MATTHEW RODELL

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RESEACH EXPERIENCE

I study regional to global scale hydrology, using ground and space-based observations and numerical models. I have been a member of the science teams for the GRACE and GRACE-FO satellite missions since 2004. I lead the Global Land Data Assimilation System and other projects focused on groundwater variability, mapping and forecasting drought/wetness, and detecting changes in the water cycle.

EDUCATION

The University of Texas, Austin, Texas.
• Doctor of Philosophy, Geological Sciences: "Estimating Changes in Terrestrial Water Storage" (2000).

The College of William and Mary, Williamsburg, Virginia.
• Bachelor of Science, Environmental Science; minor in Mathematics (1994).

HISTORY OF EMPLOYMENT

Associate Deputy Director of Earth Sciences for Hydrosphere, Biosphere, and Geophysics, NASA Goddard Space Flight Center, 2019-present.

Chief, Hydrological Sciences Laboratory, NASA Goddard Space Flight Center, 2012-2019.

Physical Scientist, NASA Goddard Space Flight Center, Greenbelt, MD, 2001-12.

Visiting Research Associate, The University of Maryland, Baltimore County, 2000-01.

Environmental Technician, Environmental Management Services, Inc., Bethlehem, PA, 1994-95.

HONORS

Clarivate Analytics Highly Cited Researcher, 2018 & 2019.

NASA/GSFC Robert H. Goddard Outreach Award for the Earth Science Exhibit Team, 2017.

Arthur S. Flemming Award for Basic Science, 2015.

NASA/GSFC Robert H. Goddard Award for Exceptional Achievement in Science, 2011

NASA/GSFC Earth Science Achievement Award, 2007.

Presidential Early Career Award for Scientists and Engineers (PECASE), 2006.

ACTIVITIES AND MEMBERSHIPS

Advisory Council, Jackson School of Geosciences, The University of Texas, 2019-present.

Co-Lead for Hydrology and for Applications, NASA Mass Change Study Team, 2018-present.

Editor, Journal of Hydrometeorology, 2017-present.

Associate Editor, Journal of Hydrology, 2012-2015.

Co-Editor, ***Remote Sensing of the Terrestrial Water Cycle,*** Wiley, 2015.

American Geophysical Union, 1996 – present.

American Meteorological Society, 1996 – present.

SELECTED REFEREED PUBLICATIONS

- 135 total refereed publications; 46 publications in AGU journals; H-Index: 58 (Google Scholar).

Getirana, A., **M. Rodell,** S. Kumar, H.K. Beaudoing, K. Arsenault, B. Zaitchik, H. Save, and S. Bettadpur (2020). GRACE improves seasonal groundwater forecast initialization over the U.S., *J. Hydrometeor.*, 21 (1), 59-71, doi:10.1175/JHM-D-19-0096.1.

Li, B., **M. Rodell,** S.V. Kumar, H.K. Beaudoing, A. Getirana, et al. (2019). Global GRACE data assimilation for groundwater and drought monitoring: advances and challenges. *Water Resour. Res.*, 55, 7564-7586, doi:10.1029/2018WR024618.

Rodell, M., J.S. Famiglietti, D.N. Wiese, J.T. Reager, H.K. Beaudoing, F.W. Landerer, and M.-H. Lo (2018). Emerging trends in global freshwater availability. *Nature,* 557, 651-659, doi:10.1038/s41586-018-0123-1.

McCabe, M.F., **M. Rodell,** D.E. Alsdorf, et al. (2017). The future of Earth observation in hydrology. *Hydrol. Earth Syst. Sc.*, 21, 3879–3914, doi:10.5194/hess-21-3879-2017.

Rodell, M., H.K. Beaudoing, R. Koster, C.D. Peters-Lidard, J.S. Famiglietti, and V. Lakshmi (2016). "Chapter 92: Large-Scale and Global Hydrology", in *Handbook of Applied Hydrology*, V. Singh, ed., McGraw Hill, 92.1-92.7.

Rodell, M., H.K. Beaudoing, T. L'Ecuyer, et al. (2015). The observed state of the water cycle in the early 21st century. *J. Climate,* 28 (21), 8289-8318, doi:10.1175/JCLI-D-14-00555.1.

Famiglietti, J.S., and **M. Rodell** (2013). Water in the Balance. *Science*, 340 (6138), 1300-1301, doi:10.1126/science.1236460.

Houborg, R., **M. Rodell,** B. Li, R. Reichle, and B. Zaitchik (2012). Drought indicators based on model assimilated GRACE terrestrial water storage observations. *Wat. Resour. Res*, 48, W07525, doi:10.1029/2011WR011291.

Rodell, M., E.B. McWilliams, J.S. Famiglietti, H.K. Beaudoing, and J. Nigro (2011). Estimating evapotranspiration using an observation based terrestrial water budget. *Hydrol. Proc.*, 25, 4082-4092, doi:10.1002/hyp.8369.

Ozdogan, M., **M. Rodell,** H.K. Beaudoing, and D. Toll (2010). Simulating the effects of irrigation over the U.S. in a land surface model based on satellite derived agricultural data. *J. Hydrometeor.*, 11 (1), 171-184, doi: 10.1175/2009JHM1116.1.

Rodell, M., I. Velicogna, and J.S. Famiglietti (2009). Satellite-based estimates of groundwater depletion in India. *Nature,* 460, 999-1002, doi:10.1038/460789a.

Zaitchik, B.F., **M. Rodell,** and R.H. Reichle (2008), Assimilation of GRACE terrestrial water storage data into a land surface model: results for the Mississippi River Basin. *J. Hydrometeor.,* 9 (3), 535-548, doi:10.1175/2007JHM951.1.

Rodell, M., J. Chen, H. Kato, J. Famiglietti, J. Nigro, and C. Wilson (2007). Estimating ground water storage changes in the Mississippi River basin (USA) using GRACE. *Hydrogeol. J.,* 15, 159-166, doi:10.1007/s10040-006-0103-7.

Rodell, M., P. R. Houser, A. A. Berg, and J. S. Famiglietti (2005). Evaluation of 10 methods for initializing a land surface model. *J. Hydrometeor., 6* (2), 146-155, doi:10.1175/JHM414.1.

Rodell, M., P. R. Houser, U. Jambor, et al. (2004). The Global Land Data Assimilation System. *Bull. Amer. Meteor. Soc., 85* (3), 381–394, doi:10.1175/BAMS-85-3-381.

Rodell, M., J. S. Famiglietti, J. Chen, S. Seneviratne, P. Viterbo, S. Holl, and C. R. Wilson (2004). Basin scale estimates of evapotranspiration using GRACE and other observations. *Geophys. Res. Lett., 31,* L20504, doi:10.1029/2004GL020873.

Rodell, M., and J. S. Famiglietti (2001). An analysis of terrestrial water storage variations in Illinois with implications for the Gravity Recovery and Climate Experiment (GRACE). *Wat. Resour. Res.*, 37, 1327-1340, doi:10.1029/2000WR900306.

Rodell, M., and J. S. Famiglietti (1999). Detectability of variations in continental water storage from satellite observations of the time dependent gravity field. *Wat. Resour. Res., 35*, 2705-2723, doi:10.1029/1999WR900141.