

# Matthew J. Hoffman

ASSOCIATE PROFESSOR · ROCHESTER INSTITUTE OF TECHNOLOGY

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## Education

### University of Maryland, College Park

PH.D. IN APPLIED MATHEMATICS AND SCIENTIFIC COMPUTATION

M.S. IN APPLIED MATHEMATICS AND SCIENTIFIC COMPUTATION

• Advisors: Eugenia Kalnay and James A. Carton

College Park, MD

2009

2007

### Williams College

B.A. IN MATHEMATICS AND ASTROPHYSICS

Williamstown, MA

2004

## Professional Experience

### Rochester Institute of Technology

ASSOCIATE PROFESSOR, SCHOOL OF MATHEMATICAL SCIENCES

ASSISTANT PROFESSOR, SCHOOL OF MATHEMATICAL SCIENCES

DIRECTOR, MS GRADUATE PROGRAM IN APPLIED AND COMPUTATIONAL MATHEMATICS

GRADUATE FACULTY MEMBER, CHESTER F. CARLSON CENTER FOR IMAGING SCIENCE

DIRECTOR OF ANALYTICS, RIT MEN'S HOCKEY TEAM

Rochester, NY

2017 - Present

2011 - 2017

2016 - 2019

2012 - Present

2016 - 2019

### University of Maryland, College Park

SPECIAL MEMBER OF THE GRADUATE FACULTY

College Park, MD

2022-Present

### Atmospheric and Environmental Research

CONSULTANT

Lexington, MA

2011

### Johns Hopkins University

GLENADORE AND HOWARD L. PIM POSTDOCTORAL FELLOW, DEPARTMENT OF EARTH AND PLANETARY SCIENCES

Baltimore, MD

2009 - 2011

### Center for Weather Forecasts and Climate Studies (CPTEC)

VISITING SPECIALIST OF THE BRAZILIAN SCIENCE AND TECHNOLOGY MINISTRY

Cachoeira Paulista, SP, Brazil

2008

## Recent Funding

### EXTERNAL

2022-2023 <b>AFOSR</b> , High-fidelity scene modeling and vehicle tracking using hyperspectral video, <b>PI</b>	\$49,940
2021-2024 <b>NOAA</b> , Closing the gap on watershed sources and sinks of debris in the Great Lakes, <b>PI</b>	\$332,281
2021-2023 <b>NOAA</b> , Great Lakes Plastic Cleanup, <b>Co-PI</b>	\$91,244
2020-2021 <b>University of Toronto</b> , pELastics Project: Fate Limnocorral Experiment, <b>PI</b>	\$5,644
2020-2022 <b>NOAA SeaGrant</b> , Impacts of Microplastic Pollution on Benthic Ecosystem Functions and Services, <b>Co-PI</b>	\$237,140
2019-2021 <b>P2I</b> , Development of a Plastics Pollution Prevention Toolkit for Science on a Sphere, <b>Co-PI</b>	\$4,956
2018-2021 <b>AFOSR</b> , High-fidelity scene modeling and vehicle tracking using hyperspectral video, <b>PI</b>	\$598,750
2018-2021 <b>NSF</b> , Developing a quantitative three-dimensional understanding of cardiac arrhythmias, <b>Co-PI</b>	\$234,989
2017-2020 <b>NSF-IUSE</b> , Data Integration in Undergraduate Mathematics Education, <b>Co-PI</b>	\$253,052
2015 <b>Defense University Research Instrumentation Program (DURIP)</b> , Hyperspectral Video System, <b>Co-PI</b>	\$311,882
2015-2017 <b>AFOSR</b> , Dynamic Modality Switching Aided Object Tracking using an Adaptive Sensor, <b>PI</b>	\$150,000
2015 <b>NSF</b> , REU Supplement to Intramural forecasting of cardiac electrical dynamics, <b>Co-PI</b>	\$5,000
2013-2015 <b>NOAA</b> , Comparison of 4DVAR and LETKF in Assimilating JPSS-Derived Sea-Surface Temperature in the Chesapeake Bay Operational Forecasting System, <b>PI</b>	\$57,079
2012-2015 <b>NSF</b> , Intramural forecasting of cardiac electrical dynamics, <b>Co-PI</b>	\$261,234
2011-2013 <b>AFOSR</b> , DDDAS for Object Tracking in Complex and Dynamic Environments (DOTCODE), <b>Co-PI</b>	\$240,123

## OTHER GRANTS

2020-2021	<b>XSEDE</b> , Ensemble Kalman Filter Data Assimilation for Forecasting and 3D Transport Modeling in Lake Erie, <b>PI</b>	\$2,070
2019-2020	<b>XSEDE</b> , Ensemble Kalman Filter Data Assimilation for Forecasting and 3D Transport Modeling in Lake Erie, <b>PI</b>	\$892
2018-2019	<b>Dean's Research Initiation Grant</b> , Developing a cross-disciplinary research cluster studying the input, fate, and effects of plastic pollution in the Great Lakes, <b>PI</b>	\$25,000
2018	<b>NVIDIA</b> , GPU Grant of a Titax Xp GPU, <b>PI</b>	\$1,150
2018-2019	<b>XSEDE</b> , Ensemble Kalman Filter Data Assimilation for Forecasting and 3D Transport Modeling in Lake Erie, <b>PI</b>	\$823
2017	<b>NVIDIA</b> , GPU Grant of a Titax X Pascal GPU, <b>PI</b>	\$970
2016-2017	<b>XSEDE</b> , Improving Temperature and Salinity Estimates in the Chesapeake Bay Operational Forecasting System Using Satellite Sea-Surface Temperature, <b>PI</b>	\$8,693
2015-2016	<b>XSEDE</b> , Correcting Temperature and Salinity in the Chesapeake Bay Operational Forecasting System Using Satellite Sea-Surface Temperature, <b>PI</b>	\$7,656
2015-2016	<b>RIT Interdisciplinary Teaching Grant</b> , Climate Change Curriculum at RIT, <b>Co-PI</b>	\$18,500
2015-2016	<b>RIT Connect Grant</b> , COMMENT: Communication and Outreach through Mentored Media Engagement and Networking Teams, <b>Co-PI</b>	\$8,000
2013-2014	<b>Dean's Research Initiation Grant</b> , Modeling and Assimilation System Development for Lake Ontario., <b>PI</b>	\$10,000

## Publications

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### JOURNAL ARTICLES [30 ]

- 1 Daily, J., Onink, V., Jongedijk, C. E., Laufkötter, C., & Hoffman, M. J. (2021). Incorporating terrain specific beaching within a lagrangian transport plastics model for Lake Erie. *Microplastics and Nanoplastics*, 1(1), 19. <https://doi.org/10.1186/s43591-021-00019-7>
- 2 Marcotte, C. D., Fenton, F. H., Hoffman, M. J., & Cherry, E. M. (2021). Robust data assimilation with noise: Applications to cardiac dynamics [Publisher: American Institute of Physics]. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 31(1), 013118. <https://doi.org/10.1063/5.0033539>
- 3 Onink, V., Jongedijk, C., Hoffman, M., Sebille, E. v., & Laufkötter, C. (2021). Global simulations of marine plastic transport show plastic trapping in coastal zones. *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/abecbd>
- 4 Rangnekar, A., Mokashi, N., Ientilucci, E. J., Kanan, C., & Hoffman, M. J. (2020). AeroRIT: A New Scene for Hyperspectral Image Analysis [Conference Name: IEEE Transactions on Geoscience and Remote Sensing]. *IEEE Transactions on Geoscience and Remote Sensing*, 58(11), 8116–8124. <https://doi.org/10.1109/TGRS.2020.2987199>
- 5 Hoffman, M. J., & Cherry, E. M. (2020). Sensitivity of a data-assimilation system for reconstructing three-dimensional cardiac electrical dynamics [Publisher: Royal Society]. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 378(2173), 20190388. <https://doi.org/10.1098/rsta.2019.0388>
- 6 Daily, J., & Hoffman, M. J. (2020). Modeling the three-dimensional transport and distribution of multiple microplastic polymer types in Lake Erie. *Marine Pollution Bulletin*, 154, 111024. <https://doi.org/10.1016/j.marpolbul.2020.111024>
- 7 Mendez, M. J., Hoffman, M. J., Cherry, E. M., Lemmon, C. A., & Weinberg, S. H. (2020). Cell Fate Forecasting: A Data-Assimilation Approach to Predict Epithelial-Mesenchymal Transition. *Biophysical Journal*, 118(7), 1749–1768. <https://doi.org/10.1016/j.bpj.2020.02.011>
- 8 Mason, S. A., Daily, J., Aleid, G., Ricotta, R., Smith, M., Donnelly, K., Knauff, R., Edwards, W., & Hoffman, M. J. (2020). High levels of pelagic plastic pollution within the surface waters of Lakes Erie and Ontario. *Journal of Great Lakes Research*. <https://doi.org/10.1016/j.jglr.2019.12.012>
- 9 Hoffman, M. J., Zhang, B., Lanerolle, L. W. J., & Brown, C. W. (2020). Evaluating the benefit and cost of assimilating satellite sea surface temperature into the NOAA Chesapeake Bay Operational Forecast System using 4DVAR and LETKF. *NOAA Technical Report*, 39. <https://repository.library.noaa.gov/view/noaa/23106>
- 10 Sebille, E. v., Aliani, S., Law, K. L., Maximenko, N., Alsina, J., Bagaev, A., Bergmann, M., Chapron, B., Chubarenko, I., Cózar, A., Delandmeter, P., Egger, M., Fox-Kemper, B., Garaba, S. P., Goddijn-Murphy, L., Hardesty, D., Hoff-

man, M. J., Isobe, A., Jongedijk, C., ... Wichmann, D. (2020). The physical oceanography of the transport of floating marine debris. *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/ab6d7d>

- 11 Parthasarathy, A., Tyler, A. C., Hoffman, M. J., Savka, M. A., & Hudson, A. O. (2019). Is Plastic Pollution in Aquatic and Terrestrial Environments a Driver for the Transmission of Pathogens and the Evolution of Antibiotic Resistance? *Environmental Science & Technology*, 53(4), 1744–1745. <https://doi.org/10.1021/acs.est.8b07287>
- 12 Bachmann, C. M., Eon, R. S., Lapszynski, C. S., Badura, G. P., Vodacek, A., Hoffman, M. J., McKeown, D., Kremens, R. L., Richardson, M., Bauch, T., & Foote, M. (2019). A Low-Rate Video Approach to Hyperspectral Imaging of Dynamic Scenes. *Journal of Imaging*, 5(1), 6. <https://doi.org/10.3390/jimaging5010006>
- 13 Uzkent, B., Rangnekar, A., & Hoffman, M. J. (2019). Tracking in Aerial Hyperspectral Videos Using Deep Kernelized Correlation Filters. *IEEE Transactions on Geoscience and Remote Sensing*, 57(1), 449–461. <https://doi.org/10.1109/TGRS.2018.2856370>
- 14 Floyd, C. M., Hoffman, M., & Fokoue, E. (2019). Shot-by-shot stochastic modeling of individual tennis points. *Journal of Quantitative Analysis in Sports*, 0(0). <https://doi.org/10.1515/jqas-2018-0036>
- 15 Greybush, S. J., Kalnay, E., Wilson, R. J., Hoffman, R. N., Nehrkorn, T., Leidner, M., Eluszkiewicz, J., Gillespie, H. E., Wespelal, M., Zhao, Y., Hoffman, M., Dudas, P., McConnochie, T., Kleinböhl, A., Kass, D., McCleese, D., & Miyoshi, T. (2019). The Ensemble Mars Atmosphere Reanalysis System (EMARS) Version 1.0. *Geoscience Data Journal*, 6(2), 137–150. <https://doi.org/10.1002/gdj3.77>
- 16 Lobyrev, F., & Hoffman, M. J. (2018). A morphological and geometric method for estimating the selectivity of gill nets. *Reviews in Fish Biology and Fisheries*, 28(4), 909–924. <https://doi.org/10.1007/s11160-018-9534-1>
- 17 LaVigne, N. S., Holt, N., Hoffman, M. J., & Cherry, E. M. (2017). Effects of model error on cardiac electrical wave state reconstruction using data assimilation. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 27(9), 093911. <https://doi.org/10.1063/1.4999603>
- 18 Hoffman, M. J., & Hittinger, E. (2017). Inventory and transport of plastic debris in the Laurentian Great Lakes. *Marine Pollution Bulletin*, 115(1), 273–281. <https://doi.org/10.1016/j.marpolbul.2016.11.061>
- 19 Hoffman, M. J., LaVigne, N. S., Scorse, S. T., Fenton, F. H., & Cherry, E. M. (2016). Reconstructing three-dimensional reentrant cardiac electrical wave dynamics using data assimilation. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 26(1), 013107. <https://doi.org/10.1063/1.4940238>
- 20 Uzkent, B., Hoffman, M. J., & Vodacek, A. (2016). Integrating Hyperspectral Likelihoods in a Multidimensional Assignment Algorithm for Aerial Vehicle Tracking. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, PP(99), 1–9. <https://doi.org/10.1109/JSTARS.2016.2560220>
- 21 Uzkent, B., Hoffman, M., Vodacek, A., & Chen, B. (2015). Feature Matching With an Adaptive Optical Sensor in a Ground Target Tracking System. *IEEE Sensors Journal*, 15(1), 510–519. <https://doi.org/10.1109/JSEN.2014.2346152>
- 22 Urquhart, E. A., Hoffman, M. J., Murphy, R. R., & Zaitchik, B. F. (2013). Geospatial interpolation of MODIS-derived salinity and temperature in the Chesapeake Bay. *Remote Sensing of Environment*, 135, 167–177. <https://doi.org/10.1016/j.rse.2013.03.034>
- 23 Greybush, S. J., Kalnay, E., Hoffman, M. J., & Wilson, R. J. (2013). Identifying Martian atmospheric instabilities and their physical origins using bred vectors. *Quarterly Journal of the Royal Meteorological Society*, 139(672), 639–653. <https://doi.org/10.1002/qj.1990>
- 24 Greybush, S. J., Wilson, R. J., Hoffman, R. N., Hoffman, M. J., Miyoshi, T., Ide, K., McConnochie, T., & Kalnay, E. (2012). Ensemble Kalman filter data assimilation of Thermal Emission Spectrometer temperature retrievals into a Mars GCM. *Journal of Geophysical Research: Planets*, 117(E11), E11008. <https://doi.org/10.1029/2012JE004097>
- 25 Hoffman, M. J., Miyoshi, T., Haine, T. W. N., Ide, K., Brown, C. W., & Murtugudde, R. (2012). An Advanced Data Assimilation System for the Chesapeake Bay: Performance Evaluation. *Journal of Atmospheric and Oceanic Technology*, 29(10), 1542–1557. <https://doi.org/10.1175/JTECH-D-11-00126.1>

- 26 Hoffman, M. J., Eluszkiewicz, J., Weisenstein, D., Uymin, G., & Moncet, J.-L. (2012). Assessment of Mars atmospheric temperature retrievals from the Thermal Emission Spectrometer radiances. *Icarus*, 220(2), 1031–1039. <https://doi.org/10.1016/j.icarus.2012.06.039>
- 27 Urquhart, E. A., Zaitchik, B. F., Hoffman, M. J., Guikema, S. D., & Geiger, E. F. (2012). Remotely sensed estimates of surface salinity in the Chesapeake Bay: A statistical approach. *Remote Sensing of Environment*, 123, 522–531. <https://doi.org/10.1016/j.rse.2012.04.008>
- 28 Hoffman, M. J., Greybush, S. J., John Wilson, R., Gyarmati, G., Hoffman, R. N., Kalnay, E., Ide, K., Kostelich, E. J., Miyoshi, T., & Szunyogh, I. (2010). An ensemble Kalman filter data assimilation system for the martian atmosphere: Implementation and simulation experiments. *Icarus*, 209(2), 470–481. <https://doi.org/10.1016/j.icarus.2010.03.034>
- 29 Hoffman, M. J., Kalnay, E., Carton, J. A., & Yang, S.-C. (2009). Use of breeding to detect and explain instabilities in the global ocean. *Geophysical Research Letters*, 36(12), L12608. <https://doi.org/10.1029/2009GL037729>
- 30 Gibbons, K. S., Hoffman, M. J., & Wootters, W. K. (2004). Discrete phase space based on finite fields. *Physical Review A*, 70(6), 062101. <https://doi.org/10.1103/PhysRevA.70.062101>

#### PEER-REVIEWED CONFERENCE PAPERS [14 ]

- 1 Rangnekar, A., Mulhollan, Z., Vodacek, A., Hoffman, M., Sappa, A. D., Blasch, E., Yu, J., Zhang, L., Du, S., Chang, H., Lu, K., Zhang, Z., Gao, F., Yu, Y., Shuang, F., Wang, L., Ling, Q., Shyam, P., Yoon, K.-J., & Kim, K.-S. (2022). Semi-supervised hyperspectral object detection challenge results - pbvs 2022. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 390–398.
- 2 Rangnekar, A., Wong, C., Rochman, C., & Hoffman, M. (2022). On fine-grained micro-plastics classification. *Proceedings of the 9th Fine-Grained Visual Categorization Workshop*.
- 3 Rangnekar, A., Yao, Y., Hoffman, M., & Divakaran, A. (2021). Fine-Tuning for One-Look Regression Vehicle Counting in Low-Shot Aerial Datasets. In A. Del Bimbo, R. Cucchiara, S. Sclaroff, G. M. Farinella, T. Mei, M. Bertini, H. J. Escalante, & R. Vezzani (Eds.), *Pattern Recognition. ICPR International Workshops and Challenges* (pp. 5–18). Springer International Publishing. [https://doi.org/10.1007/978-3-030-68793-9\\_1](https://doi.org/10.1007/978-3-030-68793-9_1)
- 4 Mulhollan, Z., Rangnekar, A., Bauch, T., Hoffman, M. J., & Vodacek, A. (2020). Calibrated Vehicle Paint Signatures for Simulating Hyperspectral Imagery, 110–111. Retrieved December 16, 2020, from [https://openaccess.thecvf.com/content\\_CVPRW\\_2020/html/w6/Mulhollan\\_Calibrated\\_Vehicle\\_Paint\\_Signatures\\_for\\_Simulating\\_Hyperspectral\\_Imagery\\_CVPRW\\_2020\\_paper.html](https://openaccess.thecvf.com/content_CVPRW_2020/html/w6/Mulhollan_Calibrated_Vehicle_Paint_Signatures_for_Simulating_Hyperspectral_Imagery_CVPRW_2020_paper.html)
- 5 Mulhollan, Z., Rangnekar, A., Vodacek, A., & Hoffman, M. J. (2020). Occlusion Detection for Dynamic Adaptation. In F. Dorema, E. Blasch, S. Ravela, & A. Aved (Eds.), *Dynamic Data Driven Application Systems* (pp. 337–344). Springer International Publishing. [https://doi.org/10.1007/978-3-030-61725-7\\_39](https://doi.org/10.1007/978-3-030-61725-7_39)
- 6 Rangnekar, A., Ientilucci, E., Kanan, C., & Hoffman, M. J. (2020). Uncertainty Estimation for Semantic Segmentation of Hyperspectral Imagery. In F. Dorema, E. Blasch, S. Ravela, & A. Aved (Eds.), *Dynamic Data Driven Application Systems* (pp. 163–170). Springer International Publishing. [https://doi.org/10.1007/978-3-030-61725-7\\_20](https://doi.org/10.1007/978-3-030-61725-7_20)
- 7 Li, H., Pan, L., Lee, E. J., Li, Z., Hoffman, M. J., Vodacek, A., & Bhattacharyya, S. S. (2019). Hyperspectral Video Processing on Resource-Constrained Platforms [ISSN: 2158-6276]. *2019 10th Workshop on Hyperspectral Imaging and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, 1–5. <https://doi.org/10.1109/WHISPERS.2019.8921138>
- 8 Rangnekar, A., & Hoffman, M. J. (2019). Learning representations to predict landslide occurrences and detect illegal mining across multiple domains. *Proceedings of the 36th International Conference on Machine Learning*. Retrieved December 17, 2020, from <https://www.climatechange.ai/papers/icml2019/43.html>
- 9 Uzkent, B., Rangnekar, A., & Hoffman, M. J. (2017). Aerial Vehicle Tracking by Adaptive Fusion of Hyperspectral Likelihood Maps [ISSN: 2160-7516]. *2017 IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 233–242. <https://doi.org/10.1109/CVPRW.2017.35>

- 10 Uz Kent, B., Hoffman, M. J., & Vodacek, A. (2016). Real-Time Vehicle Tracking in Aerial Video Using Hyperspectral Features. *2016 IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 1443–1451. <https://doi.org/10.1109/CVPRW.2016.181>
- 11 Uz Kent, B., Hoffman, M. J., & Vodacek, A. (2015a). Efficient integration of spectral features for vehicle tracking utilizing an adaptive sensor. *9407, 940707–940707–10*. <https://doi.org/10.1117/12.2082266>
- 12 Uz Kent, B., Hoffman, M. J., & Vodacek, A. (2015b). Spectral Validation of Measurements in a Vehicle Tracking DDDAS. *Procedia Computer Science*, *51*, 2493–2502. <https://doi.org/10.1016/j.procs.2015.05.358>
- 13 Uz Kent, B., Hoffman, M. J., Vodacek, A., Kerekes, J. P., & Chen, B. (2013). Feature Matching and Adaptive Prediction Models in an Object Tracking DDDAS. *Procedia Computer Science*, *18*, 1939–1948. <https://doi.org/10.1016/j.procs.2013.05.363>
- 14 Vodacek, A., Kerekes, J. P., & Hoffman, M. J. (2012). Adaptive Optical Sensing in an Object Tracking DDDAS. *Procedia Computer Science*, *9*, 1159–1166. <https://doi.org/10.1016/j.procs.2012.04.125>

#### COMMENTARY/POPULAR PRESS [1]

- 1 Hoffman, M. J., & Tyler, C. (2018). Tons of plastic trash enter the Great Lakes every year – where does it go? *The Conversation*. Retrieved January 15, 2020, from <http://theconversation.com/tons-of-plastic-trash-enter-the-great-lakes-every-year-where-does-it-go-100423>

#### CONFERENCE PAPERS [3]

- 1 Li, H., Pan, L., Hoffman, M. J., Vodacek, A., & Bhattacharyya, S. S. (2018). Design methods for hyperspectral video processing on resource-constrained platforms. *Proceedings of the Hyperspectral Imaging & Applications Conference*, *2*.
- 2 Uz Kent, B., Hoffman, M. J., Vodacek, A., & Chen, B. (2015). Background image understanding and adaptive imaging for vehicle tracking. *Airborne Intelligence, Surveillance, Reconnaissance (ISR) Systems and Applications XII*, 9460, 94600F. <https://doi.org/10.1117/12.2177494>
- 3 Uz Kent, B., Hoffman, M. J., Cherry, E., & Cahill, N. (2014). 3-D MRI cardiac segmentation using graph cuts. *2014 IEEE Western New York Image and Signal Processing Workshop (WNYISPW)*, 47–51. <https://doi.org/10.1109/WNYIPW.2014.6999484>

## Graduate Thesis Students

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Current	<b>Aneesh Rangnekar</b> , Imaging Science	<i>Ph.D.</i>
Current	<b>Zachary Mulhollan</b> , Imaging Science (co-advise with Tony Vodacek as primary advisor)	<i>Ph.D.</i>
Current	<b>David Russell</b> , Applied Mathematics & Statistics, and Scientific Computation at University of Maryland (co-advise with Kayo Ide)	<i>Ph.D.</i>
2021	<b>Juliette Daily</b> , Mathematical Modeling	<i>Ph.D.</i>
2020	<b>Emily Thomas</b> , Applied and Computational Mathematics	<i>M.S.</i>
2019	<b>Rebecca Knauff</b> , Applied and Computational Mathematics	<i>M.S.</i>
2017	<b>Calvin Floyd</b> , Applied and Computational Mathematics	<i>M.S.</i>
2016	<b>Burak Uz Kent</b> , Imaging Science	<i>Ph.D.</i>
2016	<b>Derek Cabone</b> , Applied and Computational Mathematics	<i>B.S./M.S.</i>
2014	<b>Stephen Scorse</b> , Applied and Computational Mathematics	<i>B.S./M.S.</i>
2013	<b>Jessica Beiter</b> , Applied and Computational Mathematics	<i>B.S./M.S.</i>

## Undergraduate Research Students

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2022	<b>Morgan Holland</b> , Applied Mathematics	<i>Emmerson Scholar</i>
2022	<b>Evan Batte</b> , Environmental Sciences	<i>Emmerson Scholar</i>
2022	<b>Zhi Heng Shi</b> , Applied Mathematics	<i>McNair Scholar</i>
2021	<b>Zhi Heng Shi</b> , Applied Mathematics	<i>McNair Scholar</i>
2021	<b>Erika Fernandez</b> , Environmental Sciences	<i>McNair Scholar</i>
2021-2022	<b>Evan Batte</b> , Environmental Sciences	<i>Paid Research</i>
2020	<b>Kelly Rogers</b> , Applied Mathematics	<i>Summer Research</i>
2018-2019	<b>Samuel Wohl</b> , Physics	<i>Capstone</i>
2018	<b>Emily Thomas</b> , Applied Mathematics	<i>Emmerson Scholar</i>
2013	<b>Derek Cabone</b> , Applied Mathematics	<i>Summer Research</i>
2013	<b>Joel Newbolt</b> , Physics	<i>Summer Research</i>
2013	<b>Cesar Reynoso</b> , Biomedical Engineering	<i>Semester Research</i>

## Journals/Programs Reviewed For

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Nature  
 Nature Sustainability  
 NSF IUSE Program  
 NSF Graduate Research Fellowship Program  
 PLOS ONE  
 Remote Sensing of the Environment  
 IEEE Sensors  
 AFOSR DDDAS Program  
 Journal of Climate  
 Journal of Geophysical Research-Oceans  
 Journal of Geophysical Research-Planets  
 Geoscientific Model Development  
 Icarus  
 Weather and Forecasting  
 Remote Sensing  
 Sensors  
 Tellus A  
 Monthly Weather Review  
 NSF Arctic Science Division  
 Journal of Great Lakes Research  
 Marine Pollution Bulletin

## Invited Lectures

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2022	<b>Speaker</b> , University of Rochester Science and Sustainability Series	Rochester, NY
2021	<b>Speaker</b> , University of Rochester Science and Sustainability Series	Rochester, NY
2020	<b>Speaker</b> , U. Toronto Department of Ecology and Environmental Biology	Toronto, Canada
2020	<b>Plenary Speaker</b> , Dynamics Days	Hartford, CT
2019	<b>Speaker</b> , RIT Engineers for a Sustainable World Winter Banquet	Rochester, NY
2019	<b>Speaker</b> , Highlands of Pittsford Speaker Series	Pittsford, NY
2019	<b>Keynote Speaker</b> , Hobart and William Smith Hackathon	Geneva, NY
2019	<b>Speaker</b> , University of Rochester Sustainability Series	Rochester, NY
2019	<b>Panelist</b> , Great Lakes Circular Economy Forum	Toronto, Canada
2019	<b>Science on the Edge Lecture</b> , Rochester Museum and Science Center	Rochester, NY
2018	<b>Keynote Speaker</b> , Texas Undergraduate Mathematics Conference	Nacogdoches, TX
2018	<b>Speaker</b> , University of Rochester Sustainability Series	Rochester, NY
2017	<b>Keynote Speaker</b> , RIT Engineers for a Sustainable World Winter Banquet	Rochester, NY
2017	<b>Speaker</b> , University of Buffalo Applied Math Seminar	Buffalo, NY
2017	<b>Speaker</b> , University of Rochester Sustainability Series	Rochester, NY
2017	<b>Speaker</b> , Rochester Science Cafe	Rochester, NY
2016	<b>Speaker</b> , NOAA Great Lakes Environmental Research Laboratory Seminar	Ann Arbor, MI
2015	<b>Speaker</b> , NOAA Joint Polar Satellite System Seminar	Silver Spring, MD
2013	<b>Speaker</b> , IMA Predictability in Earth Systems Processes Hot Topic Workshop	Minneapolis, MN
2013	<b>Speaker</b> , SMS Conversations in Mathematics Seminar	Rochester, NY
2013	<b>Speaker</b> , Houghton College Science and Math Seminar	Houghton, NY
2012	<b>Speaker</b> , University of Buffalo Environmental Engineering & Science Seminar	Buffalo, NY
2012	<b>Speaker</b> , RIT Astrophysical Sciences and Technology Colloquium	Rochester, NY
2011	<b>Speaker</b> , RIT Cetner for Imaging Sciences Colloquium	Rochester, NY
2010	<b>Speaker</b> , Williams College Mathematics Department Faculty Seminar	Williamstown, MA
2010	<b>Speaker</b> , Johns Hopkins Center for Environmental and Applied Fluid Mechanics Seminar	Baltimore, MD
2010	<b>Speaker</b> , Mathematics Department Colloquium, Stephen F. Austin University	Nacogdoches, TX
2010	<b>Speaker</b> , Mathematics Department Colloquium, University of Vermont	Burlington, VT
2009	<b>Speaker</b> , Center for Weather Forecasts and Climate Studies (CPTEC) Seminar	Cachoiera Paulista, Brazil
2009	<b>Speaker</b> , University of Maryland Mathematics Graduation Conference	College Park, MD
2008	<b>Speaker</b> , University of São Paulo Meteorology Department Seminar	São Paulo, Brazil
2008	<b>Speaker</b> , Center for Weather Forecasts and Climate Studies (CPTEC) Seminar	Cachoiera Paulista, Brazil
2008	<b>Speaker</b> , National Institute of Space Studies (INPE) Seminar	São Jose dos Campos, Brazil

## Contributed Talks (as speaker)

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2022	Joint Aquatic Sciences Meeting	Grand Rapids, MI
2022	AGU Ocean Sciences Meeting	Online
2021	AFOSR DDDAS PI Meeting	Online
2021	International Conference on Great Lakes Research	Online
2020	International Conference on Great Lakes Research	Online
2020	AFOSR DDDAS PI Meeting	Online
2019	International Conference on Great Lakes Research	Brockport, NY
2019	AFOSR DDDAS PI Meeting	Dayton, OH
2019	AMS Joint Meetings	Baltimore, MD
2018	SIAM Education SIAG Conference	Portland, OR
2016	HABs State of the Science Webinar Series	Webinar
2016	SIAM Conference on Life Sciences	Boston, MA
2016	SIAM Annual Meeting	Boston, MA
2017	AFOSR DDDAS PI Meeting	Dayton, OH
2016	Summer Math Institute	Rochester, NY
2016	International Conference on Great Lakes Research	Guelph, Canada
2016	International Conference on Great Lakes Research	Guelph, Canada
2016	AFOSR DDDAS PI Meeting	Washington, DC
2015	SPIE Defense and Commercial Sensing	Baltimore, MD
2013	New York Conference on Applied Mathematics	Troy, NY
2013	MathFest	Hartford, CT
2013	RIT COS Faculty Research Symposium	Rochester, NY
2013	Summer Math Institute	Rochester, NY
2012	Chesapeake Bay Modeling Symposium	Annapolis, MD
2012	AGU Ocean Sciences Meeting	Salt Lake City, UT
2012	American Mathematical Society Annual Meeting	Boston, MA
2011	Mars Atmosphere Workshop: Modeling And Observations	Paris, France
2011	SIAM Dynamical Systems Conference	Snowbird, UT
2011	CEaFM/Burger's Symposium	Baltimore, MD
2011	American Meteorological Society Annual Meeting	Seattle, WA
2010	Division for Planetary Science Annual Meeting	Pasadena, CA
2010	Atmosphere/Ocean Days	College Park, MD
2010	Chesapeake Modeling Symposium	Annapolis, MD
2010	American Meteorological Society Annual Meeting	Atlanta, GA
2009	Division for Planetary Science Annual Meeting	Fajardo, PR
2009	CEAFM/Burger's Symposium	Baltimore, MD
2008	AMSC Student Seminar	College Park, MD
2008	SMALL 10th Anniversary Mini Conference	Williamstown, MA
2008	Chesapeake Modeling Symposium	Annapolis, MD
2007	AMSC Student Seminar	College Park, MD
2007	International Union of Geodesy and Geophysics	Perugia, Italy

## Posters

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2018	6th International Marine Debris Conference	San Diego, CA
2015	Dynamics Days	Houston, TX
2014	AGU Ocean Sciences Meeting	Honolulu, HI
2013	MathFest	Hartford, CT
2010	Division for Planetary Sciences Annual Meeting	Pasadena, CA
2008	American Geophysical Union Annual Meeting	San Francisco, CA
2007	American Meteorological Society Annual Meeting	San Antonio, TX
2006	American Geophysical Union Annual Meeting	San Francisco, CA

## Workshops

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2019	<b>Floating Litter and its Oceanic Transport Analysis and Modelling (FLOTSAM)</b> , Scientific Committee on Oceanic Research	<i>Utrecht, Netherlands</i>
2013	<b>Predictability in Earth Systems Processes Hot Topic Workshop</b> , Institute for Mathematics and its Applications	<i>Minneapolis, MN</i>
2015	<b>Integrated analysis for agricultural management strategies</b> , American Institute of Mathematics	<i>Palo Alto, CA</i>
2010	<b>Advanced School on Complexity, Adaptation, and Emergence in Marine Ecosystems</b> , International Centre for Theoretical Physics	<i>Trieste, Italy</i>
2007	<b>MSRI Symposium on Climate Change: From Global Models to Local Action</b> , Mathematical Sciences Research Institute	<i>Berkeley, CA</i>

## Professional Activities/Service

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2022	<b>Organizer</b> , Session at the 7th International Marine Debris Conference	<i>Busan, South Korea</i>
2021	<b>Organizer</b> , Session on Microlastic Pollution at State of Lake Ontario Conference	<i>Online</i>
2020	<b>Organizer</b> , Session on Microlastic Pollution at IAGLR	<i>Online</i>
2020	<b>Organizer</b> , Session on Data Assimilation and Coupled Models at IAGLR	<i>Online</i>
2019	<b>Organizer</b> , RIT Sports Analytics Conference	<i>Rochester, NY</i>
2019	<b>Organizer</b> , Session on Microlastic Pollution at IAGLR	<i>Brockport, NY</i>
2019	<b>Organizer</b> , Session on Data Assimilation and Coupled Models at IAGLR	<i>Brockport, NY</i>
2018	<b>Organizer</b> , RIT Sports Analytics Conference	<i>Rochester, NY</i>
2018	<b>Organizer</b> , Session on Data Assimilation and Coupled Models at IAGLR	<i>Toronto, Canada</i>
2018	<b>Organizer</b> , Session on Mathematics of Planet Earth Education at SIAM ED	<i>Portland, OR</i>
2017	<b>Organizer</b> , RIT Hockey Analytics Conference	<i>Rochester, NY</i>
2017	<b>Organizer</b> , Session on Data Assimilation and Coupled Models at IAGLR	<i>Detroit, MI</i>
2016	<b>Organizer</b> , RIT Hockey Analytics Conference	<i>Rochester, NY</i>
2015	<b>Organizer</b> , RIT Hockey Analytics Conference	<i>Rochester, NY</i>
2013	<b>Organizer</b> , Invited Paper Session on Climate and Geophysical Modeling at MathFest	<i>Hartford, CT</i>
2008-2009	<b>President</b> , AMSC Student Council	<i>Univ. of Maryland</i>
2008-2009	<b>President</b> , SIAM Student Chapter	<i>Univ. of Maryland</i>
2008	<b>Organizer</b> , Math Department Graduation Conference	<i>Univ. of Maryland</i>
2007-2008	<b>Board Member</b> , AMSC Student Council	<i>Univ. of Maryland</i>
2007	<b>Organizer</b> , Math Department Graduation Conference	<i>Univ. of Maryland</i>

## Honors & Awards

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2015	<b>Finalist</b> , Richard and Virginia Eisenhart Provost's Award for Excellence in Teaching	<i>RIT</i>
2015	<b>Fun Outside the Classroom Award</b> , College of Science	<i>RIT</i>
2014	<b>Rising Star Award</b> , College of Science	<i>RIT</i>
2013	<b>Finalist</b> , Richard and Virginia Eisenhart Provost's Award for Excellence in Teaching	<i>RIT</i>

## University Service

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2021-2022 <b>Chair</b> , Faculty Search Committee	<i>SMS</i>
2021-2022 <b>Member</b> , Non-tenure Promotion Committee	<i>COS</i>
2021-2022 <b>Member</b> , Research and Scholarship Committee	<i>RIT</i>
2018-2019 <b>Chair</b> , Faculty Search Committee (2 positions)	<i>SMS</i>
2018-2019 <b>Member</b> , Faculty Search Committee	<i>GSOLS</i>
2018-2019 <b>Member</b> , Department Head Search Committee	<i>SMS</i>
2017-2018 <b>Chair</b> , Faculty Search Committee	<i>SMS</i>
2016-2019 <b>Co-Chair</b> , Strategic Planning Committee	<i>SMS</i>
2016-2019 <b>Director</b> , MS in Applied and Computational Mathematics	<i>SMS</i>
2016-2019 <b>Member</b> , Graduate Curriculum Committee	<i>SMS</i>
2016-2019 <b>Member</b> , Graduate Curriculum Committee	<i>COS</i>
2016-2017 <b>Member</b> , Faculty Search Committee	<i>CIS</i>
2014-2017 <b>Member</b> , Undergraduate Curriculum Committee	<i>SMS</i>
2013-2019 <b>Founder and Organizer</b> , Conversations in Climate Change Series	<i>RIT</i>
2013-2018 <b>Co-Head</b> , PiRIT Student Mathematics Club	<i>SMS</i>
2013-2017 <b>Co-Organizer</b> , PiRIT ImagineRIT Exhibits	<i>SMS</i>
2013-2014 <b>Member</b> , Faculty Search Committee	<i>SMS</i>
2012-2013 <b>Member</b> , Technology in the Classroom Committee	<i>SMS</i>
2012-2015 <b>Chair</b> , Ph.D. in Mathematical Modeling Development Committee	<i>SMS</i>
2012-2013 <b>Co-Organizer</b> , RIT Center for Applied and Computational Mathematics Seminar	<i>SMS</i>

## Technical Skills

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<b>Programming</b>	FORTRAN 90/95/03, MATLAB, Python, $\LaTeX$ Shell Scripts
<b>Languages</b>	English, Proficient in Portuguese and Spanish
<b>OS Platform</b>	WINDOWS, LINUX