

C.K. SHUM

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A. HIGHEST ACADEMIC DEGREE:

The University of Texas at Austin, Aerospace Engineering, PhD, 1982.

B. APPOINTMENTS & AFFILIATIONS:

Professor & Distinguished University Scholar, 2005–present, School of Earth Sciences, The Ohio State University.
Professor, 2001–2005; Associate Professor, 1997–2001; Dept. of Civil & Environ. Eng. & Geodetic Science, OSU.
Senior Research Scientist, 1996–1997; Research Scientist, 1989–1996, Senior Research Associate, 1984–1989;
Research Associate, 1982–1984, Center for Space Research, The Univ. of Texas at Austin.
Advisor, The National Astronomical Observatories (NAOCAS), Beijing, China, 1999–present.
Guest Professor, Purple Mountain Astronomical Observatory, Nanjing, China, 2002–present.
Adjunct Professor, Dept. of Geomatics, National Chung Cheng University, Tainan, Taiwan, 4/2006–present.
Guest Professor, Southwest Jiao-Tong University, Chengdu, China, July 2006–present.
Guest Professor, Institute of Geodesy & Geophysics, Chinese Academy of Sciences, China, 2012–present.
Guest Professor, Hohai University, Nanjing, China, 2016–present.

C. BRIEF DESCRIPTION OF ACTIVITIES AND EXPERTISE:

C.K. SHUM is a Professor and Distinguished University Scholar, Division of Geodetic Science, School of Earth Sciences, at The Ohio State University. He is a Fellow of the American Association for the Advancement of Science (AAAS), and a Fellow of the International Association of Geodesy (IAG). He received numerous awards including the 2012 Vening Meinesz Medal from the European Geosciences Union. He served as a Lead Author for the Intergovernmental Panel for Climate Change (IPCC) Fourth Assessment Report (AR4). This contribution resulted in the 2007 Nobel Peace Prize jointly awarded to IPCC and Al Gore, Jr. He and his group focus on scientific research relates to the quantification of 20th Century and present-day global sea-level rise due to various geophysical sources, including anthropogenic climate-change. He specializes in satellite geodesy, precision satellite orbit determination, temporal gravity field and tide modeling, and their cross-disciplinary science and applications to oceanography, hydrology, geodynamics, ice mass balance, GNSS meteorology and space physics. He has published over ~300 refereed journal articles and book chapters, with a Google Scholar Citation index of 11,914, H-index: 50, and i-10 Index: 176. His work was covered by New York Times, Physics Today, Sky & Telescope Radio Show, Discoveries and Breakthroughs Inside Science TV, Science News, Science Daily, Scientific American, Soundings magazine, Deccan Chronicle, La Figaro, MSNBC.com, Tomorrow Focus Portal GmbH, Axel Springer AG, Televisión Española, Neue Zürcher Zeitung, Zurich, Columbus Dispatch, American Geophysical Union, Ohio State University press, and other news organizations.

D. AWARDS & SYNERGISTIC ACTIVITIES (SINCE ~1996):

SELECTED LIST OF AWARDS

Fellow, American Association for the Advancement of Science, 2011.
Fellow, International Association of Geodesy, July 1995.
Lead author, IPCC Working Group I 4th Assessment Report, Ch. 5, *Observations: Oceanic Climate Change and Sea Level*, 2004–2007. This contribution led to the 2007 Nobel Peace Prize jointly awarded to IPCC & Al Gore, Jr.
Vening Meinesz Medal, for distinguished research in Geodesy, European Geosciences Union (EGU), 2012.
Distinguished University Scholar Award, The Ohio State University, April 2008.
Resources Lecturer Award, Pakistan Council of Research in Water Resources, Minister of Science & Technology, Pakistan, *Workshop on Nurturing Satellite Remote Sensing on Applications of Water Management*, Islamabad, Pakistan, 16–20 February 2015.
Professor P.R. Pisharoty Distinguished Lecturer: *Improved Estimates of 20th and Early 21st Century Global Sea-Level Rise*, Indian Meteorological Society, Pune, India, 17 November 2016.

Atmospheric Science Librarians International's ASLI CHOICE Scientific and Technical Category for "High Impact Comprehensive Publication" Award to Intergovernmental Panel on Climate Change Working Group for Climate Change 2007: The Physical Science Basis, 2007.

Most Cited Article Award by *Terr. Atmos. Ocean. Sci. Journal*, 2011–2015: Lee, H., **C. Shum**, K. Tseng, J. Guo, C. Read. Present-day lake level variation from Envisat altimetry over northeastern Qinghai-Tibetan Plateau: links to precipitation and temperature, *Terr. Atmos. Ocean. Sci.*, 22(2), 169, doi: 10.3319/TAO.2010.08.09.01, 2011.

Most Cited Article Award by *Terr. Atmos. Ocean. Sci. Journal*, 2007–2011: Kuo, C.Y., **C. Shum**, A. Braun, K. Cheng, Y. Yi, Vertical motion determined using satellite altimetry and tide gauges, *Terr. Atmos. Ocean. Sci.*, 19, 1-2, 21-35, doi: 10.3319/TAO.2008.19.1-2.21 (SA), 2008.

NASA Certificate of Appreciation on contribution to the success of the Gravity Recovery and Climate Experiment (GRACE), by Nicholas G. Chrissotimos, Earth Explorers, June 2006.

NASA Certificate of Appreciation on valuable contribution and outstanding support to NASA Earth Science Technology Office, Nov. 2010.

International Council for Science (ICSU), World Meteorological Organization (WMO) Certificate of Appreciation on contribution in establishing International Polar Year 2007–2008.

NASA Awards: Group Achievement Awards on *Joint Gravity Model-1 (JGM-1)*, 1993, *TOPEX/POSEIDON Mission Design*, 1993; NASA Public Service Group Achievement Awards: *T/P Flight Operations Team*, 1994, *TOPEX/POSEIDON Precision Orbit Determination Team*, 1994; Certificate of Appreciation on *Contribution to the U.S./French TOPEX/POSEIDON mission*, by L.A. Fisk and S.G. Tilford, 1994, *the U.S./French TOPEX/POSEIDON three-year prime mission*, by W.F. Townsend, A. Ratier, E. Stone & M. Courtons, 1996.

Lumley Research Award, College of Engineering, The Ohio State University, 2004.

Senior Weikko A. Heiskanen Geodesy Award, Ohio State University, 1998.

Distinguished Alumnus Award, University of Texas at Austin, Hong Kong Texas Exes, April 9, 2009.

SELECTED SYNERGISTIC ACTIVITIES (1996–)

President, Section II, Advanced Space Geodetic Techniques, International Association of Geodesy, 1999–2003.

Participant, Conference of Experts on Hurricane, American Geophysical Union, January 11–12, 2006.

Vice-President, Commission I, Reference Frame, International Association of Geodesy, 2003–2007.

Geodesy Section Secretary, American Geophysical Union, 1996–1998.

Member, National Research Council Committee, on *Sea level rise in California, Oregon and Washington*, Division on Earth and Life Studies, US National Academies, Board on Earth Sciences & Resources, Ocean Studies Board, DELS-BESR-09-04, 2010–2011.

Lead author, (IPCC) Working Group 1 Fourth Assessment Report (AR4): *Chap. 5, Observations: Oceanic Climate Change and Sea Level*, 2004–2007.

Contributing author, IPCC Working Group I Third Assessment Report (AR3), Ch. 11, *Changes in Sea Level*, 2001.

Standing Review Board (SRB), NASA/GFZ GRACE Follow-on (GRACE-FO) satellite mission, 2012–present.

Panel Member, Physical Sciences Panel, Research Grants Council, University Grants Council, Hong Kong Special Administrative Region (SAR), China, 2012–present.

Panel Member, NASA Planetary Discovery Mission Proposal Review Panel, 2015–2016.

Member, U.S. National Committee for International Union of Geodesy and Geophysics (IUGG), The US National Academies, 2003–2011.

Member, External Review Committee, Department of Land Surveying and Geo-Informatics, Hong Kong Polytechnic University, Hong Kong Special Administrative Region (SAR), China, 2013–2016.

Chair, Vening Meinesz Medal Committee, European Geosciences Union, with Philip Woodworth, Harald Schuh, Zuheir Altamimi, 2013–2014; Medal Committee, 2013–2015.

Science Advisory Committee, GNSS rEfectometry, Radio Occultation & Scatterometry onboard International Space Station (GEROS-ISS), European Space Agency, 2011–present.

Vice-Chair, International Coordination of Space Techniques for Geodesy and Geodynamics (a point Sub-Commission with IUGG/IAG Commission I on Reference Frames, Space Research (COSPAR), 2007-present.

Representative, International Association of Geodesy (IAG) Project on Global Geodetic Observing system (GGOS), *Working Group on User Interface*, 2003–2014.

Chancellor's Council, University of Texas Systems, February 1992–present.

Chairs or Members Organizing Committees for numerous national and International Symposia (*not listed*), 1990–present.

E. EDITORSHIP (AFTER 2003)

1. Associate Editor, *IEEE Geosciences Remote Sensing Letters* (GRSL), 2014–present.
2. Editorial Board, *Journal of Geodesy and Geodynamics*, 2010–present.
3. Editorial Board, *Journal of Global Positioning System*, <http://www.cpgps.org/journal.php>, 2009–Present.
4. Guest Editor, *Terrestrial, Atmospheric and Oceanic Sciences*, on the Special Issue “Tibet: Contemporary Geodetic-Geophysical Observations and Interpretations”, Cheinway Hwang, Wenbin Shen, **C.K. Shum**, and Xiaodong Song, 2018–.
5. Guest Editor, International Association of Geodesy Symposia, Editors, Jeff Freymueller, **C.K. Shum** et al., 2015–2016.
6. Guest Editor, *Remote Sensing*, on the Special Issue “*Remote Sensing in Tibet and Siberia*”, Cheinway Hwang, Stéphane Calmant, Wenbin Shen, and **C.K. Shum**, Guest Editors, 2015–2016.
7. Guest Editor, *Terrestrial, Atmospheric and Oceanic Sciences*, on the Special Issue “Geophysical and Climate Change Studies in Tibet, Xinjiang and Siberia (TibXS) from Satellite Geodesy”, Cheinway Hwang, Kosuke Heki, Wenbin Shen, and **C. Shum**, Guest Editors, 24, doi:10.3319/TAO.2013.04.17.01(TibXS), 2013.
8. Guest Editor, *Terrestrial, Atmospheric and Oceanic Sciences*, on the Special Issue “Geophysical and Climate Change Studies in Tibet, Xinjiang and Siberia (TibXS) from Satellite Geodesy”, Cheinway Hwang, Kosuke Heki, Wenbin Shen, and **C. Shum**, Guest Editors, 24, doi:10.3319/TAO.2013.04.17.01(TibXS), 2013.
9. Guest Editor, *Terrestrial, Atmospheric and Oceanic Sciences*, on the Special Issue “Geodynamic and Climate-Change Processes over Tibet, Xinjiang and Siberia (TibXS)”, Cheinway Hwang, Benjamin Fong Chao, Jeffrey T. Freymueller, Wenbin Shen, **C. Shum**, Guest Editors, 22, doi: 10.3319/TAO.2010.12.01.01(TibXS), 2011.
10. Guest Editor, *Terrestrial, Atmospheric and Oceanic Sciences*, on the Special Issue Satellite Altimetry Over Land And Coastal Zones: Applications And Challenges, Cheinway Hwang, **C. Shum**, Yaming Dang, Jérôme Benveniste, Guest Editors, 19, No. 1–2, doi:10.3319/TAO.2008.19.1-2.l(SA), 2008.
11. Book Volume Editor, *Satellite Altimetry for Geodesy, Geophysics and Oceanography*, International Association of Geodesy Symposia, Editors, Hwang, C., **C. Shum**, J. Li. 126, Springer-Verlag, ISBN 3-540-420211-0, October 2003.

F. SELECTED RELEVANT PUBLICATIONS (SINCE 2004):

Summary: Number of Selected Publications, Books, Conference Papers and Presentations

Refereed Journals	Chapter Books	Proceeding Papers	Reports	Presentations
300*	4	>150	>10	>800
Refereed Journal Publications: 28 (2018), 14 (2017), 20 (2016), 14 (2015), 13 (2014), 14 (2013), 18 (2012), 16 (2011), 13 (2010), 12 (2009), 14 (2008), 2 (2007), 7 (2006), 17 (2005), 12 (2004), 7 (2003), 10 (2002), 7 (2001), 7 (2000), 38 (19980–1998), 9 (Before 1990), *includes in-press, in-review.				

Google Scholar Citation: 11,914, H-index: 50, i-10 Index: 176, <https://go.osu.edu/CKShumPublication>, Accessed Dec. 2018

2018

Cazenave, Anny, and the WCRP Global Sea Level Budget Group (includes **C.K. Shum**), Global Sea Level Budget 1993–Present, *Earth Syst. Sci. Data*, doi:10.5194/essd-2018-53, <https://www.earth-syst-sci-data.net/10/1551/2018/essd-10-1551-2018.pdf>, 2018.

Cardellach, Estel, Jens Wickert, Rens Baggen, Javier Benito, Adriano Camps, Nuno Catarinho, Bertrand Chapron, Fran Fabra, Greg Flato, Heinrich Fragner, Carolina Gabarró, Christine Gommenginger, Christian Haas, Sean Healy, Manuel Hernandez-Pajares, Per Høeg, Adrian Jäggi, Juha Kainulainen, Shfaqat Abbas Khan, Norbert M.K. Lemke, Weiqiang Li, Son V. Nghiem, Nazzareno Pierdicca, Marcos Portabella, Kimmo Rautiainen, Antonio Rius, Ingo Sasgen, Maximilian Semmling, **C.K. Shum**, François Soulat, Andrea K. Steiner, Sébastien Tailhades, Maik Thomas, Roger Vilaseca, and Cinzia Zuffada, GNSS Transpolar Earth Reflectometry exploriNg system (G-TERN): Mission concept, *IEEE Trans. on Geosci. & Rem. Sens.*, doi:10.1109/ACCESS.2018.2814072, 2018.

Dai, C., J. Guo, K. Shang, **C. Shum**, R. Wang, The effect of Earth’s oblateness on the seismic moment estimation from satellite gravimetry, *Geophys. J. Int.*, 213(2), 1297–1304, doi: 10.1093/gji/ggy056, 2018.

Feng, Wei, **C.K. Shum**, Min Zong, Yun Pan, Groundwater storage changes in China from satellite gravity: An overview, *Remote Sensing*, **10**(5), 674, doi:10.3390/rs10050674, 2018.

Forootan, E., Mehdi Khaki, Maike Schumacher, Joseph L Awange, **C.K. Shum**, Francis Akinluyi, Guillaume Ramillien, Monitoring global hydrological droughts using multiple drought Indices from combined satellite products, *Science of the Total Environment*, 650, 2,587–2,604, doi:10.1016/j.scitotenv.2018.09.231, 2018.

Iz, H.B., **C. Shum**, Chungyen Kuo, Sea level accelerations at globally distributed tide gauge stations during the satellite altimetry era, *Jl. Geodetic Science*, 10.13140/RG.2.2.10496.48644, 2018.

Karpytchev, M., V. Ballu, Y. Krien, M. Becker, S. Goodbred, G. Spada, S. Calmant, **C. Shum**, Z. Khan, Contribution of past climate change and enhanced sedimentation to present-day subsidence of the Ganges-Brahmaputra Delta, *Geophys. Res. Lett.*, doi:10.1002/2017GL076388, 2018.

Khakia, M., E. Forootan, M. Kuhn, J. Awange, F. Papa, **C.K. Shum**, Study on Bangladesh's sub-surface water storages using satellite products and data assimilation scheme, *Science of the Total Environment*, Vol. 625, 963–977, doi:10.1016/j.scitotenv.2017.12.289, 2018.

Lee, Chi-Ming, Chung-Yen Kuo, Jian Sun, Tzu-Pang Tseng, Kwo-Hwa Chen, Wen-Hau Lan, **C.K. Shum**, Tarig Ali, Kuo-En Ching, Philip Chu, Yuanyuan Jia, Evaluation and improvement of coastal sea level variations from existing GNSS stations in Taiwan, *Advanced Space Research*, doi:10.1016/j.asr.2018.10.039, 2018.

Liu, G.M., F. Schwartz, K.H. Tseng, **C.K. Shum**, S.S. Lee, Satellite altimetry for measuring river stage in remote regions, *Environmental Earth Sciences*, **18**, 77:639, 1–9, doi:10.1007/s12665-018-7823-6, 2018.

Pan, Y.J., W.B. Shen, **C.K. Shum**, Spatial surface seasonal oscillations and 3-D crustal deformations of Tibetan Plateau derived from GPS and GRACE data, *Earth & Planet. Sci. Lett.*, doi.org/10.1016/j.epsl.2018.08.037, 2018.

Shen, Q., H.S. Wang, **C.K. Shum**, L.M. Jiang, H.T. Hsu, J. Dong, Present-day high-resolution ice flow mapping and accelerated mass loss in Antarctica, *Nature Scientific Report*, **8**:4477, doi:10.1038/s41598-018-22765-0, 2018.

Su, X.L., **C.K. Shum**, Z.C. Luo, Evaluating IMERG Vo4 Final Run for monitoring three heavy rain events over mainland China in 2016, *IEEE Geoscience and Remote Sensing Letters*, doi:10.1109/LGRS.2018.2793897, 2018.

Su, X.L., **C.K. Shum**, J.Y. Guo, I. Howat, C.Y. Kuo, K.C. Jezek, J.B. Duan, Y. Yi, Estimating nominal density of the Antarctic ice sheet by combining inter-annual anomalies from GRACE gravimetry and EnviSat altimetry, *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 56, Issue 1, doi:10.1109/TGRS.2017.2751070, 2018.

Tseng, Kuo-Hsin, Chung-Yen Kuo, Min-Hui Lo, **C.K. Shum**, Md Mizanur Rahman, Yuanyuan Jia, Ting-Yi Yang, Po-Hung Shih, Using MODIS/Terra and Landsat imageries to improve surface water quantification in Sylhet, Bangladesh, *Terrestrial, Atmospheric and Oceanic Sciences*, 10.3319/TAO.2018.11.15.04, 2018.

Yang, F., E. Forootan, M. Schumacher, **C. Shum**, M. Zhong, Evaluating non-tidal atmospheric products by measuring GRACE K-band range rate residuals, *Geophys. Jl. International*, **215**, 1,132–1,147, doi:10.1093/gji/ggy340, 2018.

Wrzesien, Melissa L., Michael T. Durand, Tamlin M. Pavelsky, Sarah Kapnick, Yu Zhang, Junyi Guo, **C.K. Shum**, A new estimate of North American mountain snow accumulation from regional climate model simulations, *Geophys. Res. Lett.*, doi:10.1002/2017GL076664, 2018.

Zhang, Guoqing, Tandong Yao, Wenfeng Chen, Guoxiong Zheng, **C.K. Shum**, Kun Yang, Shilong Piao, Yongwei Sheng, Shuang Yi, Junli Li, Catherine M. O'Reilly, Shuhua Qi, Samuel S.P. Shen, Hongbo Zhang, Yuanyuan Jia, Natural and anthropogenic causes of multi-decadal lake changes across China from 1960s to 2015, *Remote Sensing of Environment*, doi.org/10.1016/j.rse.2018.11.038, 221, 386–404, 2018.

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Forootan, E., J. Kusche, M. Talpe, **C.K. Shum**, M. Schmidt, Developing a complex independent component analysis (CICA) technique to extract non-stationary patterns from geophysical time series, *Surveys in Geophysics*, doi.org/10.1007/s1071, 2017.

Gortham, T., Y.Y. Jia, **C.K. Shum**, J.Y. Lee, Ten-year survey of cyanobacteria blooms in Ohio's waterbodies using satellite remote sensing, *Harmful Algae*, **66**, 13–19, doi:10.1016/j.hal.2017.04.013, 2017.

Huang, Z.K., H.H. Wang, Z.C. Luo, **C. Shum**, K.H. Tseng, and B. Zhong, Improving Jason-2 sea surface heights with 10 km offshore by retracking decontaminated waveforms, *Remote Sensing*, **9**(10), 1077, doi:10.3390/rs9101077, 2017.

Iz, H.B., **C.K. Shum**, C.Y. Zhang, C.Y. Kuo, Inferring vertical crustal velocities from averaged relative sea level velocities, *Journal of Geodetic Science*, **7**, 59–67, doi:10.1515/jogs-2017-0007, 2017.

- Jia, Y., J. Kim, **C. Shum**, Z. Lu, X. Ding, L. Zhang, K. Erkan, C. Kuo, K. Shang, K.H. Tseng, Y. Yi, Characterization of Active Layer Thickening rate over northern Qinghai-Tibetan Plateau permafrost region using ALOS Interferometric Synthetic Aperture radar data, 2007–2010, *Remote Sens.*, doi:10.3390/rs9010084, 9(1), 84, 2017.
- Krien, Y., L. Testut, F. Durand, C. Mayer, A. Tazkia, A.K.M. Saiful Islam, M. Becker, S. Calmant, F. Papa, V. Ballu, **C. Shum**, Z. Khan, Storm surge dynamics in the head Bay of Bengal: insight into tidal surge-wave interaction and its contribution to sea level, *Continental Shelf Research*, doi:10.1016/j.csr.2017.01.014, 135, 58–73, 2017.
- Lan, W.H., C.Y. Kuo, H.C. Kao, L.C. Lin, **C. Shum**, and H.H. Tseng, Impacts of geophysical and datum corrections on sea level trend and its determination around Taiwan using tide gauges, *Water*, doi:10.3390/w9070480, 2017.
- Markus, T., T. Neumann, A. Martino, W. Abdalati, K. Brunt, B. Csatho, S. Farrell, H. Fricker, A. Gardner, D. Harding, M. Jasinski, R. Kwok, L. Magruder, D. Lubin, S. Luthcke, J. Morison, R. Nelson, A. Neuenschwander, S. Palm, S. Popescu, **C. Shum**, B. Schutz, B. Smith, Y.K. Yang, and J. Zwally, The Ice, Cloud, and land Elevation Satellite-2 (ICESat-2): Science requirements, concept, and implementation, *Remote Sensing of Environment*, 190, 260–273, doi:10.1016/j.rse.2016.12.029, 2017.
- Tian, D., G.X. Xie, J. Tian, K.H. Tseng, **C. Shum**, J.Y. Lee, S. Liang, Spatio-temporal variability and environmental drivers of harmful algal blooms (HABs) in Western Lake Erie, USA, *PLOS One*, 12(6): e0179622, doi:10.1371/journal.pone.0179622, 2017.
- Zhang, F., C.L. Hu, **C. Shum**, L. Song, J.Y. Lee, Satellite remote sensing of drinking water intakes in Lake Erie for Cyanobacteria population and toxins using two MODIS-based indicators, *Frontiers in Marine Science*, doi:10.3389/fmars.2017.00124, 2017.
- Zhang, Guoqing, Tandong Yao, Shilong Piao, Tobias Bolch, Hongjie Xie, Deliang Chen, Yanhong Gao, Catherine M. O'Reilly, **C.K. Shum**, Kun Yang, Shuang Yi, Yanbin Lei, Weicai Wang, You He, Kun Shang, Xiankun Yang, Hongbo Zhang, Extensive and drastically different alpine lake changes on Asia's high plateaus during the past four decades, *Geophys. Res. Lett.*, 44, 252–260, doi:10.1002/2016GL072033, 2017.
- Zhang, G.Q., T.D. Yao, **C. Shum**, S. Yi, K. Yang, H.J. Xie, W. Feng, T. Bolch, L. Wang, A. Behrangji, H.B. Zhang, W.C. Wang, Y. Xiang, and J.Y. Yu, Lake volume and groundwater storage variations in Tibetan Plateau's endorheic basin, *Geophys. Res., Letts.*, doi:10.1002/2017GL073773, 2017.
- Zotov, L., N. Sidorenkov, C. Bizouard, **C.K. Shum**, W.B. Shen, Multichannel singular spectrum analysis of the axial atmospheric angular momentum, *Jl. Geodesy & Geodynamics*, doi:10.1016/j.geog.2017.02.010, 2017.
- 2016**
- Braitenberg, C., **C. Shum**, Geodynamic implications of temporal gravity changes over Tibetan Plateau, *Italian J. of Geosciences*, doi:10.3301/IJG.2015.38, 2016.
- Chang, C.H., C.Y. Kuo, **C. Shum**, and Y. Yi, Global surface and subsurface geostrophic currents from multi-mission satellite altimetry and hydrographic data, 1996–2011, *J. Marine Sci. & Tech.*, 24(6), 1181–1193, 10.6119/JMST-016-1026-7, 2016.
- Dai, C., **C. Shum**, J. Guo, K. Shang, B. Tapley, R. Wang, Improved source parameter constraints for five undersea earthquakes from north component of GRACE gravity and gravity gradient change measurements, *Earth Planet. Sci. Lett.*, 443, 118–128, doi:10.1016/j.epsl.2016.03.025, 2016.
- Han, G., N. Chen, C. Kuo, **C. Shum**, Interannual and decadal sea surface height variability over the northwest Atlantic slope, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTAR)*, 10.1109/JSTARS.2016.2584778, 2016.
- Hwang, C.W., Y.D. Yang, R. Kao, J.C. Han, **C. Shum**, D.L. Galloway, M. Sneed, W.C. Hung, Y.S. Chen, and F. Li, Nonlinear land subsidence revealed by radar altimetry: California, Taiwan and north China, *Nature Scientific Report*, 6, 28160, doi:10.1038/srep28160, 2016.
- Ke, L., X. Ding, L. Zhang, J. Hu, **C. Shum**, Z. Lu, Compiling a new glacier inventory for southeastern Qinghai–Tibet Plateau from Landsat and PALSAR data, *Jl. Glaciology*, doi:10.1017/jog.2016.58, 2016.
- Krien, Y., C. Mayer, L. Testut, F. Durand, A.R. Tazkia, A.K.M. Saiful Islam, V.V. Gopalakrishna, A.S. Unnikrishnan, M. Becker, S. Calmant, **C. Shum**, Z.H. Khan, Improved bathymetric dataset and tidal model for the head Bay of Bengal, *Marine Geodesy*, doi:10.1080/01490419.2016.1227405, 2016.
- Kouraev, A.V., **C. Shum**, Y. Yi, E. Zakharova, M.A. Naumenko, F. Rémy, J-F. Cretaux, V. Vuglinsky, M.N. Shimaraev. Seasonally-frozen lakes and reservoirs in boreal regions, In: *Inland Water Altimetry*, Inland Water Altimetry, J. Benveniste, S. Vignudelli, A. Kostianoy (Eds.), Ch. 9, *Springer*, 2016.
- Kusche, J., B. Uebbing, R. Rietbroek, **C. Shum**, and Z. Khan, Sea level budget in the Bay of Bengal (2002–2014) from GRACE and altimetry, *J. Geophys. Res. Oceans*, 121(2), 1194–1217, doi:10.1002/2015JC011471, 2016.

- Liu, K.T., K.H. Tseng, **C. Shum**, C.Y. Liu, C.Y. Kuo, G.M. Liu, Y.Y. Jia, Assessment of the impact of reservoirs in the upper Mekong river using satellite radar altimetry and remote sensing imageries, *Remote Sens.*, 8(5), 367; doi:10.3390/rs8050367, 2016.
- Sebera, J., A. Bezděková, J. Kostelecký, I. Pešek, and **C. Shum**, An oblate ellipsoidal approach to update a high-resolution geopotential model over the oceans: study case of EGM2008 and DTU10, *Adv. In Space Res.*, 57, 2–18, doi:10.1016/j.asr.2015.08.024, 2016.
- Sikder, S., X. Chen, F. Hossain, J. Roberts, F. Robertson, **C. Shum**, J. Turk, Are general circulation models ready for operational streamflow forecasting at seasonal scales in South Asia? *J. Hydrometeorology*, 17(1), 195–210, doi:10.1175/JHM-D-14-0099.1, 2016.
- Su, X.L., **C. Shum**, C.Y. Kuo, Y. Yi, Improved Envisat altimetry ice sheet elevation change data processing algorithms using repeat-track analysis, *IEEE Geosc. and Rem. Sens. Lett.*, 10.1109/LGRS.2016.2567486, 2016.
- Sun, Z.Y., H.K. Lee, K.H. Tseng, **C. Shum**, Recent glacier dynamics in the Northern Novaya Zemlya observed by multiple geodetic techniques, *IEEE J. Selected Topics in Applied Earth Observations & Remote Sens.*, doi:10.1109/JSTARS/2016.2643568, 2016.
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