

## Zhong Liu's Publications (Full List)

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- 2015 Mantas, V.M., Liu, Z., Caro, C., and Pereira, A.J.S.C., 2015, Validation of TRMM Multi-Satellite Precipitation Analysis (TMPA) products in the Peruvian Andes. Atmospheric Research, IPWG7 Special Issue, in press.
- 2015 Mantas, V.M., Liu, Z., Caro, C., and Pereira, A.J.S.C., 2015, A Web Service and Android Application for the distribution of rainfall estimates. Computers and Geosciences, in press.
- 2015 Liu, Z., 2015, Comparison of Precipitation Estimates between Version 7 3-Hourly TRMM Multi-Satellite Precipitation Analysis (TMPA) Near-real-time and Research Products, Joint between the 20th Conference on Satellite Meteorology and Oceanography; the 11th Annual Symposium on New Generation Operational Environmental Satellite Systems; and the Third Symposium on the Joint Center for Satellite Data Assimilation, AMS Annual Meeting, Phoenix, 4-8 January 2015.
- 2015 Liu, Z., 2015, Comparison of precipitation estimates between Version 7 3-hourly TRMM Multi-Satellite Precipitation Analysis (TMPA) near-real-time and research products, Atmospheric Research, Volume 153, February 2015, Pages 119–133, Online: <http://www.sciencedirect.com/science/article/pii/S0169809514003081>
- 2015 Liu, Z., 2015, Comparison of Versions 6 and 7 3-Hourly TRMM Multi-Satellite Precipitation Analysis (TMPA) Research Products, Atmospheric Research, in press, Online: <http://www.sciencedirect.com/science/article/pii/S0169809515000046>
- 2014 Liu, Z., 2014, Online Comparison of Precipitation Products during the GPM Era, Session: Utilizing Precipitation Data Sets and Quantifying Associated Uncertainties in Hydrometeorological and Climate Impact Applications I, AGU Fall Meeting, San Francisco, 15-19 December 2014.
- 2014 Liu, Z., 2014, Online Intercomparison of Satellite-based Global Precipitation Products: Challenges, Progress and Future Directions, the 7th IPWG Workshop on Precipitation Measurements, Tsukuba, 17-21 November, 2014.
- 2014 Liu, Z., 2014, Comparison of global precipitation climatology products derived from ground- and satellite-based measurements, Remote Sensing of the Atmosphere, Clouds, Precipitation V, SPIE Asia-Pacific Remote Sensing , Paper 9259-6, Beijing, China.
- 2014 Liu, Z., Ostrenga, D., Teng, W., Kempler, S., Milich, L., 2014, Developing GIOVANNI-based online prototypes to intercompare TRMM-related global gridded-precipitation products, Computers & Geosciences, volume 66, issue , year 2014, pp. 168 – 181

- 2014 Liu, Z., Ostrenga, D., Teng, W., and Kempler, S., 2014, Developing Online Visualization and Analysis Services for NASA Satellite-derived Global Precipitation Products during the Big Geospatial Data Era Chapter 5 **In: *Big GeoSpatial Data***, Taylor & Francis, 89-114.
- 2013 Liu, Zhong, Dana Ostrenga, William L. Teng, and Steven J. Kempler, 2013. Implementing the International Precipitation Working Group (IPWG) Validation Statistics in Online Tools to Inter-compare and Characterize Satellite-derived Global Precipitation Products. 2013 American Geophysical Union Fall Meeting in San Francisco, 9-13 December 2013.
- 2013 Ostrenga, Dana; Zhong Liu, Steven J. Kempler, Bruce Vollmer, and William L. Teng, 2013. Preparing Precipitation Data Access, Value-added Services and Scientific Exploration Tools for the Integrated Multi-satellite Retrievals for GPM (IMERG). 2013 American Geophysical Union Fall Meeting in San Francisco, 9-13 December 2013.
- 2013 Liu, Z., D. Ostrenga, W. Teng, and S. Kempler, 2013: Developing New Features to Enhance NASA GES DISC Global Agriculture Information System, Agro Informatics 2013, Fairfax, VA
- 2013 Liu, Z., D. Ostrenga, W. Teng, and S. Kempler, 2013: Online Access, Visualization and Analysis of TRMM Composite Climatology Products, 93rd AMS Annual Meeting, Jan 6-10, Austin, TX
- 2013 Liu, Z., D. Ostrenga, W. Teng, and S. Kempler, 2013: Online Tools to Inter-compare TRMM Precipitation Products, 93rd AMS Annual Meeting, Jan 6-10, Austin, TX
- 2013 Ostrenga, D., Z. Liu, W. Teng, and S. Kempler, 2013: [Newly Released Version 7 TRMM Multi-satellite Precipitation Analysis \(TMPA\) Products and Data Services at NASA GES DISC](#), 93rd AMS Annual Meeting, Jan 6-10, Austin, TX
- 2012 Liu, Z., D. Ostrenga, D. W. Teng, and S. Kempler, Utilizing Satellite-derived Precipitation Products in Hydrometeorological Applications (*Invited*), *American Geophysical Union (AGU) 2011 Fall Meeting. December 3-7, 2012, San Francisco, CA*
- 2012 Liu, Z., D. Ostrenga, D. W. Teng, and S. Kempler, Online Tools to Investigate Uncertainties in Satellite-derived Global Precipitation Products, *American Geophysical Union (AGU) 2011 Fall Meeting. December 3-7, 2012, San Francisco, CA*
- 2012 Ostrenga, D., Z. Liu, W. Teng, and S. Kempler, Newly Released Version 7 TRMM Multi-satellite Precipitation Analysis (TMPA) Products and Data Services at NASA GES DISC, *American Geophysical Union (AGU) 2011 Fall Meeting. December 3-7, 2012, San Francisco, CA*

- 2012 Liu, Z., D. Ostrenga, W. Teng, S. Kempler, 2012, Online Inter-comparison of Satellite-derived Global Precipitation Products, Sixth Workshop of the International Precipitation Working Group, 15-19 October 2012, Sao Jose dos Campos, Brazil.
- 2012 Liu, Zhong, 2012. [Developing Online Tools to Assess Uncertainty in Satellite-derived Global Precipitation Products](#). Climate Informatics 2012, Boulder, Colorado (selected for a partial travel fellowship support).
- 2012 Liu, Zhong, Dana Ostrenga, William Teng, Steven Kempler, 2012: Tropical Rainfall Measuring Mission (TRMM) Precipitation Data and Services for Research and Applications. *Bull. Amer. Meteor. Soc.*, **93**, 1317–1325.

- 2012 Liu, Z., and D. Ostrenga, S. J. Kempler, W. Teng, and G. Leptoukh, 2012, TRMM Precipitation Application Examples Using Data Services at NASA GES DISC, 92nd AMS Annual Meeting, Jan 22-26, New Orleans, LA
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- 2011 Liu, Z., and D. Ostrenga, W. Teng, and S. J. Kempler, 2011, Newly Released TRMM Version 7 Products, GPCP Version 2.2 Precipitation Dataset and Data Services at NASA GES DISC, *American Geophysical Union (AGU) 2011 Fall Meeting. December 5-9, 2011, San Francisco, CA*
- 2011 Liu, Z., and D. Ostrenga, W. Teng, and S. J. Kempler, 2011, Online Evaluation of Satellite-Derived Global 3-Hourly Precipitation Products, *American Geophysical Union (AGU) 2011 Fall Meeting. December 5-9, 2011, San Francisco, CA*
- 2011 Liu, Z., Ostrenga, D., and Leptoukh, G., 2011, *NASA Giovanni Tools and Services for Supporting the Year of Tropical Convection*, YOTC International Science Symposium & 8<sup>th</sup> AMY Workshop, May 16-19, Beijing, China
- 2011 Liu, Z. D. Ostrenga and G, Leptoukh, 2011, Online Visualization and Analysis of Global Half-hourly Pixel-Resolution Infrared Dataset, *Bulletin of the American Meteorological Society*, Vol. 92, No. 4, 429-432.
- 2011 Liu, Z., S. Kempler and W. Teng, 2011, Maps, Tools, and Services at NASA GES DISC for Supporting Global Drought Monitoring Activities, *NASA Global Drought Monitoring Workshop*, Apr. 11-12, Silver Spring, Maryland.
- 2011 Liu, Z., Ostrenga, D., and Leptoukh, G., 2011, TRMM Data Service Update. *27th IIPS, 91th AMS Annual Meeting, Jan 23-27, Seattle, WA*
- 2011 Liu, Z., Ostrenga, D., and Leptoukh, G., 2011, Hurricane Data Analysis Tool. *Symposium on Effectively Communicating the Science of Tropical Climate and Tropical Cyclones, 91th AMS Annual Meeting, Jan 23-27, Seattle, WA*
- 2010 Liu, Z., D. Ostrenga, G. Leptoukh, S. Kempler, Global Precipitation Data Access, Value-added Services and Scientific Exploration Tools at NASA GES DISC, *Fifth Workshop of the International Precipitation Working Group*, 11-15 October 2010, KlimaCampus, Max-Planck-Institut für Meteorologie, Hamburg, Germany

- 2010 Liu, Z., S. Kempler, W. Teng, H. Rui, L. S. Chiu, and L. Milich, 2010, Global Agriculture Information System and its Applications, in *Other Applications, Advanced Geoinformation Science*, Yang, C., D. Wong, Q. Miao, and R. Yang, editors, pp.353-361, CRC Press, Taylor & Francis.
- 2010 Liu, Z., J. Acker, 2010, Monitoring Oysters Using Remote Sensing Data and Services: a Case Study of the Apalachicola River and Bay Watershed during Recent Droughts, in *Theme: Fisheries and Aquaculture, Handbook of Satellite Remote Sensing Image Interpretation: Applications for Marine Living Resources Conservation and Management (2010)*, EU PRESPO and IOCCG, Jesus Morales, Venetia Stuart, Trevor Platt and Shubha Sathyendranath, editors, pp. 3-20 (available: <http://www.ioccg.org/handbook.html>)
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- 2010 Liu, Z, 2010, Global Precipitation at Your Fingertips, Part II: Data Access, *The Pacific Tradewinds Quarterly (invited)*
- 2010 Liu., Z., Ostrenga, D., and Leptoukh, G., 2010, Multi-dataset collection research scenario – Air France Flight 447 Case Study, [Collaborative Energy and Water Cycle Information Services \(CEWIS\)](#) Workshop, June 15-16, 2010, Greenbelt, Maryland.
- 2010 Liu., Z., Ostrenga, D., and Leptoukh, G., 2010, NASA Goddard GES DISC Data Services for Supporting Hurricane Research and YOTC, 29th Conference on Hurricanes and Tropical Meteorology being held 10-14 May, 2010 in Tucson, AZ.
- 2010 Liu., Z., Ostrenga, D., and Leptoukh, G., 2010, Update of Online Visualization and Analysis of Global Merged Geostationary Satellite Infrared Dataset. *26th IIPS, 90th AMS Annual Meeting, Jan 17-21, Atlanta, GA*
- 2010 Liu., Z., Ostrenga, D., and Leptoukh, G., 2010, TRMM Data Service Updates. *26th IIPS, 90th AMS Annual Meeting, Jan 17-21, Atlanta, GA*

- 2009 Liu, Z., Ostrenga, D., Leptoukh, G., Kempler, S., and Teng, W., 2009, New Capabilities in TRMM Precipitation Data Services at NASA GES DISC. *American Geophysical Union (AGU) 2009 Fall Meeting. December 14-18, 2009, San Francisco, CA*
- 2009 Liu, Z., H. Rui, W.L. Teng, L.S. Chiu, G.G. Leptoukh, and S. Kempler, 2009, Developing an Online Information System Prototype for Global Satellite Precipitation Algorithm Validation and Intercomparison. *Journal of Applied Meteorology and Climatology-IPWG Special Issue, Volume 48, Issue 12 (December 2009) pp. 2581-2589*
- 2009 Liu, Z., Developing a Data Analysis Tool for Hurricane Studies, in GMU OSP Newsletter November 2009.
- 2009 Liu, Z., G. Leptoukh, and H. Rui, New Data Products and Capabilities in TRMM Online Visualization and Analysis System (TOVAS). The 25<sup>th</sup> IIPS, AMS 89<sup>th</sup> Annual Meeting, Phoenix, AZ
- 2009 Liu, Z., D. Ostrenga, and G. Leptoukh, Online Visualization and Analysis of Global Half-hourly Pixel-Resolution Infrared Dataset. The 25<sup>th</sup> IIPS, AMS 89<sup>th</sup> Annual Meeting, Phoenix, AZ
- 2008 Liu, Z., D. Ostrenga, G. Leptoukh, and S. Kempler, Online Visualization and Analysis of NASA QuikSCAT and TRMM Daily Products. the 24<sup>th</sup> IIPS, AMS 88<sup>th</sup> Annual Meeting, New Orleans, LA
- 2008 Liu, Z., G. Leptoukh, D. Ostrenga, and S. Kempler, Online Visualization and Analysis of NASA QuikSCAT and TRMM Daily Products. The Third International TRMM Science Conference, Las Vegas, NV
- 2008 Rui, H., Teng, B., Liu, Z., Leptoukh, G., and Ostrenga, D., Climatology and Vertical Structure of TRMM Precipitable Water, 3<sup>rd</sup> International TRMM Science Conference, February 4-8, 2008, Las Vegas, NV.
- 2008 Teng, B., Rui, H., Bonk, J., Hrubciak, P., Liu, Z., Nadeau, D., Ostrenga, D., and Leptoukh, G., Anatomy of TRMM Science Data Support and Services at the NASA GES DISC: the past 10 years and a look ahead to GPM, 3<sup>rd</sup> International TRMM Science Conference, February 4-8, 2008, Las Vegas, NV.
- 2007 Liu, Z., G. Leptoukh, D. Ostrenga, C. Savtchenko, and S. Kempler, New Data and Capabilities in the NASA Goddard Hurricane Data Portal, 2007 AGU Fall Meeting, December 10-14, San Francisco, CA.

- 2007 Liu, Z., W. L. Teng, S. J. Kempler, C. Lim, H. Rui, L. Chiu, and E. Ocampo, Maps and Tools at NASA GES DISC for Supporting Global Drought Monitoring Activities, 21st Conference on Hydrology, American Meteorological Society, San Antonio, Texas, Jan 15-18, 2007.
- 2007 Liu, Z., G. Leptoukh, D. Ostrenga, J. Hulka and L. Carlaw, NASA GES DISC Web Portal and Services for Supporting Hurricane Monitoring, Research and Outreach Activities. The 23rd International Conference on Interactive Information Processing Systems for Meteorology, Oceanography, and Hydrology (IIPS), American Meteorological Society, 87th Annual Meeting, San Antonio, TX, Jan 14-18.
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- 2007 Liu, Z., Rui, H., Teng, W. L., Chiu, L. S., Leptoukh, G. G., & Vicente, G. A. Online visualization and analysis: A new avenue to use satellite data for weather, climate and interdisciplinary research and applications. *Measuring Precipitation from Space - EURAINSAT and the future, Advances in Global Change Research*, 28, 549-558.
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- 2006 Liu, Z., L. Chiu, P. Hrubciak, S. Kempler, G. Leptoukh, D. Ostrenga, H. Rui, and W. Teng, Developing a Global Precipitation Data and Information Services Center, AGU Spring Meeting, Baltimore, MD, May 22-26.
- 2006 Liu, Z., L. Chiu, G. Leptoukh, H. Rui, and W. Teng, NASA Satellite Observations of Fires, Aerosols, and Precipitation and their Relationships in Monsoon Regions, AGU Spring Meeting, Baltimore, MD, May 22-26.
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- 2006 Liu, Z., W. Teng, S. Kempler, H. Rui and E. Ocampo. Developing a Global Agriculture Information System. Preprint for the 22<sup>nd</sup> International Conference on IIPS, the 86th AMS Annual Meeting, 19 January – 2 February 2006, Atlanta, GA.
- 2006 Shen, S., H. Rui, Z. Liu, T. Zhu, L. Lu, S. Berrick, G. Leptoukh, W. Teng, J. Acker, J. Johnson, A. Savtchenko, I. Gerashimov, S. Kempler, and S.P. Ahmad. GIOVANNI: A System for Rapid Access, Visualization and Analysis of Earth Science Data Online. Preprint for the 22<sup>nd</sup> International Conference on IIPS, the 86th AMS Annual Meeting, 19 January – 2 February 2006, Atlanta, GA.
- 2006 Liu, Z., L. Milich, W. Teng, H., Rui and S. Kempler. Integrating Remote Sensing and other Products into the Decision Support Systems of the United Nations World Food Programme. Preprint for the 20<sup>th</sup> Conference on Hydrology, the 86th AMS Annual Meeting, 19 January – 2 February 2006, Atlanta, GA.
- 2005 Liu, Z., L. Milich, W. Teng, H. Rui, and S. Kempler. Integrating Remote Sensing and other Products into the Decision Support Systems of the United Nations World Food Programme. The U.S. Climate Change Science Program Workshop, Climate Science in Support of Decision Making, November 2005, Arlington, Virginia, USA.
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- 2005 Chiu, L.S., Z. Liu, J. Vongsaard, S. Morain, A. Budge, P. Neville, and C. Bales. Comparison of TRMM and Water District Rain Rates over New Mexico, AGU Fall Meeting, San Francisco, CA, December 5-9



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- 2004 Acker, J., G. Leptoukh, S. Kempler, T. Zhu, Z. Liu, S. Shen: Ocean Color Time-Series Project Web Site at the Goddard Earth Sciences DISC, Earth Science data System Working Group Meeting, Greenbelt, MD, Oct. 18-19, 2004
- 2004 Vicente, G., H. Rui, W. Teng, Z. Liu, L. Lu, P. Hrubciak, J. Bonk, J. McManus, L. Chiu and G. Leptoukh: The NASA GES-DISC-DAAC Precipitation Data and Information Services Center (PDISC), AGU fall 2004
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- 2003 Rui, H., W. Teng, L. Chiu, and Z. Liu. 2003. **TRMM data at the GES DISC DAAC and their applications to monitoring tropical cyclones.** In Proc. IUGG, Sapporo, Japan.
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