
9. **Frasson, R.P.M.**, Krajewski, W.F., Three-dimensional digital model of maize canopy, WCCA, Reno, Nevada, June 22-24, 2009.
8. **Frasson, R.P.M.**, Krajewski, W.F., Constructing a 3-D model of corn to be used in hydrological studies, A.G.U. Fall Meeting, San Francisco, December 15-19, 2008.
7. Ciach, G., **Frasson, R.P.M.**, Krajewski, W.F., Investigating uncertainties in rainfall DSD measurements using five collocated Laser Precipitation Monitors., 3rd TRMM, Las Vegas, Nevada, February 4-8, 2008.
6. Krajewski, W.F., Ciach, G.J., Kruger, A., Cunha, L., **Frasson, R.P.M.**, Licznar, P., Rainfall measurement, estimation, and validation: A practical perspective., A.G.U. Fall Meeting, San Francisco, December 10-14, 2007.
5. **Frasson, R.P.M.**, Krajewski, W.F., Rainfall interception by corn plants. First part: development of a method to quantify the stemflow in corn., A.G.U. Fall Meeting, San Francisco, December 10-14, 2007.

4. **Frasson, R.P.M.**, Krajewski, W.F., Kruger, A., and Ceynar, D.L., Early assessment of an optical disdrometer performance., E.G.U. General Assembly, Vienna, Austria, April 2-7, 2006.
3. Coelho, M.A.M., Silva, M.G., Souza, F.L.S., Sarmiento, R., **Frasson, R.P.M.**, Pinheiro, S.M.M., Zandonade, E., Morimoto, T. L., Effects of alkali-activation of slag concrete., ACI/CANMET Conference on Quality of Concrete Structures and Recent Advances in Concrete Materials Testing. ACI, Olinda, Brazil, September 6-7, 2005.
2. Silva, G.M., **Frasson, R.P.M.**, Gonçalves, R.F., The influence of the organic load on the production of biomass in trickling filters treating effluents of an UASB., Proceeding of the 22nd Brazilian Congress of Environmental and Sanitation Engineering, Joinville, SC, Brazil, September 14-19, 2005.
1. Schmid, M., BLAß, H.J. and **Frasson, R.P.M.**, Effects of distances, spacing and number of dowels in a row on the load carrying capacity of connections with dowels failing by splitting., 35th Meeting from the International Council for Research and Innovation in Building and Construction CIB-W18, Kyoto, Japan, 2002.

TECHNOLOGY SKILLS

- C++, MATLAB, Fortran, Visual Basic programing
- Running, modifying and optimizing Earth system models
- Campbell Scientific proprietary Datalogging language
- ESRI ArcGIS
- Photogrammetry
- Deployment and servicing of eddy covariance systems, rain gauges, optical disdrometers and other meteorological instruments.

LANGUAGES

- Portuguese (native speaker)
- English (fluent)
- German (basic reading, writing and conversation)

PROFESSIONAL ASSOCIATIONS

- American Geophysical Union (AGU)
- European Geosciences Union (EGU)

TECHNICAL REVIEWER: PROPOSALS

2024 NASA SBIR panelist, 2021 NASA ROSES panelist, 2014 NASA Postdoctoral program, 2020 SWOT Science Team TOSCA CNES (French National Center for Space Studies) call, 2020 Canada Foundation for Innovation call.

TECHNICAL REVIEWER: JOURNALS

Water Resources Research, Geophysical Research Letters, Journal of Hydrology, Journal of Geophysical Research – Biogeosciences, Ecological Modelling, Agricultural and Forest Meteorology, Journal of Hydrometeorology, Remote Sensing, Remote Sensing of Environment, Transactions of the ASABE, American Journal of Climate Change, IET Software, Computer Animation and Virtual Worlds, Land Degradation & Development, PLoS ONE, and others

PARTICIPATION IN EDITORIAL BOARDS

Associate editor for the Journal of Hydrometeorology.

Guest editor for the Remote Sensing's special issue "Remote Sensing of Flow Velocity, Channel Bathymetry, and River Discharge".

OUTREACH ACTIVITIES

Served as a judge for the Outstanding Student Award at the AGU annual meeting (2012-2020, 2023), for The Ohio Academy of Science's State Science Day (May 2014), and for the Science Symposium organized by the Gahanna Lincoln Highschool (February 2019 and 2020).

Volunteered at Prairie High school (Iowa), Lincoln Elementary school and Lincoln High School (Ohio), and the Brazilian Federal Institute of Technology of Espirito Santo, Emblem Academy Elementary School (California) giving speeches on STEM careers and Hydrology.