

## G. ROBERT BRAKENRIDGE

Founder and Associate Director, Dartmouth Flood Observatory  
<http://floodobservatory.colorado.edu/>

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### EDUCATION

Ph.D. 1982, University of Arizona, Tucson, Geosciences  
M. S. 1979, University of Arizona, Tucson, Geosciences  
B.S. 1975, Beloit College, Environmental Geology  
Postdoctoral Research, 1982 (German Academic Exchange Scholarship), West Germany

### EXPERIENCE

2010-Present Senior Research Scientist, University of Colorado  
1987-2011 Assistant, Associate, Full Research Professor, Dartmouth College, Dept. of Geography; Adjunct Professor, Dept. of Earth Sciences  
1991-1992 JPL/California Institute of Technology Visiting Senior Scientist and Geology Program Manager, Solid Earth Sciences, NASA Headquarters, Washington, D.C.  
1983-1987 Assistant Professor, Dept. Geology, Wright State University

### ACTIVITIES

2018 NASA/USAID/PEER project workshop: "Applied tools to monitor water discharge and flooding for South American Rivers", EAFIT University, Medellín, Colombia  
2018- Users Working Group, NASA Global Hydrology Resource Center  
2012- International Working Group on Satellite Emergency Mapping (IWG-SEM)  
2014 - Steering Committee, Global Flood Partnership: public, private and international groups performing global flood monitoring, modeling and forecasting  
2017 Expert Meeting on the Global Risk Assessment in support of the Sendai Framework, UN-ISDR, Geneva  
2017 Invited Presenter, Transboundary Water - Improving Methodologies and Developing Integrated Tools for Global Water Security meeting, Silver Spring.  
2014 - 2017 Advisory Board, "[Earth2Observe](#)", Global Earth Observation for Integrated Water Resource Assessment. The European Commission-supported project includes 23 EU and 4 non-EU partners  
2016 Co-Chair, with A. Chong, World Food Program/Dartmouth Flood Observatory/NASA GSFC technical work session, Boulder, CO  
2016 SERVIR (NASA and U.S. AID) Technical Assessment Group for surface water and flood extent monitoring, mapping, and modeling

- 2016 Expert consultation, Information system on damage and losses from disasters in crops, livestock, fisheries, aquaculture and forestry, UN FAO, Rome
- 2015 Co-convener with T. Hopson and T. De Groeve, 5<sup>th</sup> Meeting of the Global Flood Partnership, NCAR/University of Colorado, Boulder, CO
- 2014 Co-convener with F. Pappenberger and T. De Groeve, 4<sup>th</sup> Meeting of the Global Flood Partnership, European Center for Medium-Range Weather Forecasting, Reading (also 3 previous annual meetings, College Park; Delft; Ispra).
- 2014 Panel Discussant, The Flood Model Showcase, The World Bank, Washington DC.
- 2013-2016 Committee on Earth Observation Satellites, Disaster Risk Management, Flood Pilot
- 2011-2017 Users Working Group, NASA LANCE (Land Atmosphere Near-real time Capability for EOS)
- 2003-2014 Federal Science Advisory Panel, then Science Working Group, NASA Land Processes Distributed Active Archive (LPDAAC)
- 2009 Co-Chair, with T. De Groeve, session on Disaster Early Warning, 33rd International Symposium on Remote Sensing of the Environment, Stresa
- 2003-2007 Director, NATO Science for Peace Project, with Romanian and Hungarian government water ministry collaborators, “Monitoring of Extreme Flood Events in Romania and Hungary”
- 2007 Consultant, The World Bank, Agriculture and Rural Development Department, “Innovative Approaches for Flood Risk Management in Agriculture” report

#### **SAMPLE GRADUATE STUDENT ADVISING**

- Ph.D. Committee, “Anisotropic Delta Subsidence Measured with Interferometric Synthetic Aperture Radar”. Stephanie Higgins, Dept. of Geological Sciences, Univ. of Colorado, 2014.
- M.S. Committee, “Factors affecting inundation and flow hydrology in a high latitude glaciated landscape”, Heather Carlos, Dept. of Earth Sciences, Dartmouth College, 2008.
- Ph.D. Committee, “Evaluating the potential for measuring river discharge from space”, David Bjerklie, University of New Hampshire, Dept. of Earth Sciences, 2004.
- External Examiner, M. Soc.Sci. “Application of GIS and remote sensing in flood management: A case study of West Bengal, India”, Sanyal Joy, National University of Singapore, 2004.

#### **MEDIA AND EDUCATIONAL OUTREACH**

- “In Colorado, a global flood observatory keeps a close watch on Harvey’s torrents”, by Jason Plautz, Aug. 30, 2017, Science, doi:10.1126/science.aap8304.
- “Visualizing Hurricane Harvey’s impact on Houston’s neighborhoods”, Sarah Stochak, Bhargavi Ganesh, September 13, 2017, <https://www.urban.org/urban-wire/visualizing-hurricane-harveys-impact-houstons-neighborhoods>, The Urban Institute, Washington, DC
- NASA Earth Observatory, 2016: “Ganges Flooding”, [http://earthobservatory.nasa.gov/IOTD/view.php?id=88729&eocn=home&eoci=iotd\\_previous](http://earthobservatory.nasa.gov/IOTD/view.php?id=88729&eocn=home&eoci=iotd_previous)
- USA Today, 2016, “Overwhelmed: Floods ravage fragile system. Deluge sent river flowing backwards and water over roadways and homes”, <http://www.usatoday.com/story/news/2016/03/26/overwhelmed-floods-ravage-fragile-system/82219820/>.

Webinar (with A. Kettner) on “Flood mapping and river flow measurements in Latin America and the Caribbean”, October 3, 2014. Co-hosted by GeoSUR, *MundoGEO* and the Dartmouth Flood Observatory (DFO). This presented capability to map floods in near-real-time and estimate daily river flow using remote sensing. Two hundred specialists from 40 countries participated.

Video Interview at the European Centre for Medium-Range Weather Forecasts (ECMWF) at the 2014 Global Flood Partnership meeting on: [“global flood observations”](#).

Collaborator in *Nurture Nature Center* (Easton, PA) “Rising Waters Project” [Science on a Sphere](#), led by Kate Brandes, supported by NOAA. Project received Media/Outreach National Award from the Association of State Flood Plain Managers, 2013.

*New York Times*, map published using data provided by the Flood Observatory, June 7, 2013, “Flooding along Europe’s Rivers”.

“Natural Hazards Experts Learn First-Hand from the Colorado Storm and Flood”, 2013, *Eos*, v. 94, No. 46, <http://onlinelibrary.wiley.com/doi/10.1002/2013EO460002/epdf>

*New York Times*, map published, January 5, 2011, “Flooded Areas, December 28-January 4, Australia”

*Chicago Tribune*, map published, January 5, 2011, “Underwater Down Under”

*New American Museum of Natural History*, *NCEP Teaching Modules and online journal*, Images and maps of Mekong Delta flooding, 2010, Network of Conservation Educators and Practitioners.

*New York Times*, August 26, 2010, “Assessing the damage as flooding in Pakistan moves south”  
*Earth and Sky*, “A Clear Voice for Science”, 08-18-2008, Is flooding increasing around the world? Earth and Sky talks with Bob Brakenridge, founder of the Dartmouth Flood Observatory in this “Clear Voices for Science” podcast.

*National Geographic News*, “Satellites Can Warn of Floods, Landslides Worldwide, Scientists Say, May 25, 2006.

*New York Times*, September 8, 2005, “Regaining ground”, maps of flooding from Katrina.

*Science Daily*, September 13, 2005, “Dartmouth Flood Observatory Tracks The Aftermath Of Katrina” Researchers with the Dartmouth Flood Observatory have been working with state and federal officials, along with representatives from NGOs, to help map and analyze the flooding”.

*Scientific American*, October 13, 2000, “Satellites help find flood victims”. New surface water images from the MODIS instrument are proving themselves a huge help to researchers monitoring the current flooding in Southeast Asia.

## INVITED TALKS

CUAHSI Biennial Colloquium, “Hydrologic Extremes and Society”, 2018.

“GeoSUR/Flood Observatory Collaboration for Water Resources and Flood Hazard Needs”, with E. Van Praag, 9<sup>th</sup> Annual Latin American Faculty Summit, Challenges of Computational Hydrology and the Potential Effects on Policy, Microsoft Research, Viña del Mar, Chile, May 7-9, 2014.

“Satellite Measurements of River Discharge and Runoff”, 9<sup>th</sup> Annual Hydrologic Sciences Research Symposium, Water, Our Global Solvent, University of Colorado, April 3-4, 2014,

“Global Hydrologist in a Local Flood”, National Hydrologic Warning Council, Colorado Advanced Flood Warning System Workshop, Broomfield, CO, February 26, 2014.

“Flood Observatory Data and Services”, Earth Engine and Disaster Risk Meeting, Google Headquarters, Mountain View, CA, December, 2013

“Global Flood Mapping and Measurement”. Deltares Noon Seminars, Delft, Netherlands. Nov. 10, 2011.

“Core-collapse Supernovae and the Younger Dryas/Terminal Rancholabrean Extinctions”, INSTAAR Noon Seminars, University of Colorado, Boulder, CO, Sept. 12, 2011.

“Arctic River Discharge and Ice-cover Using AMSR-E”, Cryospheric and Polar Processes Seminar, National Snow and Ice Data Center, Boulder, Colorado, February 4, 2011.

“Space-based Management of Surface Water”, *The World Bank*, World Water Week, Washington DC, Flood Management Session, February 17, 2009.

“Satellite-based Flood Detection, Mapping, and River Monitoring in Near Real Time”, NASA Earth Science delegate, India-United States Bilateral Conference on Space Science, Applications, and Commerce”, Bangalore, India, June 21-25, 2004.

## **AWARDS**

Certificate of Appreciation, for reviews provided to Journal of Applied Remote Sensing, 2012.

Certificate of Appreciation, for “Valuable Contribution and Outstanding Support to the Instrument Incubator Program and the NASA Earth Science Technology Office”, NASA, 2010.

Group Achievement Award, “Outstanding Achievement in Development of an Operational Earth Observing Sensorweb, Integrating Space and Ground Sensors”, NASA Administrator, 2007.

## **SERVICE**

*Performance/promotion reviews* (academic tenure, or advancement to senior scientist), 2008-present.

*Peer Reviewer* for GSA Bulletin, Geology, J. of Geophys. Res., J. of Geophys.-Planets, Geophys. Res. Letters, Water Resources Res., Quaternary Res., Nature, Geomorphology, Geoarchaeology, J. Hydrometeorology, Remote sensing of the Environment, Physical Geography, Hydrological Sciences, Int. J. Remote Sensing; others, 1984-present.

*Peer Reviewer*, NSF, NASA, other national and international grant proposals and review panels, 1984-present.

*Fellow*, Geological Society of America; *Member*, American Geophysical Union

*Watershed Advisory Board member*, Lyons, Colorado, 2017-2018

*Elected Board Member*, Dresden and Hanover School Districts, New Hampshire and Vermont, 1997-2001.

## **PUBLICATIONS**

(\*abstract and lecture or poster; others are peer-reviewed articles or technical reports)

### **2018**

Brakenridge, G. R. and Nghiem, S. V., Merged AMSR-2 and GPM Passive Microwave Radiometry for Measuring River Discharge and Runoff. *IEEE JSTARS special issue*, “Contributions to Global Water Cycle Science and Applications from GCOM-W/AMSR2”, *in review*.

Alfieri and others, 2018, A global network for operational flood risk reduction. *Environmental Science & Policy*, Vol. 84, p.149–158.

Kundzewicz, Z. W., Pińskwar, I., and Brakenridge, G. R., 2017, Changes in river flood hazard in Europe - a review, *Hydrological Research*, V. 49, p. 294-302.

## 2017

Tellman, B., Sullivan, J., Doyle, C., Kettner, A., Kuhn, C., Brakenridge, R., Slayback, D., Eriksen, T., A Global Geospatial Database of 5000+ Historic Flood Event Extents. *American Geophysical Union Annual Meeting*, New Orleans.\*

Hopson, T., Riddle, E., Broman, D., Brakenridge, R., Birkett, C., Kettner, A., Sampson, K., Boehner, J., Priya, S., Collins, D., Rostkier-Edelstein, D., Islam, AKM, Young, W., Singh, D., Transforming Atmospheric and Remotely-Sensed Information to Hydrologic Predictability in South Asia. *American Geophysical Union Annual Meeting*, New Orleans\*.

Cohen, S., Adler, R., Alfieri, L., Brakenridge, G. R., Coughlan, E., Flamig, Z., Galantowicz, J., Hong, Y., Kettner, A., Matgen, P., Nghiem, S. V., Prados, A., Rudari, R., Salamon, P., Trigg, M., Rapid-response flood mapping during Hurricanes Harvey by the Global Flood Partnership (GFP), *American Geophysical Union Annual Meeting*, New Orleans.\*

Cohen, S., Brakenridge, G. R., Kettner, A., Bates, B., Nelson, J., Huang, Y-F, Munasignhe, D. and Zhang, J., 2018, Methodology for Estimating Floodwater Depths from Remote Sensing Flood Inundation Maps and Topography. *Jour. of the Amer. Water Resources Association*, 1-12. <https://doi.org/10.1111/1752-1688.12609>.

Andreadis, K. M., Schumann, G. J-P, Stampoulis, D., Bates, P.D., Brakenridge G. R., and Kettner, A.J., 2017, Can atmospheric reanalysis datasets be used to reproduce flooding over large scales? *Geophysical Research Letters*.44, 10.1002/2017GLO75502..

Brakenridge, G. R., 2017, Flood risk mapping from orbital remote sensing, In “Global Flood Hazard: applications in modeling, mapping and forecasting”, AGU Monograph Series, G J-P Schumann, ed., John Wiley & Sons, 350 p., *in press*.

Kettner, A, Overeem, I., Cohen, S., Fekete, B., Brakenridge, G. R., ; Syvitski, J., 2017, Increases in flood frequency by the 21st century: A global modeling assessment. In “Global Flood Hazard: applications in modeling, mapping and forecasting”, AGU Monograph Series, G J-P Schumann, ed., John Wiley & Sons, 350 p.

## 2016

Kettner, A. J., Cohen, S., Overeem, I., Fekete, B. M., Brakenridge, G. R., and Syvitski, J. P., 2016, A numerical analysis on how climate change affects riverine flooding, *American Geophysical Union Annual Meeting*, San Francisco\*

Cohen, S., Brakenridge, G. R., and Kettner, A. J., 2016, Near real time river discharge observation and flood inundation mapping using satellite remote sensing products. *Geological Society of America Abstracts with Programs*. Vol. 48, No. 7, doi: 10.1130/abs/2016AM-285128\*.

Nghiem, S.V., Zuffeda, C., Shah, R., Chew, C., Lowe, S. T., Mannucci, A. J., and Brakenridge, G. R., 2016, Wetland dynamics monitoring with global navigation satellite system reflectometry. *AGU Earth and Space Science*, DOI: 10.1002/2016EA000194.

Brakenridge, G. R., and others, 2016, Design with Nature: Causation and avoidance of catastrophic floods in Myanmar. *Earth-Science Reviews*, V. 165, p. 81–109.

- Policelli, and others, 2016, The NASA global flood mapping system, In “Remote Sensing of Hydrologic Extremes”, V. Lakshmi and G. Huffman, eds, Springer International Publishing Switzerland 2017, ISBN 978-3-319-43743-9
- Salamon P., Hirpa F., Andreadakis I., de Groeve, T., Brakenridge R., Coughlan de Perez, E., Rudari R., Wu H., Policelli F., Amarnath G., Trigg M., and Green D., 2016, The Global Flood Partnership Conference 2016; Linking global flood information with local needs. Technical report by the Joint Research Centre (JRC) of the European Commission. JRC Science Hub, <https://ec.europa.eu/jrc>, JRC103406.
- Escobar, R. C., Restrepo, J.D., Brakenridge, G. R., and Kettner, A.J., 2016, Satellite-based estimation of water discharge and runoff in the Magdalena River, northern Andes of Colombia. In “Remote Sensing of Hydrologic Extremes”, V. Lakshmi and G. Huffman, eds, Springer International Publishing Switzerland 2017, ISBN 978-3-319-43743-9
- Van Dijk, A. I. J. M., Brakenridge, G. R., Kettner, A. J., Beck, J. E., and De Groeve, T. 2016, River gauging at global scale using optical and passive microwave remote sensing. *Water Resources Research*, 52, doi:10.1002/2015WR018545.
- Schumann, G. J-P. and others, 2016, Unlocking the full potential of Earth observation during the 2015 Texas flood disaster. *Water Resources Research*, 52, 3288–3293, doi:10.1002/2015WR018428.
- Andreadis, K., Schumann, G., Stampoulis, D., Smith, A., Neal, J., Bates, P., Brakenridge, G. R., and Kettner, A., 2016, Building a flood climatology and rethinking flood risk at continental scales, European Geophysical Union General Assembly, Vienna\*
- Revilla-Romero, B. et al, 2016, Decision making based on global flood forecasts and satellite-derived inundation maps in data-sparse regions, European Geophysical Union General Assembly, Vienna\*
- Thielen-del Pozo, J., Salamon, P., Hirpa, F. A., De Groeve, T., Brakenridge, G. R., 2016, Building bridges for better global flood risk management: the Global Flood Partnership. UNISDR Science and Technology Conference on the Implementation of the Sendai Framework for Disaster Risk Reduction, Geneva, Switzerland, January 27-29\*.
- Syvitski, J. P. M., Kettner, A. J., Overeem, I., Brakenridge, G. R., and Cohen, S. 2015, In press, Latitudinal controls on siliciclastic sediment production and transport. *SEPM Special Issue, Latitudinal Controls on Stratigraphic Models and Sedimentary Concepts*.
- 2015**
- De Groeve, T., Brakenridge, G. R., and Paris, S., 2015, “Global Flood Detection System Data Product Specifications”. *JRC Technical Report*. [http://www.gdacs.org/flooddetection/Download/Technical\\_Note\\_GFDS\\_Data\\_Products\\_v1.pdf](http://www.gdacs.org/flooddetection/Download/Technical_Note_GFDS_Data_Products_v1.pdf).
- Revilla-Romero, B., Feyera, A. H., Thielen-del Pozo, J., Salamon, P., Brakenridge, G. R., Pappenberger, F., De Groeve, T., 2015, On the use of global flood forecasts and satellite-derived inundation maps for flood monitoring in data-sparse regions. *Remote Sensing* (Special Issue "Remote Sensing in Flood Monitoring and Management"), 7, 15702-15728; doi:10.3390/rs71115702.
- Petiteville, I, and others, submitted to the GEO Secretariat, 2015, “GEO-DARMA (Data Access For Risk Management) Preliminary Implementation Plan”. This international initiative will be implemented in the GEO framework and apply the GEO Data Sharing principles.

- Masetti, M., Nghiem, S. V., Sorichetta, A., Stevenazzi, S., Fabbri, P., Pola, M., Filippini, M., Brakenridge, G. R., 2015, Urbanization Affects Air and Water in Italy's Po Plain, *EOS*, v. 96, No. 21, p. 13-16.
- Brakenridge, G. R., Nghiem, S. V., Overeem, I., and De Groeve, T., 2015, Synergistic use of satellite sensors to monitor freshwater influx into the Arctic Ocean. Submitted abstract, *Living Planet Symposium*, European Space Agency, Prague, May 9-13, 2016.\*
- Syvitski, J. P. M. and Brakenridge, G. R., 2015, The Amazon --- An Incredible Tropical River System. *9th Symposium on River, Coastal and Estuarine Morphodynamics*, Iquitos City\*
- Kettner, A., Syvitski, J. P. M., Overeem, I. and Brakenridge, G. R., 2015, Morphological changes due to flooding: the Indus River. *9th Symposium on River, Coastal and Estuarine Morphodynamics*, Iquitos City\*.
- Brakenridge, G. R., Kettner, A. J., Cohen, S., Syvitski, J. P. M., Overeem, I., and De Groeve, T., 2015, Flood risk and climate change: the contributions of remote sensing. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Kettner, A. J., Brakenridge, G. R., van Praag, E., Borrero, S., Slayback, D., Young, C., Cohen, S., Prades, L., de Groeve, T., 2015, On the value of satellite-based river discharge and river flood data. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Overeem, I., Brakenridge, G. R., and Hudson, B., 2015, Satellite-based observation of arctic river dynamics. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Hirpa, F., Revilla-Romero, B., Thielen, J., Salomon, P., Brakenridge, G. R., Pappenberger, F., de Groeve, T., 2015, On the reliable use of satellite-derived surface water products for global flood monitoring. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Slayback, D., Brakenridge, G. R., and Policelli, F., 2015, Characterizing 13 Years of surface water variability from MODIS-based near real-time flood mapping products in the Indus River, Tonle Sap Lake, and Lake Chad. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Frye, S., and others, 2015, User-Driven Workflow for Modeling, Monitoring, Product Development, and Flood Map Delivery Using Satellites for Daily Coverage Over Texas. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- 2014**
- Syvitski, J. P. M, Cohen, S, Kettner, A. J, Brakenridge, G. R., 2014, How important and different Are tropical rivers? *Geomorphology*, doi: 10.1016/j.geomorph.2014.02.029.
- Nigro, J., Slayback D., Policelli, F., and Brakenridge, G. R., 2014, "NASA/ DFO MODIS Near Real-Time (NRT) Global Flood Mapping Product-Evaluation of Flood and Permanent Water Detection". *Technical report, NASA GSFC, Greenbelt, MD.*
- De Groeve, T., Thielen, J., Brakenridge, G. R., Adler, R., Alfieri, L., Kull, D., Lindsay, F., Imperiali, O., Pappenberger, F., Rudari, R., Salamon, P., Villars, N., and Wyjad, K., 2014, Joining forces in a Global Flood Partnership. *Bull. Amer. Meteor. Soc.* doi:10.1175/BAMS-D-14-00147.1.
- Revilla-Romero, B., Thielen, J., Salamon, P., De Groeve, T., and Brakenridge, G. R., 2014, Evaluation of the satellite-based Global Flood Detection System for measuring river discharge: influence of local factors. *Hydrology and Earth System Sciences*, v. 18, p. 4467–4484, doi:10.5194/hess-18-4467-2014.
- Zhang, Y., Hong, Y., Gourley, J.J., Wang, X., Brakenridge, G.R., De Groeve, T., and Vegara, H., 2014, Impact of assimilating spaceborne microwave signals for improving hydrological

- prediction in ungauged basins. In “Remote Sensing of the Terrestrial Water Cycle”, V. Lakshmi et al, Eds, DOI: 10.1002/9781118872086.ch27, John Wiley, NY.
- Kundzewicz, Z. W., Kanae, S., Seneviratne, S. I. Handmer, J., Nicholls, N., Peduzzi, P., Mechler, R., Bouwer, L. M., Arnell, N., Mach, K., Zhang, X., Honda, Y., Luo, Y., Benito, G., Takahashi, K., Sherstyukov, B., Brakenridge, G. R., Kron, W, 2014, Flood risk and climate change – global and regional perspectives. *Hydrological Sciences Journal*, V. 59, Issue 1, p. 1-28.
- Syvitski, J. P. M., Overeem, I., Brakenridge, G. R., Hudson, B, and Cohen, S., 2014, Arctic river discharge and sediment loads -an overview. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Overeem, I, Higgins, S, Syvitski, J. P. M., Kettner, A. J, Brakenridge, G. R., 2014, The impacts of armoring our deltas: mapping and modeling large-scale delta plain aggradation. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Di, L., Yu, G., Kang, L., Shao, Y., Shrestha, R., Zhang, B., Deng, M., Yang, Z., Hipple, J., and Brakenridge, G.R., 2014, A remote-sensing based flood crop loss assessment service system for supporting USDS crop statistics and insurance decision-making. *IGARSS 2014/Canadian Symposium on Remote Sensing*, Quebec City\*.
- Thielen, J., De Groeve, T., Pappenberg, F., and Brakenridge, G. R., 2014, HEPEX, Hydrologic Ensemble Prediction Experiment. *Tenth Anniversary Workshop*, June 24-26, Maryland, USA.\*
- 2013**
- Syvitski, J. P. M., Brakenridge, G. R, 2013, Causation and avoidance of catastrophic flooding along the Indus River, Pakistan. *GSA Today* 23(1): p. 4-10.
- Syvitski, J.P.M., Kettner, A.J., Overeem, I., Giosan, L., Brakenridge, G. R., Hannon, M., Bilham, R., 2013, Anthropocene metamorphosis of the Indus Delta and lower floodplain, *Anthropocene*, V. 3, p. 24–35.
- Hirpa, F.A., Hopson, T., De Groeve, T., Brakenridge, G. R., Gebremichael, M., and Restrepo. P. J., 2013, Upstream satellite remote sensing for river discharge prediction: application to major rivers in South Asia. *Remote Sensing of Environment*, V.131, 140–151.
- Kundzewicz, Z.W., Iwona Pińskwar, I., and Brakenridge, G. R., 2013, Large floods in Europe, 1985–2009, *Hydrological Sciences Journal*, 58:1, 1-7.
- Westerhoff, R. S., Kleuskens, M. P. H., Winsemius, H. C., Huizinga, H. J., Brakenridge, G. R., and Bishop, C., 2013, Automated global water mapping based on wide-swath orbital synthetic-aperture radar. *Hydrol. Earth Syst. Sci.*, 17, 651-663, doi: 10.5194/hess-17-651-2013.
- Brakenridge, G. R. and Birkett, C., 2013, Lake storage measurements for water resources management: combining remotely sensed water levels and surface areas. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Nghiem, S. V., Barber, D. G. Brakenridge, G. R., Leshkevich, G. A., Markus, T., Neumann, G., Njoku, E. G., Perovich, D. K., Steffen, K., Sturm, M., van Woert, M. L., 2013, Surface water applications of satellite scatterometry. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*
- Kettner, A., Syvitski, J. P. M, Overeem, I., Brakenridge, G. R., 2013, Flood deposition patterns and channel migration due to a 10-year flood event: the case of the Indus River flood 2010. *Fall Meeting, American Geophysical Union*, San Francisco, CA.\*



- Syvitski, J. P. M, Cohen, S., Kettner, A. J., Brakenridge, G. R., 2013, New possibilities in global hydrology and sediment transport. *Fall Meeting, American Geophysical Union, San Francisco, CA.\**
- Webster, P. J., Hopson, T. M., Hirpa, F. A., Brakenridge, G. R., De-Groove, T., Shrestha, K., Gebremichael, M., Restrepo, P. J., 2013, Remote sensing and river discharge forecasting for major rivers in South Asia. *Fall Meeting, American Geophysical Union, San Francisco, CA.\**
- Verdin, K. L., Verdin, J. P., Gadain, H., Mathis, M., Woodbury, M., Rusack, E., Brakenridge, G. R., 2013, A GIS flood tool for rapid inundation mapping. *Fall Meeting, American Geophysical Union, San Francisco, CA.\**
- Brakenridge, G. R. and Syvitski, J. P. M., 2013, Quaternary geoscience and natural hazards. *Geological Society of America National Meeting, Denver, November 1-4, 2013\*.*
- Birkett, C. and Brakenridge, G. R., 2013, Lake volume monitoring for water resources: combining altimetry and surface area measurements. *ASPRS Annual Conference, March 24-28, 2013, Baltimore, MD USA\**
- 2012**
- Brakenridge, G. R., Cohen, S., Kettner, A.J., De Groeve, T., Nghiem, S.V., Syvitski, J.P.M., Fekete, B. M., 2012, Calibration of orbital microwave measurements of river discharge using a global hydrology model. *Journal of Hydrology*, <http://dx.doi.org/10.1016/j.jhydrol.2012.09.035>.
- Syvitski, J. P. M., Overeem, I., Brakenridge, G. R., Hannon, M. D., 2012, Floods, floodplains, delta plains: A satellite imaging approach. *Sedimentary Geology* v.267-268, p. 1-14, doi.org/10.1016/j.sedgeo.2012.05.014.
- Fekete, B. M., Lammers, R. B., and Brakenridge, G. R., 2012, River discharge, in “State of the Climate in 2011”, *Special Supplement to the Bulletin of the American Meteorological Society*, 93, 7, Chapter 2, p. S28-S29.
- Khan, S. I., Y. Hong, H. J. Vergara, J. J. Gourley, G. R. Brakenridge, T. De Groeve, Z. L. Flamig, F. Policelli, and B. Yong, 2012, Microwave satellite data for hydrologic modeling in ungauged basins, *Geoscience and Remote Sensing Letters, IEEE*, v. 9, no. 4, p. 663-667, PP (99), 1-5. doi: 10.1109/LGRS.2011.2177807.
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