Stanford

Howard Zebker

Professor of Electrical Engineering and of Geophysics

Bio

BIO

Zebker's research program consists of developing spaceborne radar systems and applying remote sensing data to problems in geophysics. His current emphasis is on interferometric radar for natural hazards, water resources, and global environmental problems. He is also active in planetary science, in particular research supporting the NASA Cassini mission to Saturn and Titan.

ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Professor, Geophysics
- Affiliate, Stanford Woods Institute for the Environment

ADMINISTRATIVE APPOINTMENTS

- Research Assistant, Physics Section, Jet Propulsion Laboratory, (1975-1976)
- Member Technical Staff, Radar Science and Engineering Section, Jet Propulsion Laboratory, (1976-1980)
- Assistant Manager Radar Science and Engineering Section, Jet Propulsion Lab, (1984-1995)
- Postdoctoral Research Affiliate Electrical Engineering, Stanford University, (1984-1984)
- Associate Professor Electrical Engineering and Geophysics, Stanford University, (1995-2006)
- Professor of Geophysics and Electrical Engineering, Stanford University, (2006- present)

HONORS AND AWARDS

- Group Achievement Award, Seasat-A-Synthetic Aperture Radar Team, NASA (1979)
- Group Achievement Award, Shuttle Imaging Radar (SIR-A) Development Team, NASA (1982)
- U.S. Patent No. 4,450,447: Synthetic Aperture Radar Target Simulator, U.S. Patent Office (1984)
- NASA Certificates of Achievement: New Technology: Approaches to modelling polarization..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Mapping small elevation changes..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Phase calibration of imaging radar..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Radar imaging polarimetry, NASA (1988-1995)
- Certificates of Achievement for New Technology: Preliminary silutaneous L/C-band images..., NASA (1988-1995)
- Certificates of Achievement for New Technology: radar polarimeter measures orientation..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Data volume reduction for imaging radar polarimetry, NASA (1988-1995)
- Certificates of Achievement for New Technology: Synthetic aperture radar processor..., NASA (1988-1995)

- Certificates of Achievement for New Technology: Interferometric radar measurement..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Topographic mapping from interferometric..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Imaging radar polarimeter, NASA (1988-1995)
- Certificates of Achievement for New Technology: Software for polarimetric radar analysis..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Calibration of Stokes and scattering mattrix..., NASA (1988-1995)
- Certificates of Achievement for New Technology: Topographic mapping using radar interferometr..., NASA (1988-1995)
- Certificates of Achievement for New Technology: THE TOPSAR interferometric radar..., NASA (1988-1995)
- Director's Research Achievement Award, Jet Propulsion Laboratory (1988)
- Best paper award, IEEE Geoscience and Remote Sensing Society (1988)
- U.S. Patent No. 4, 829,303: Data Volume Reduction for Imaging Radar Polarimetry, U.S. Patent Office (1989)
- U.S. Patent No. 4, 975,704: Method for Detecting Surface Motions and Mapping Small Terrestrial..., U.S. Patent Office (1990)
- Group Achievement Award, Airborne Imaging Radar System Team, NASA (1990)
- Best paper award, IEEE Geoscience and Remote Sensing Society (IGARSS 95) (1995)
- Dana Adams Griffin Award, School of Engineering, Stanford University (1998)
- Fellow, Institute of Electrical and Electronics Engineers (1998)
- Best reviewer award, IEEE Transactions on Geoscience and Remote Sensing (1999)
- Robert Noyce Faculty Scholar, Stanford University School of Engineering (1999)
- Fellow, The Electromagnetics Academy (1999)
- Award for New Technology Report no. 20376: "ROI (Repeat Orbit Interferometer) Software.", NASA Board (2006)
- Certificate of Recognition for development of Differential Radar Interferometry, June, NASA (2007)
- Technical Brief Achievement Award, Airborne Radar Interferometric Repeat Pass Processing, NASA (2010)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair, EE Ph.D. Program Committee, Stanford University (1996 - 2003)
- EE Admissions Committee (co-Chair 2005-7), Stanford University (1997 - 2003)
- Freshman advisor, Stanford University (1997 - 2003)
- LightSAR Science Working Group, NASA (1997 - 1999)
- Associate Editor, IEEE Transactions on Geoscience and Remote Sensing (1998 - 2009)
- Europa Radar Instrument Definition Team, NASA (1998 - 1999)
- Alaska SAR Facility Users Working Group, NASA (1998 - present)
- Invited Speaker:, Phase unwrapping algorithms for radar interferometry: residue/cut, least-squares, and synthesis algorithms, 1998 Progress in Electromagnetic Research Symposium (PIERS '98), July 13-17, Nantes, France (1998 - 1998)
- Invited Speaker, Volume scattering effects in radar interferograms: foliage and icy targets, 1998, Progress in Electromagnetic Research Symposium (PIERS '98), July 13-17, Nantes, France (1998 - 1998)
- Invited Speaker, Interferometric radar measurement of the viscosity of salt near the Dead Sea, IGARSS 98, International Geoscience and Remote Sensing Symposium, July 6-10, Seattle, Washington (1998 - 1998)
- Invited Speaker, Contributions to Earth Crustal Deformation Studies from Interferometric Synthetic Aperture Radar, AGARSS 98: International Geoscience and Remote Sensing Symposium, July 6-10, Seattle, Washington (1998 - 1998)
- Invited speaker, Measuring Earth Crustal Deformation with Interferometric Synthetic Aperture Radar,AAAS Annual Meeting and Science Innovation Exposition, Feb. 12-17, Philadelphia, Pennsylvania (1998 - 1998)
- Geophysics Department graduate program coordinator, Stanford University (1998 - 2005)
- EE Search Committee for Digital Image and Video Systems, Stanford University (1998 - 1999)

- EE Search Committee for Medical Imaging Systems, Stanford University (1999 - 2000)
- Invited speaker, On the use of radar interferometry for volcano geodesy, AGU meeting, San Francisco (1999 - 1999)
- Invited speaker, Studying volcanoes using interferometric synthetic aperture radar, Cascades Volcano Observatory (1999 - 1999)
- Invited speaker, Imaging the subsurface with spaceborne interferometric radar, Scripps Inst. of Oceanography IGPP Geophysics Seminar series, SIO, April 27, 1999 (1999 - 1999)
- Invited speaker, Using subaperture processing and interferometric correlation measurements to infer subsurface scattering properties, International Geoscience and Remote Sensing Symposium, June 28 -July 2, 1999, Hamburg, Germany (1999 - 1999)
- Invited speaker, Advances in interferometric phase unwrapping: network flow algorithms, International Geoscience and Remote Sensing Symposium, June 28 -July 2, 1999, Hamburg, Germany (1999 - 1999)
- Invited speaker, Imaging subsurface fluid flow using spaceborne interferometric radar, URSI XXVI General Assembly, August 13-21, 1999, Toronto, Canada (1999 - 1999)
- Technical committee member, Progress in Electromagnetic Research Symposium, (PIERS 2000) (1999 - 2000)
- Invited speaker, Speculating on radar volcanology in the coming decade, AGU (Fall) | Meeting, San Francisco, CA (2000 - 2000)
- Invited speaker, Inference of volcano subsurface processes from InSAR crustal deformation observations, Third Joint Meeting, U.S.-Japan Natural Resources Panel on Earthquake Research, USGS, Menlo Park, CA (2000 - 2000)
- Invited speaker, We don't need a new InSAR mission, Proceedings of the International Geoscience and Remote Sensing Sensing Symposium, Honolulu, Hawaii (2000 - 2000)
- Invited speaker, Subsurface volcanic processes in the Galapagos Islands from interferometric SAR, Progress in Electromagnetics Research Symposium 2000 (PIERS) Cambridge, Mass. (2000 - 2000)
- Invited speaker, Radar science and technology:speculating on the next 20 year, Workshop on Scientific Applications of Synthetic Aperture Radar (SAR) Satellites, USC (2000 - 2000)
- Session Chair, Interferometric and Differential Interferometric SAR, International Geoscience and Remote Sensing Symposium, Honolulu, Hawaii (2000 - 2000)
- Member, Solid Earth Science Proposal Review Panel, NASA Earth Science Enterprise (2000 - 2000)
- Member, Earth Science Technology Office (ESTO), NASA Earth Science Enterprise, Advanced Radar Technology Panel (2000 - 2000)
- Steering Committee and Earthquake Working Group, NSF Workshop on Scientific Applications of Synthetic Aperture Radar, University of Southern California (2000 - 2000)
- Technical Program Committee, 2001 Progress In Electromagnetic Research Symposium (2001 - 2001)
- Executive Committe member, Chair (2004-6),Vice Chair (2002-3), Western North America Interferometric SAR (Winsar) consortium, a division of the Southern California Earthquake Center, national Science Foundation (2001 - 2008)
- Antarctic Mapping Mission (AMM) Science Advisory Group, NASA (2001 - 2001)
- Summer Research Workshop, Synergies in Geophysical, Medical and Space Imaging, July 22- 26, Newport Beach, California (2001 - 2001)
- Invited speaker, Time-Lapse Imaging of Subsurface Flow Using SAR Interferometry, SEG (2001 - 2001)
- Invited speaker, Measuring Earth Crustal Deformation With Interferometric Synthetic Aperture Radar, Xerox Palo Alto Research Center Forum, February 1, 2001. (2001 - 2001)
- Invited speaker, Measuring Earth Crustal Deformation with Interferometric Synthetic Aperture Radar, University of California, Santa Barbara, Dept.of Geology Lecture Series, Santa Barbara, CA, Feb. 28 (2001 - 2001)
- Invited speaker, Measuring Subsurface Flow with Interferometric Synthetic Aperture Radar, UC Davis Hydrology Seminar Series, University of California at Davis, January 18 (2001 - 2001)
- Session chair and organizer, Geophysical Modeling Using Spaceborne InSAR Measurements, American Geophysical Union 2002 (Fall) | Meeting, 6-10 December, 2002, San Francisco, CA. (2002 - 2002)
- Technical Program Committee, 2002 Progress In Electromagnetic Research Symposium (2002 - 2002)
- Solid Earth Science Proposal Review Panel, NASA Earth Science Enterprise (2002 - 2002)
- Chair, Visiting Committee, NSF National Astronomy and Ionosphere Center (Arecibo Observatory) (2002 - 2004)
- Chair (2003-5), University Senate Committee on Review of Undergraduate majors (C-RUM), Stanford University (2002 - 2005)
- Chair, Geophysics Department Curriculum Committee, Stanford University (2003 - 2005)
- Chair, George A. Thompson Fellowship Committee, Department of Geophysics, Stanford University (2003 - 2003)
- Search committee, Surface Processes, Dept. of Geological and Environmental Sciences, Stanford University (2003 - 2004)

- School of Earth Sciences Committee on Computational Geosciences, Stanford University (2003 - 2004)
- Technical Program Committee, Progress in Electromagnetics Research Symposium (2003 - 2003)
- Invited keynote talk, Time-dependent deformation associated with natural hazards, 30th International Symposium on Remote Sensing of the Environment, Nov. 10-14, 2003, Honolulu, Hawaii. (2003 - 2003)
- Invited Speaker, General Assembly, June 30-July 11, 2003, Sapporo, Japan. (2003 - 2003)
- Invited speaker, 4-d imaging of the Earth's subsurface using insar: moving beyond the single interferogram, International Union of Geodesy and Geophysics (IUGG) (2003 - 2003)
- Solid Earth Science Proposal Review Panel, NASA Earth Science Enterprise (2003 - 2003)
- Technical Committee, Progress in Electromagnetics Research Symposium 2003, October 13-16, 2003, Honolulu, Hawaii (2003 - 2003)
- Steering Committee, InSAR Working Group (2004 - present)
- NASA Review Committee, Earth System Science Fellowships (2004 - 2004)
- NASA Technical Review Committee, HICP planetary missions (2004 - 2004)
- Organizing Committee, Interagency Interferometric Synthetic Aperture Radar Workshop (2004 - 2004)
- Member, International Union of Radioscience (URSI) Board of Experts for Medal Evaluations (2004 - 2005)
- chool of Earth Sciences Committee on Establishment of a School-wide Undergraduate major, Stanford University (2004 - 2005)
- Department of Electrical Engineering Qualification Examination Appeals Committee, Stanford University (2004 - 2006)
- Chair, Dept. of Geophysics Admissions Committee, Stanford University (2005 - 2011)
- Board of Experts, International Union of Radioscience (URSI) for Medal Evaluations (2005 - 2005)
- Earth Science Technology Office Review Panel, NASA (2005 - 2005)
- NASA Review Committee, Earth System Science Fellowships (2005 - 2006)
- Editorial Board, Proceedings of the IEEE (2005 - present)
- NRC Earth Science and Applications Panel, NASA Earth Science Decadal Survey (2005 - 2007)
- Invited talk, Zebker, H.A., Research Within the WInSAR Consortium, Eos Trans. AGU, 87(52), (Fall) Meet. Suppl., Abstract H24C-02 (2006 - 2006)
- NASA Review Committee, Earth System Science Fellowships (2006 - present)
- NASA, Earth Science Technology Office Review Panel (2006 - present)
- InSAR Review Board, NASA Jet Propulsion Laboratory (2006 - present)
- Invited talk, Zebker, H.A., Research Within the WInSAR Consortium, Eos Trans. AGU, 87(52), (Fall) | Meet. Suppl., Abstract H24C-02 (2006 - 2006)
- Member, International Program Committee, International Association of Science and Technology for Development (IASTED), International Conference on Antennas, Radar, and Propagation (2006 - 2007)
- Session chair, InSAR Science Results and Recommendations for Future Missions I, II, and III, 2006 American Geophysical Union (Fall) | Meeting, San Francisco, Dec. 10-15 (2006 - 2006)
- Technical Program Committee, IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2006), Denver, CO, Jul. 31 – Aug. 4 (2006 - 2006)
- Session chair, Geological Hazards. 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2006), Denver, CO (2006 - 2006)
- Participating Scientist Review Committee, NASA Mars Reconnaissance Orbiter (2006 - 2006)
- Session Chair, Remote Sensing and Imaging, 2006 Progress in Electromagnetics Research Symposium, Cambridge, MA., March 26-29 (2006 - 2006)
- Session Chair, Microwave Remote Sensing of Snow, 2006 Progress in Electromagnetics Research Symposium, Cambridge, MA., March 26-29 (2006 - 2006)
- Chair, Faculty Senate Committee for Review of Undergraduate Majors (C-RUM), Stanford University (2006 - 2006)
- Chair, Geophysics Department George Thompson Fellowship Committee, Stanford University (2006 - 2007)
- Chair, Board of Judicial Affairs, Stanford University (2007 - 2009)
- Broad Area Search Committee, Dept. of Electrical Engineering, Stanford University (2007 - 2008)
- Steering Committee, NSF EarthScope (2007 - 2011)

- Invited talk, Zebker, H.A., and P. Shankar, InSAR Remote Sensing Over Decorrelating Terrains: Persistent Scattering Methods, RADAR Littoral Studies Workshop, Naval Postgraduate School, Monterey Bay Aquarium Research Institute (MBARI), Moss Landing, California, August 9 (2007 - 2007)
- Invited talk, Zebker, H.A, Radar Measurements: electrical properties of Titan and constraints on surface composition and structure, CIPS Titan Workshop II: Titan after Cassini, UC Berkeley, Berkeley, CA, May 15 (2007 - 2007)
- Invited talk, Zebker, H.A, Titan’s Surface from Reconciled Cassini Microwave Reflectivity and Emissivity Observations, UCSD Scripps Institution of Oceanography Institute for Geophysics and Planetary Physics Seminar, UC San Diego, La Jolla, CA, April 27 (2007 - 2007)
- Invited talk, Zebker, H.A., Accomplishments in Earth science from satellite observations, National Research Council Committee on Scientific Accomplishments of Earth Observations from Space, Irvine, CA, March 5 (2007 - 2007)
- Session chair, InSAR Science Results and Recommendations for Future Missions I, II, and III, 2006 American Geophysical Union (Fall) | Meeting, San Francisco, Dec. 10-15 (2007 - 2007)
- Member, International Program Committee, International Association of Science and Technology for Development (IASTED), International Conference on Antennas, Radar, and Propagation 2007 (ARP 2007), Montreal, Canada, May 30th - June 1 (2007 - 2007)
- Editor and Chair, Editorial Committee, Report of the July 17-19, 2007 Orlando, Florida Workshop to Assess the National Research Council Decadal Survey Recommendation for the DESDynI Radar/Lidar Space Mission (2007 - 2007)
- Invited speaker, Zebker, H.A., and A.P. Shanker (2008), Geodetic imaging with time series persistent scatterer InSAR, Eos Trans. AGU, 89 (53), (Fall) | Mtg. Suppl., Abstract G51C-02 (2008 - 2008)
- Executive Committee, Department of Electrical Engineering (2008 - present)
- Member, USEReST Program Committee, for meeting in Naples, It. Nov. (2008 - 2008)
- Chair, EE Graduate Admissions Committee, Stanford University (2008 - present)
- Chair, Committee on Academic Computing and Information Systems (C-ACIS), Stanford University (2009 - 2012)
- Faculty Search Committee, Dept. of Aeronautics and Astronautics, School of Engineering, Stanford University (2010 - 2011)
- Team Leader, School of Earth Sciences Initiative on Computational Earth Sciences, Stanford University (2010 - 2011)
- Session Chair, Remote Sensing and Polarimetry: SAR, GPR, Imaging, at Progress in Electromagnetics Research Symposium (PIERS 2010), Cambridge. MA, July 5-8 (2010 - 2010)
- Session Chair, Sensors and Platforms- SAR Processing: Interferometric SAR Processing Thursday, July 29, 08:20 - 10:00, 2010 IEEE International Geoscience and Remote Sensing Symposium, Honolulu, HI, July 25-30 (2010 - 2010)
- International Program Committee, International Association of Science and Technology for Development (IASTED), International Conference on Antennas, Radar, and Propagation (2009 - present)
- Steering Committee, National Science Foundation EarthScope Program Science (2007 - 2011)
- Chair, Nominations Subcommittee, EarthScope Science Steering Committee (2010 - 2011)
- Organizing Committee, EarthScope National Meeting (2010 - 2010)
- Invited talk, Zebker, H. A. (2010), InSAR Volcanology 2010: the Past and Coming Decade, Abstract V44C-02, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. (2010 - 2010)
- Invited talk, Zebker, H.A., Measuring Earth's Crustal Deformation Using InSAR, 2011 Symposium on Position, Navigation, and Time, Stanford Linear Accelerator Center, Nov. 17 (2011 - 2011)
- Invited talk, Zebker, H.A., C. Wortham, J. Lien, and P.S. Agram (2011), Advances in time-series InSAR, Eos Trans. AGU, 92(52), Fall Meet. Suppl., Abstract G21C-03 (2011 - 2011)
- Steering Committee, NASA DESDynI (Deformation, Ecosystems, and Dynamics of Ice) Science (2008 - present)
- Technical Review Committee, IEEE Geoscience and Remote Sensing Symposium (2009 - present)
- Panel on Sustainable Land Imaging, National Research Council (2011 - present)
- Geodetic Imaging Panel, NASA (2011 - 2012)
- Member, NASA DESDynI Science Definition Team (2012 - 2013)
- Member, NASA Earth Science Technology Office Review Panel (2012 - 2013)
- Member, NASA Review Committee, Earth System Science Fellowships (2012 - 2013)
- Session convener and co-Chair, Exotic and Unusual Applications of Geodesy, AGU Fall Meeting (2012 - 2012)
- Panel on the US Land Imaging Program, National Research Council (2012 - 2013)
- Associate Chair, Dept. of Geophysics, Stanford University (2012 - present)

- Promotion Committee, Tiziana Vanorio, Geophysics, Stanford University (2012 - 2012)
- Team Leader, Geophysics Strategic Planning Leadership Committee, Stanford University (2013 - 2013)

PROFESSIONAL EDUCATION

- PhD, Stanford University (1984)
- M.S., University of California at Los Angeles , Engineering (1979)
- B.S., California Institute of Technology , Engineering and Applied Science (1976)

LINKS

- Radar Remote Sensing: http://ee.stanford.edu/~zebker/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Research

My students and I study the surfaces of Earth and planets using radar remote sensing methods. Our specialization is interferometric radar, or InSAR. InSAR is a technique to measure mm-scale surface deformation at fine resolution over wide areas, and much of our work follows from applying this technique to the study of earthquakes, volcanoes, and human-induced subsidence. We also address global environmental problems by tracking the movement of ice in the polar regions. whose ice mass balance affects sea level rise and global climate. We participate in NASA space missions such as Cassini, in which we now are examining the largest moon of Saturn, Titan, to try and deduce its composition and evolution. Our work includes experimental observation and modeling the measurements to best understand processes affecting the Earth and solar system. We use data acquired by spaceborne satellites and by large, ground-based radar telescopes to support our research.

Teaching

I teach courses related to remote sensing methods and applications, and how these methods can be used to study the world around us. At the undergraduate level, these include introductory remote sensing uses of the full electromagnetic spectrum to characterize Earth and planetary surfaces and atmospheres, and methods of digital image processing. I also teach a freshman and sophomore seminar course on natural hazards. At the graduate level, the courses are more specialized, including the math and physics of two-dimensional imaging systems, plus detailed ourses on imaging radar systems for geophysical applications.

Professional Activities

InSAR Review Board, NASA Jet Propulsion Laboratory (2006-present); editorial board, IEEE Proceedings (2005-present); NRC Earth Science and Applications from Space Panel on Solid Earth Hazards, Resources, and Dynamics (2005-present); Chair, Western North America InSAR (WInSAR) Consortium (2004-06); organizing committee, NASA/NSF/USGS InSAR working group; International Union of Radioscience (URSI) Board of Experts for Medal Evaluations (2004-05); National Astronomy and Ionospheric Center, Arecibo Observatory, Visiting Committee, (2002-04; chair, 2003-04); NASA Alaska SAR Facility users working group (2000-present); associate editor, IEEE Transactions on Geoscience and Remote Sensing (1998-present); fellow, IEEE (1998)

Teaching

COURSES

2017-18

- Frontiers of Geophysical Research at Stanford: Faculty Lectures: GEOPHYS 201 (Aut)
- Imaging Radar and Applications: EE 355, GEOPHYS 265 (Win)
- Introduction to Digital Image Processing: EE 168 (Win)
- Man versus Nature: Coping with Disasters Using Space Technology: EE 60N, GEOPHYS 60N (Aut)

- Radio Remote Sensing: GEOPHYS 385Z (Aut, Win, Spr)

2016-17

- Frontiers of Geophysical Research at Stanford: Faculty Lectures: GEOPHYS 201 (Aut)
- Man versus Nature: Coping with Disasters Using Space Technology: EE 60N, GEOPHYS 60N (Aut)
- Radio Remote Sensing: GEOPHYS 385Z (Aut, Win, Spr)

2015-16

- Frontiers of Geophysical Research at Stanford: Faculty Lectures: GEOPHYS 201 (Aut)
- Imaging Radar and Applications: EE 355, GEOPHYS 265 (Win)
- Introduction to Digital Image Processing: EE 168 (Win)
- Man versus Nature: Coping with Disasters Using Space Technology: EE 60N, GEOPHYS 60N (Aut)
- Radio Remote Sensing: GEOPHYS 385Z (Aut, Win, Spr)

2014-15

- Frontiers of Geophysical Research at Stanford: Faculty Lectures: GEOPHYS 201 (Aut)
- Introduction to Digital Image Processing: EE 168 (Win)
- Man versus Nature: Coping with Disasters Using Space Technology: EE 60N, GEOPHYS 60N (Aut)
- Radio Remote Sensing: GEOPHYS 385Z (Aut, Win, Spr)
- Two-Dimensional Imaging: EE 262 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Zahra Koochak, Sean Peters

Doctoral Dissertation Advisor (AC)

Yujie Zheng

Doctoral (Program)

Roger Michaelides

Publications

PUBLICATIONS

- **Estimating the permanent loss of groundwater storage in the southern San Joaquin Valley, California** *WATER RESOURCES RESEARCH*
  Smith, R. G., Knight, R., Chen, J., Reeves, J. A., Zebker, H. A., Farr, T., Liu, Z.
  2017; 53 (3): 2133-2148
- **Titan's "Magic Islands": Transient features in a hydrocarbon sea** *ICARUS*
  Hofgartner, J. D., Hayes, A. G., Lunine, J. I., Zebker, H., Lorenz, R. D., Malaska, M. J., Mastrogiuseppe, M., Notarnicola, C., Soderblom, J. M.
  2016; 271: 338-349
- **Constraining the physical properties of Titan's empty lake basins using nadir and off-nadir Cassini RADAR backscatter** *ICARUS*
  Michaelides, R. J., Hayes, A. G., Mastrogiuseppe, M., Zebker, H. A., Farr, T. G., Malaska, M. J., Poggiali, V., Mullen, J. P.
  2016; 270: 57-66
- **Confined aquifer head measurements and storage properties in the San Luis Valley, Colorado, from spaceborne InSAR observations** *WATER RESOURCES RESEARCH*
  Chen, J., Knight, R., Zebker, H. A., Schreueder, W. A.
  2016; 52 (5): 3623-3636

- **Ground-penetrating radar-derived measurements of active-layer thickness on the landscape scale with sparse calibration at Toolik and Happy Valley, Alaska** *GEOPHYSICS*
  Chen, A., Parsekian, A. D., Schaefer, K., Jafarov, E., Panda, S., Liu, L., Zhang, T., Zebker, H.
  2016; 81 (2): H9-H19

- **A persistent scatterer interpolation for retrieving accurate ground deformation over InSAR-decorrelated agricultural fields** *GEOPHYSICAL RESEARCH LETTERS*
  Chen, J., Zebker, H. A., Knight, R.
  2015; 42 (21): 9294-9301

- **Remote sensing measurements of thermokarst subsidence using InSAR** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
  Liu, L., Schaefer, K. M., Chen, A. C., Gusmeroli, A., Zebker, H. A., Zhang, T.
  2015; 120 (9): 1935-1948

- **Remotely Sensed Active Layer Thickness (ReSALT) at Barrow, Alaska Using Interferometric Synthetic Aperture Radar** *REMOTE SENSING*
  Schaefer, K., Liu, L., Parsekian, A., Jafarov, E., Chen, A., Zhang, T., Gusmeroli, A., Panda, S., Zebker, H. A., Schaefer, T.
  2015; 7 (4): 3735-3759

- **Groundwater extraction, land subsidence, and sea-level rise in the Mekong Delta, Vietnam** *ENVIRONMENTAL RESEARCH LETTERS*
  Erban, L. E., Gorelick, S. M., Zebker, H. A.
  2014; 9 (8)

- **The 2010 slow slip event and secular motion at Kilauea, Hawaii, inferred from TerraSAR-X InSAR data** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
  Chen, J., Zebker, H. A., Segall, P., Miklius, A.
  2014; 119 (8): 6667-6683

- **An Analysis of the Uncertainty in InSAR Deformation Measurements for Groundwater Applications in Agricultural Areas** *IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING*
  Reeves, J. A., Knight, R., Zebker, H. A.
  2014; 7 (7): 2992-3001

- **Shape, topography, gravity anomalies and tidal deformation of Titan** *ICARUS*
  Mitri, G., Meriggiola, R., Hayes, A., Lefevre, A., Tobie, G., Genova, A., Lunine, J. I., Zebker, H.
  2014; 236: 169-177

- **Transient features in a Titan sea** *NATURE GEOSCIENCE*
  Hofgartner, J. D., Hayes, A. G., Lunine, J. I., Zebker, H., Stiles, B. W., Sotin, C., Barnes, J. W., Turtle, E. P., Baines, K. H., Brown, R. H., Buratti, B. J., Clark, R. N., Encrenaz, et al
  2014; 7 (7): 493-496

- **InSAR detects increase in surface subsidence caused by an Arctic tundra fire** *GEOPHYSICAL RESEARCH LETTERS*
  Liu, L., Jafarov, E. E., Schaefer, K. M., Jones, B. M., Zebker, H. A., Williams, C. A., Rogan, J., Zhang, T.
  2014; 41 (11): 3906-3913

- **Estimating temporal changes in hydraulic head using InSAR data in the San Luis Valley, Colorado** *WATER RESOURCES RESEARCH*
  Reeves, J. A., Knight, R., Zebker, H. A., Kitanidis, P. K., Schreueder, W. A.
  2014; 50 (5): 4459-4473

- **The bathymetry of a Titan sea** *GEOPHYSICAL RESEARCH LETTERS*
  Mastrogiuseppe, M., Poggiali, V., Hayes, A., Lorenz, R., Lunine, J., Picardi, G., Seu, R., Flamini, E., Mitri, G., Notarnicola, C., Paillou, P., Zebker, H.
  2014; 41 (5): 1432-1437

- **Surface of Ligeia Mare, Titan, from Cassini altimeter and radiometer analysis** *GEOPHYSICAL RESEARCH LETTERS*
  Zebker, H., Hayes, A., Janssen, M., Le Gall, A., Lorenz, R., Wye, L.
  2014; 41 (2): 308-313

- **Reducing Ionospheric Effects in InSAR Data Using Accurate Coregistration** *IEEE Transactions on Geoscience and Remote Sensing,*
  Chen, A., Zebker, H.
  2014; 52 (1): 60-70

- **Seasonal thaw settlement at drained thermokarst lake basins, Arctic Alaska** *CRYOSPHERE*
  Liu, L., Schaefer, K., Gusmeroli, A., Grosse, G., Jones, B. M., Zhang, T., Parsekian, A. D., Zebker, H. A.
  2014; 8 (3): 815-826

- **Reducing Ionospheric Effects in InSAR Data Using Accurate Coregistration** *IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING*
  Chen, A. C., Zebker, H. A.
  2014; 52 (1): 60-70

- **Interferometric SAR** *in Microwave Radar and Radiometric Remote Sensing*
  Zebker, H., A.
  edited by Ulaby, F., Long, D.
  University of Michigan Press.2014: 1

- **Surface of Ligeia Mare, Titan, from Cassini altimeter and radiometer analysis.** *Geophysical Research Letters*
  Zebker, H., Hayes, A., Janssen, M., Le Gall, A., Lorenz, R., Wye, L.
  2014

- **Release of arsenic to deep groundwater in the Mekong Delta, Vietnam, linked to pumping-induced land subsidence.** *Proceedings of the National Academy of Sciences of the United States of America*
  Erban, L. E., Gorelick, S. M., Zebker, H. A., Fendorf, S.
  2013; 110 (34): 13751-13756

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