

Dr. Ute Christina Herzfeld

February 7, 2019

ECEE and CIRES
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CURRICULUM VITAE

Research Professor, Department of Electrical, Computer and Energy Engineering, University of Colorado Boulder

Senior Research Associate, Cooperative Institute for Research in Environmental Sciences (CIRES), CU Boulder

Affiliate Professor, Department of Applied Mathematics, CU Boulder

Department Representative of ECEE to the CU Geophysics Program

Academic Education and Degrees

- 1978-1983 Study of mathematics and evangelical theology, Universität Mainz, Germany, and University of Warwick, Coventry, England
- Dec. 1983 **State Examination (Master's Degree)**, Mathematics, Evangelical Theology, Johannes Gutenberg-Universität Mainz, Germany (summa cum laude), thesis in the theory of finite soluble groups
- 1982-1986 Study of geology, geophysics, oceanography, geography, glaciology
- June 1986 **Doctoral Degree (Dr. rer. nat.)**, Mathematics (with Prof. Dr. K. Doerk), thesis in the theory of finite groups, secondary subjects applied mathematics and geosciences, Johannes Gutenberg-Universität Mainz
- 1986 **Diploma of Postgraduate Studies in Mathematical Geology**, Free University of Berlin, Germany (with Prof. Dr. W. Skala), two thesis papers (a) on geostatistical estimation of bathymetric data, and (b) on statistical classification of digital satellite images (LANDSAT)

Fellowships and Awards

- 1978-1983 **Scholarship, German National Scholarship Foundation** (Studienstiftung des deutschen Volkes), Bonn, Germany
- 1980-1981 **Scholarship for Studies Abroad, German National Scholarship Foundation**, Bonn, at the University of Warwick, Coventry, Great Britain
- 1984-1986 **Doctoral Fellowship, German National Scholarship Foundation**, Bonn
- 1987-1988 **Postdoctoral Fellowship, German Science Foundation** (Deutsche Forschungsgemeinschaft), Bonn, Germany, at Mathematical Geology, Free University of Berlin, Germany
- 1988-1992 **Feodor Lynen Fellowship, Alexander von Humboldt Foundation**, Bonn, Germany, at Scripps Institution of Oceanography, University of California at San Diego, USA
- 1992 **President's Prize of the International Association for Mathematical Geology** for outstanding contributions to theoretical and applied geostatistics

- 1994-1995 **Heisenberg Fellow, German Science Foundation** (Deutsche Forschungsgemeinschaft), at Institute of Arctic and Alpine Research, University of Colorado Boulder
- 2002-2004 **CIRES Visiting Fellow**, at CIRES (Cooperative Institute for Research in Environmental Sciences), University of Colorado Boulder
- 2009 **National Aeronautics and Space Administration Ames Honor Award** to CASIE Project Team for excellence in the category Group/Team; signed by S. Pete Worden, Center Director, Ames Research Center (Ute Herzfeld Coinvestigator of Characterization of Arctic Sea Ice Experiment (CASIE))
- 2010 **National Aeronautics and Space Administration Group Achievement Award** to CASIE Team for outstanding accomplishments in the Characterization of Arctic Sea Ice Experiment (CASIE), conducted in Svalbard, Norway, July 2009; signed by NASA Administrator C. Bold Jr. (Ute Herzfeld Coinvestigator of CASIE)

Positions

- 2018-present **Research Professor, Department of Electrical, Computer and Energy Engineering, University of Colorado Boulder**, Director of the Geomathematics, Remote Sensing and Cryospheric Sciences Laboratory (development of physically constrained mathematical and statistical algorithms and applications in physical sciences, airborne and satellite remote-sensing technology; Development of algorithms for detection of ice surfaces, cloud layers, tree canopy and ground in micro-pulse laser altimeter data for ICESat-2; Classification methods for signal processing; Big Data computational algorithms and analysis; Bering Glacier Surge 2011-2014 (Alaska) and Negribreen Surge 2017-2019 (Svalbard): Airborne and satellite observation, analysis and numerical modeling; Spatial statistical analysis of roughness structures of glaciers and sea ice and their influence on satellite signals; Model-data comparison)
- 2015-present **Department Representative of ECEE to the CU Geophysics PhD Program**
- 2004-present **Senior Research Associate, Cooperative Institute for Research in Environmental Sciences, University of Colorado Boulder** (complex changes in Arctic sea ice, glaciology of fast-moving glaciers in Greenland, Antarctica, Iceland and Alaska, geostatistical classification of sea ice and glaciers from field and remote-sensing data, energy transfer cryosphere – atmosphere)
- 1993-present **Affiliate Professor, Department of Applied Mathematics, University of Colorado Boulder** (advisory of undergraduate and graduate research assistants)
- 2010-2018 **Research Associate Professor, Department of Electrical, Computer and Energy Engineering, University of Colorado Boulder**, Director of the Geomathematics and Remote Sensing Laboratory (development of physically constrained mathematical and statistical algorithms and applications in physical sciences, airborne and satellite remote-sensing technology; Classification methods for signal processing; Big Data computational algorithms and analysis; Development of algorithms for detection of ice surfaces, cloud layers, tree canopy and ground in micro-pulse laser altimeter data for ICESat-2; Bering Glacier Surge 2011-2014 (Alaska) and Negribreen Surge 2017-2018 (Svalbard): Airborne and satellite observation, analysis and parameterization; Spatial statistical analysis of roughness structures of glaciers and sea ice and their influence on satellite signals; Model-data comparison; New course Spring 2011: Remote Sensing, Signal Processing and Spatial Data Analysis ECEN 4004)
- 2007-2008 **Lecturer, Department of Applied Mathematics, CU Boulder** (APPM 7400-001: Spatial Statistics: Theory and Applications, and APPM 2350: Calculus 3 for Engineers)
- 2002-2004 **CIRES Visiting Fellow at the University of Colorado, Boulder** (“Study of ice-surface features as indicators of glaciologic and climatic processes, based on analysis of ground and satellite data”; collaboration with Prof. Dr. Konrad Steffen, Cooperative Institute for Research in Environmental Sciences, and Prof. Dr. Roger Barry, Director, National Snow and Ice Data Center / World Data Center for Glaciology)

- 1995-2009 **Professor (Universitätsprofessor, C3) and Head of Geomathematics Division, University of Trier, Department of Geography and Geosciences** (development and organisation of a geomathematics program, research in geomathematics, remote sensing, geophysics, environmental and cryospheric sciences, Greenland expeditions, instrument development) [on leave 2003-2009]
- 10/1999-3/2000 **Sabbatical** at the University of Colorado, Boulder (snow surface roughness, snow hydrology, and geostatistics; with Prof. Dr. Nel Caine, Institute of Arctic and Alpine Research) and as **Visiting Professor** to the University of British Columbia, Vancouver, Canada (study of damaged material (crevassed glaciers) using continuum damage mechanics and geostatistical classification; with Prof. Dr. Garry Clarke)
- 1995-2003 **Fellow Adjoint and Senior Research Associate, Institute of Arctic and Alpine Research, University of Colorado Boulder**
- 1994-1995 **Heisenberg Fellow, German Science Foundation** (Deutsche Forschungsgemeinschaft; geomathematics and satellite geophysics – applications in polar research)
- 1993-1995 **Research Associate, Institute of Arctic and Alpine Research, University of Colorado Boulder; and Member of the Graduate Faculty, Department of Geological Sciences** (projects in remote sensing, glaciology, geomathematics, marine geology and geophysics)
- 1991-1993 **Assistant Research Geomathematician (Project Scientist) at Scripps Institution of Oceanography, University of California San Diego** (marine geology and geophysics, satellite altimetry over ice and oceans, geomathematics and geophysical inverse theory, data analysis for new shipboard remote-sensing instruments)
- 1988-1992 **Feodor Lynen Research Fellow, Alexander von Humboldt Foundation, Bonn, Germany, at Scripps Institution of Oceanography, University of California at San Diego, USA** (projects in physical oceanography and mathematical geology, geostatistics related to geophysical inverse theory, variography and fractals, with Prof. Dr. W. H. Berger)
- 10/1987-4/1988 **Research Scientist, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Expedition ANTARKTIS VI/3, RV POLARSTERN** (application of geostatistics in the evaluation of SEABEAM data and ground-penetrating radar data of Antarctic glaciers)
- 1987-1988 **Postdoctoral Research Fellow (Deutsche Forschungsgemeinschaft) and Lecturer, Mathematical Geology, Free University of Berlin, Germany** (development of geostatistical methods, spatial continuity measures for geologic and bathymetric data, mineral exploration)
- 7-8/1987 **Visiting Research Scientist, Centre de Géostatistique, Ecole des Mines de Paris, Fontainebleau, France** (theory of geostatistical estimation under constraints)
- 1986-1987 **Assistant Professor, Department of Geology, Bayerische Julius-Maximilians-Universität, Würzburg** (establishment of a mathematical geology program through lectures and seminars, introduction of computer applications)
- 10-11/1984 **Research Scientist during Expedition ANTARKTIS III/1, RV POLARSTERN, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany** (development and implementation of software for the SEABEAM post-processing, coordination of SEABEAM technology course)
- 1984-1986 **Graduate Teaching Assistant in Mathematics, University of Mainz, Germany** (algebra, analysis)
- 1981-1983 **Teaching Assistant in Mathematics, University of Mainz, Germany** (linear algebra, calculus, analysis, differential equations)
- 1980-1981 **Teaching Assistant in Mathematics, University of Warwick, Coventry, Great Britain** (linear algebra, calculus, differential equations)

Synergistic Activities

- (1) Pioneering research in physically, geophysically and environmentally constrained mathematical and spatial statistical methods and algorithms
- (2) Pioneering contributions to establishing geostatistics and geomathematics as a discipline in international and multi-disciplinary research communities
- (3) Development and lead of a graduate and undergraduate Geomathematics Program, Universität Trier, Germany, including statistics, geostatistics, linear algebra, analysis and advanced geomathematics
- (4) Extensive software development for geostatistical estimation and classification systems
- (5) Pioneering work on the role of spatial ice surface roughness in glaciology and remote sensing, through physical and statistical theory, instrument development (Glacier Roughness Sensor, ULS), field work in Greenland and on alpine glaciers
- (6) Geophysical observation of surges of Bering Glacier, Alaska (1993-1995 and 2011-2013), environmental catastrophes associated with sudden accelerations of Americas largest and longest glacier; coordination of airborne remote-sensing observations and classification of laser-altimeter and image data; parameterization of physical processes exemplary of glacial acceleration and disintegration (PI of NSF RAPID response to natural catastrophe project)
- (7) Lead author of ICESat-2 Algorithm Theoretical Base Document (ATBD) for the Atmosphere, Part II: Detection of Atmospheric Layers and Surface Using a Density Dimension Algorithm; also algorithm development for detection of snow, ice and vegetation in next-generation micro-pulse laser altimeter data, in preparation of NASA's ICESat-2 Mission (launch 2018) [2010-present]
- (8) Airborne geophysical data collection to study the surge of Negribreen, Svalbard (2017 and planned for 2018). Collaboration with the University Centre in Svalbard and the Norwegian Polar Institute. Funded participation in the Svalbard Integrated Arctic Earth Observing System (SIOS) as the first PI from a non-European institution (2018).
- (9) PI for European Space Agency (ESA) satellites ERS-1, ERS-2, ENVISAT and CryoSat-2 (launched 2010), 1992-present
- (10) Member of ICESat-2 ad-hoc Science Definition Team, official collaborator of ICESat Project (2003-2009), National Aeronautic and Space Administration (NASA) and PI of ICESat/ICESat-2 research projects funded by NASA Cryospheric Sciences
- (11) Regular contribution to MABEL flight planning (The Multiple Altimeter Beam Experimental Lidar (MABEL) is an aircraft prototype of the ICESat-2 multi beam micro-pulse photon-counting lidar), coordinated by NASA ICESat-2 Project (2010-present)
- (12) Spatial statistical analysis of airborne remote-sensing data from NASA's Operation IceBridge 2009-present
- (13) PI for RADARSAT mission data analysis, Canadian Space Agency and NASA
- (14) Participation in SeaRISE through physically constrained spatial analysis of ice-bed topographic data (SeaRISE is a community project to assess maximal sea-level rise from mass loss of ice sheets), 2010-2013
- (15) Participation in the Ice Sheet Model Intercomparison Project 6 (ISMIP-6) of the World Climate Research Programme (WCRP) Climate Model Intercomparison Project 6 (CMIP-6), established 2014
- (16) Contributions to Community Earth System Modeling (CESM) through the Polar Climate Working Group, Land Ice Working Group and Uncertainty Quantification interest group
- (17) Extensive experience as PI and expedition lead of Greenland glaciology and remote sensing field projects (5 expeditions, 1996-2005)

- (18) Extensive experience in flight-planning and leading of airborne geophysical observations in Greenland, Alaska, Iceland, Canada and Svalbard (Norway) (1993, 1994, 1995, 1996, 1997, 1999, 2001, 2003, 2004, 2005, 2011, 2012, 2013, 2017)
- (19) Co-PI in the 2009 “Characterization of Arctic Sea Ice Experiment” (CASIE; Science PI J. Maslanik), observations of sea ice in the Fram Strait from a base in Ny Alesund, Svalbard, with NASA AMES SIERRA UAV (NASA Airborne Operations PI M. Fladeland); two NASA Awards received 2009, 2010
- (20) Contributions to the International Polar Year through research on sea-ice roughness as an indicator of changes in the Arctic Sea-Ice (collaborative with JPL, Brigham Young University, Ft Hays State University, KS, funded by NASA Cryospheric Sciences)
- (21) Design and development of the Glacier Roughness Sensor (GRS), with Electrical Engineering Group, Universität Trier and supported by Deutsche Forschungsgemeinschaft
- (22) Collaboration on development of UAV laser profilometer system with aerospace engineers, CU Boulder (funded by NSF Arctic Sciences and NASA Cryospheric Sciences)
- (23) Development of a small integrated system for coregistered collection of laser altimeter, video and GPS data of ice surfaces (Bering-Bagley Glacier System, AK), as input for automated surface classification system
- (24) Participation in sea-going expeditions in Antarctica, the Arctic, the central Atlantic and several regions of the Pacific (1984-1992), geophysical surveying and collaboration on development of marine geophysical instrumentation, with Alfred-Wegener Institute for Polar and Marine Research (Germany), Scripps Institution of Oceanography (USA), Lamont-Doherty Geophysical Observatory (USA), NOAA, and Universität Kiel (Germany)
- (25) Development and teaching of new interdisciplinary statistics courses at CU Boulder
- (26) Extensive teaching experience and graduate and undergraduate student advisory (1980-present)
- (27) Faculty advisor of the Student Chapter of the International Association for Mathematical Geosciences at the University of Colorado Boulder (2009-present)
- (28) Member of founding Board of Directors, Alexander von Humboldt Association of America
- (29) PI or Co-PI on 95 funded research projects (85 as PI)
- (30) Introduction of the concept of spatial sea-floor roughness to marine geophysics, study of influence of roughness on acoustic scattering and reverberation
- (31) 20 years of editorship of Computers&Geosciences: Associate Editor 1995-2007, Assistant Editor 1987-1994
- (32) Reviewer for funding agencies in this and other countries

Select Publications (from 5 books and 135 papers, 113 peer-reviewed - for full Publication List please see separate module)

- (1) HERZFELD, U.C. (2004) ATLAS OF ANTARCTICA — Topographic Maps from Geostatistical Analysis of Satellite Radar Altimeter Data, Springer Verlag Heidelberg, New York, Tokyo, 364+XVI pp., 145 maps, 25 figs, 5 tables, 1 chart, CDROM
- (2) HERZFELD, U.C. and S. PALM (2018) ICESat-2 Algorithm Theoretical Base Document for the Atmosphere, Part II: Detection of Atmospheric Layers and Surface Using a Density Dimension Algorithm (Code version v111), v9.0, 20 December 2018, 288 pp. (NASA ICESat-2 Project)
- (3) PALM, S., U. C. HERZFELD and Y. YANG (2018) ICESat-2 Algorithm Theoretical Base Document for the Atmosphere, Part I: Level 2 and Level 3 Data Products, v7.5, 16 June 2018, 83 pp. (NASA ICESat-2 Project)

- (4) HERZFELD, UTE C. , THOMAS TRANTOW, DAVID HARDING and PHILIP DABNEY (2017), Surface-Height Determination of Crevassed Glaciers — Mathematical Principles of an Auto-Adaptive Density-Dimension Algorithm and Validation Using ICESat-2 Simulator (SIMPL) Data, IEEE Transactions in Geoscience and Remote Sensing, doi:10.1109/TGRS.2016.2617323
- (5) TRANTOW, THOMAS and UTE C. HERZFELD (2018), Crevasses as indicators of surge dynamics in the Bering Bagley Glacier System, Alaska: Numerical experiments and comparison to image data analysis, Journal of Geophysical Research: Earth Surface, p. 1615-1637, doi: 10.1029/2017JF004341 (published online 19-June-2018, in print 2018)
- (6) GREVE, RALF, REINHARD CALOV and UTE C. HERZFELD (2017) Projecting the response of the Greenland ice sheet to future climate change with the ice sheet model SICOPOLIS, Low Temperature Science (ISSN 1880-7593), v. 75, p. 117-129, doi: 10.14943/lowtemsci.75.117
- (7) HERZFELD, UTE C., SCOTT WILLIAMS, JOHN HEINRICHS, JAMES MASLANIK and STEVEN SUCHT (2016), Geostatistical and Statistical Classification of Sea-Ice Properties and Provinces from SAR Data — Methods and Applications to Ice Environments Near Point Barrow, Alaska, Remote Sensing (MDPI), volume 8, issue 616, 37 pp., doi:10.3390/rs8080616, www.mdpi.com/journal/remotesensing
- (8) HERZFELD, UTE C, ELIZABETH C. HUNKE, BRIAN MCDONALD and BRUCE WALLIN (2015), Sea Ice Deformation in Fram Strait — Comparison of CICE Simulations with Analysis and Classification of Airborne Remote-Sensing Data, Cold Regions Science and Technology, v. 117, pp. 19-33, doi:10.1016/j.coldregions.2015.05.001
- (9) HERZFELD, UTE C., BRIAN MCDONALD, BRUCE WALLIN, WILLIAM KRABILL, SERDAR MANIZADE, JOHN SONNTAG, HELMUT MAYER, WILLIAM ALEX YEARSLEY, PHILLIP CHEN and ALEXANDER WELTMAN (2014) Elevation Changes and Dynamic Provinces of Jakobshavn Isbræ, Greenland, Derived Using Generalized Spatial Surface Roughness from ICESat GLAS and ATM Data, Journal of Glaciology, v. 60 (223), pp. 834-848, doi:10.3189/2014JoG13J129
- (10) HERZFELD, U.C., B. MCDONALD, B.F. WALLIN, T. NEUMANN, T. MARKUS, A. BRENNER and C. FIELDS (2014) An Algorithm for Detection of Ground and Canopy Cover in Micropulse Photon-Counting Lidar Altimeter Data in Preparation of the ICESat-2 Mission, IEEE Trans. Geoscience and Remote Sensing, p. 2109 - 2125, vol. 52, issue 4, doi: 10.1109/TGRS.2013.2258350
- (11) HERZFELD, UTE C., BRIAN MCDONALD, MACIEJ STACHURA, ROBERT GRIFFIN HALE, PHILIPP CHEN and THOMAS TRANTOW (2013) Bering Glacier Surge 2011: Analysis of Laser Altimeter Data, Annals of Glaciology, v. 54(63), pp. 158–170, doi:10.3189/2013AoG63A348
- (12) HERZFELD, UTE C., BRIAN MCDONALD and ALEXANDER WELTMAN (2013) Bering Glacier and Bagley Ice Valley Surge 2011: Crevasse Classification as an Approach to Map Deformation Stages and Surge Progression, Annals of Glaciology, v. 54(63), pp. 279–286, doi:10/3189/ 2013AoG63A338
- (13) HERZFELD, U.C., J. FASTOOK, R. GREVE, B.W. MCDONALD, B.F. WALLIN and P.A. CHEN (2012) On the influence of Greenland outlet glacier bed topography on results from dynamic ice sheet models, Annals of Glaciology, v. 53(60), pp. 281–293, doi: 10.3189/2012AoG60A061
- (14) HERZFELD, U.C., B.F. WALLIN and M. STACHURA (2012) Applications of Geostatistics in Optimal Design of Satellite Altimetry Orbits and Measurement Configurations, The Journal of the Astronautical Sciences, vol. 58, no. 3, part 2, pp. 495–511
- (15) BINDSCHADLER, ROBERT, SOPHIE NOWICKI, AYAKO ABE-OUCHI, ANDY ASCHWANDEN, HYEUNG CHOI, JAMES FASTOOK, GLEN GRANZOW, GAIL GUTOWSKI,

- UTE HERZFELD, CHARLES JACKSON, JESSE JOHNSON, CONSTANTINE KHROULEV, ANDERS LEVERMANN, WILLIAM H. LIPSCOMB, MARIA A. MARTIN, MATHIEU MORLIGHEM, BYRON PARIZEK, DAVID POLLARD, STEPHEN PRICE, DIAN-DONG REN, FUYUKI SAITO, TATSURU SATO, HAKIME SEDDIK, HELENE SEROUSSI, KUNIO TAKAHASHI, RYAN WALKER and WEI LI WANG (2013) Ice-Sheet Model Sensitivities to Environmental Forcing and Their use in Projecting Future Sea-Level (The SeaRISE Project), *Journal of Glaciology*, Vol. 59, No. 214, doi:10.3189/2013JoG12J125
- (16) HERZFELD, U.C., B.F. WALLIN, C.J. LEUSCHEN and J. PLUMMER (2010), An Algorithm for Adjusting Topography to Grids while Preserving Sub-Scale Morphologic Characteristics — Creating A Glacier Bed DEM for Jakobshavns Trough as Low-Resolution Input for Dynamic Ice Sheet Models, *Computers&Geosciences*, 2011, DOI: 10.1016/j.cageo.2011.02.021
- (17) HERZFELD, U.C. (2008) Master of the Obscure — Automated Geostatistical Classification in Presence of Complex Geophysical Processes, *Math. Geosciences*, 32 p., doi: 10.1007/s11004-008-9174-4
- (18) HERZFELD, U.C., P.J. MCBRIDE, H.J. ZWALLY, and J. DIMARZIO (2008), Elevation changes in Pine Island Glacier, Walgreen Coast, Antarctica, based on GLAS (2003) and ERS-1 (1995) Altimeter Data Analyses and Glaciological Implications, *International Journal of Remote Sensing*, doi:10.1080/01431160802020510, 21 pp.
- (19) HERZFELD, U.C., J. MASLANIK and M. STURM (2006) Geostatistical characterization of snow-depth structures on sea ice near Point Barrow, Alaska — A contribution to the AMSR-ICE03 Field Validation Campaign, *IEEE Transactions on Geoscience and Remote Sensing*, vol. 44, no. 11, p. 3038-3056, doi:10.1109/TGRS.2006.883349
- (20) HERZFELD, U.C., J.E. BOX, K. STEFFEN, H. MAYER, N. CAINE, and M.V. LOSLEBEN (2006) A case study on the influence of snow and ice surface roughness on melt energy, *Zeitschrift Gletscherkunde Glazialgeol.*, v. 39, p. 1-42
- (21) HERZFELD, U.C. (1998) The 1993-1995 surge of Bering Glacier (Alaska) — a photographic documentation of crevasse patterns and environmental changes, *Trierer Geograph. Studien*, 17, 211 pp., *Geograph. Gesellschaft Trier and Fachbereich VI – Geographie/Geowissenschaften, Universität Trier*
- (22) HERZFELD, U.C. (1992) Least squares collocation, geophysical inverse theory, and geostatistics: A bird's eye view, *Geophys. J. Internat.*, vol. 111, no. 2, p. 237-249

Professional Societies — Memberships and Services

- *International Union of Geodesy and Geophysics (IUGG)*
 - Liaison of the International Association of Cryospheric Sciences (IACS) to the IUGG Commission on Mathematical Geophysics (CMG)
- *International Glaciological Society*
 - Scientific Editor: *Annals of Glaciology*, International Symposium on Changes in Glaciers and Ice Sheets, 8-13 July 2013, Beijing, China (published 2014)
 - Reviewer “*Journal of Glaciology*” and “*Annals of Glaciology*”
- *International Statistical Institute*
 - Invited Speaker and Discussion Panel Member, 58th session, Dublin 2011 (Title: “Geophysical and spatial statistical approaches to understanding recent complex changes in Greenland glaciers at centimeter to ice-sheet-wide scales” in IPM 28 “Statistical analysis of nonlinear water systems”)

- Invited Speaker and Discussion Panel Member, 52nd session, Helsinki 1999 (Title: “New approaches to the statistical analysis of satellite and remote sensing data”)
- *International Association for Mathematical Geosciences (IAMG)*
 - Guest Editor of a Special Issue “Geomathematics Today and Tomorrow — A Tribute to Daniel Francis Merriam”, *Mathematical Geosciences* (in progress, 2017-2018)
 - Convener of Symposium “Advances in Remote Sensing of the Cryosphere in the Polar Regions” at the 35th International Geological Congress 2016, Cape Town, South Africa
 - Organisation of a special session on “Geomathematics, Geoinformatics and Remote Sensing” at the 34th International Geological Congress 2012, Brisbane, Australia
 - Organisation of a special session on “Spatial Analysis and Remote Sensing”, IAMG 2005 Meeting “GIS and Spatial Analysis”, Toronto, Canada (co-convener C.R. De Souza Filho, University of Campinas, Brazil)
 - Organisation of a special session on “Understanding Geology and Geophysics through Geomathematical Analysis of Remote Sensing Data”, International Geological Congress, Florence, Italy, 2004 (co-convener D. F. Merriam, University of Kansas)
 - Guest Editor of Special Issue “Inverse Theory in the Earth Sciences”, *Mathematical Geology*
 - Organisation of a session on “Inverse Theory”, Silver Anniversary Meeting, Prague, Czech Republic, Oct. 1993
 - Exhibitor for IAMG at the American Geophysical Union Fall Meeting, Dec. 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
 - Faculty Advisor, Student Chapter of IAMG at the University of Colorado Boulder, 2009-present
 - Assistant Editor of “*Mathematical Geology*”, since 1995
 - Associate Editor of “*Computers & Geosciences*” (1995-2007), Assistant Editor 1987-1994
 - Member, Nomination Committee (President, Vice President, Treasurer, Secretary General, Council) 2003/2004
 - Member of Council 1996–2000; President Nomination Committee 2003
 - Chair, President’s Prize Committee 1994; Member, President’s Prize Committee 1993
 - Recipient of IAMG President’s Prize for Outstanding Contributions to Theoretical and Applied Geostatistics, 1992
- *American Geophysical Union (AGU)*
 - Reviewer “*Geophysical Research Letters*”, “*Journal of Geophysical Research*” and “*Water Resources Research*”
 - Convener and chair of a special session on “Exploration, Observation, and Modeling of Fast-Moving Glaciers, Ice Sheets, and Permafrost Landscapes” in the AGU Cryospheric Sciences Section, Fall Meeting, San Francisco, 2016
 - Convener and co-chair of a special session on “Innovative Mathematical Algorithms for Analysis of Geophysical Big Data” in the AGU Non-linear Geophysics Section, Fall Meeting, San Francisco, 2015
 - Convener and chair of a special session on “Linking Cryospheric Observations and Modeling” in the AGU Cryospheric Sciences Section, Fall Meeting, San Francisco, 2014
 - Convener and co-chair of a special session on “Neural Networks in Geophysics” and of a special session on “Non-Gaussian and Non-linear Techniques for Data Assimilation/Fusion, Predictability, and Uncertainty Quantification and Neural Networks” in the AGU Non-linear Geophysics Section, Fall Meeting, San Francisco, 2014

- Convener and co-chair of a special session on “Fast Glacier Flow” in the AGU Cryospheric Sciences Section, Fall Meeting, San Francisco, 2012
- Representation of IAMG at AGU Fall Meetings through Exhibition, Journal Editorship, Membership Services 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
- Co-Chair of Session ”Nonlinear Geophysics: Horizons”, Nonlinear Geophysics Section, Fall Meeting, San Francisco, 2010
- Organisation of a special session on “Non-Differentiability, Non-Continuity and Roughness of Earth Surfaces” in the AGU Nonlinear Geophysics Section, Fall Meeting, San Francisco, 2010
- Organisation of a special session on “Connecting Observations and Modeling of Glacial Change” in the AGU Cryospheric Sciences Section, Fall Meeting, San Francisco, 2010
- Organisation of a special session on “Snow and Ice Surface Roughness and Remote Sensing” in the AGU Cryospheric Sciences Section, Fall Meeting, San Francisco, 2009
- Organisation of a special session on “Geomathematical Methods for Information Retrieval in Complex Geophysical Systems” (co-convener Q. Cheng, York University, Canada), jointly with geophysical inverse theory in the AGU Nonlinear Geophysics Section, Fall Meeting, San Francisco, 2004
- Organisation of a special session on “Roughness of Snow and Ice Surfaces” in the AGU Cryospheric Sciences Section, Fall Meeting, San Francisco, 2004

- *Alexander von Humboldt Association of America*
 - Member of Founding Board of Directors 1994–1997
 - Founding Member since 1994

- *International Geological Congress*
 - 35th IGC, 2016, Cape Town, South Africa: Convener of Symposium “Advances in Remote Sensing of the Cryosphere in the Polar Regions”
 - 34th IGC, 2012, Brisbane, Australia: Convener of special session “Geomathematics, Geoinformatics and Remote Sensing”
 - 32nd IGC, 2004, Florence, Italy: Convener of special session “Understanding Geology and Geophysics through Geomathematical Analysis of Remote Sensing Data”

- *European Geophysical Society*
 - Assistant Editor of “Journal of Geodynamics” 1994–2001
 - Invited Speaker, European Geophysical Union Meeting, Vienna, 2015, 2016

- *IEEE - Institute of Electrical and Electronics Engineers*
 - Geoscience and Remote Sensing Society (member)
 - Reviewer, Transactions in Geoscience and Remote Sensing

- *Remote Sensing and Photogrammetry Society (UK)*
 - Reviewer, International Journal of Remote Sensing

- *Deutsche Gesellschaft für Polarforschung*
- *American Alpine Club*
- *Deutscher Alpenverein*

PUBLICATION LIST

Books and Special Issue

- (1) DAVIS, J.C. and U.C. HERZFELD (eds.) (1993), *Computers in geology: 25 years of progress*, International Association for Mathematical Geology, Studies in Mathematical Geology, no. 5, Oxford University Press, New York, 298 p.
- (2) HERZFELD, U.C. (Editor) (1996), *Inverse Theory in the Earth Sciences*, Special Issue, *Math. Geol.*, vol. 28, no. 2, p. 133-251
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- (191) THOMAS TRANTOW and UTE HERZFELD, Glacier Surging: Data Analysis and Numerical Experiments, Abstract for Ilulissat Climate Days, June 2015, Ilulissat, Greenland
- (192) UTE C. HERZFELD, THOMAS TRANTOW, LUKAS GOETZ-WEISS and JESSICA BOBECK, Crevasses and supraglacial water as indicators of surge progression: A data analysis perspective, International Symposium on the Hydrology of Glaciers and Ice Sheets, Höfn í Hornafirþí, Iceland, 21-26 June 2015 (<http://www.igsoc.org/abstracts/72a/1767>)
- (193) THOMAS TRANTOW and UTE HERZFELD, Crevasses and supraglacial water as indicators of surge progression: A modeling perspective, International Symposium on the Hydrology of Glaciers and Ice Sheets, Höfn í Hornafirþí, Iceland, 21-26 June 2015 (<http://www.igsoc.org/abstracts/72a/1768>)
- (194) UTE C. HERZFELD, Changes in Pine Island Glacier and Thwaites Glaciers from Analysis of Altimeter Data and Image Classification, 22nd Annual West Antarctic Ice Sheet Workshop, September 16-19, 2015, Sylvan Dale Ranch, Loveland, CO, U.S.A. (<https://www.waisworkshop.org/workshop-2015#Agenda> and <http://tiny.cc/2015agenda>)
- (195) UTE C. HERZFELD, Changes in Greenland Ice Surface Roughness and Relationships to Melting and Glacial Acceleration, American Geophysical Union Fall Meeting, San Francisco, California, Dec 14-18, 2015 (Abstract published)
- (196) MATTHIAS URS HERZFELD MAYER and UTE HERZFELD, Use of Unmanned Aircraft Systems (UAS) in Observations of Glaciers, Ice Sheets, Sea Ice and Snow Fields, American Geophysical Union Fall Meeting, San Francisco, California, Dec 14-18, 2015 (BrightStars Poster Presentation; Abstract published)
- (197) THOMAS TRANTOW and UTE HERZFELD, Changes in the Earth's largest surge glacier system from satellite and airborne altimetry and imagery, American Geophysical Union Fall Meeting, San Francisco, California, Dec 14-18, 2015 (Abstract published)
- (198) PALM, STEVE, UTE HERZFELD and YUEKUI YANG, The Atmospheric Measurements of ICESat-2: Scientific Applications and an Aide to Mission Success, American Geophysical Union Fall Meeting, San Francisco, California, Dec 14-18, 2015 (Abstract published)

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- (199) UTE C. HERZFELD, THOMAS TRANTOW, BRUCE WALLIN, STEPHEN PALM, DAVID HARDING, WILLIAM COOK, THORSTEN MARKUS, THOMAS NEUMANN and KELLY BRUNT, Changes in Greenland and Alaska Ice Surface Roughness and Relationships to Glacial Acceleration — Analyses Using Altimeter Data from ICESat, CryoSat-2 and ICESat-2 Simulator Instruments, Program for Arctic Regional Climate Assessment (PARCA) Meeting, NASA Goddard Space Flight Center, Greenbelt, Maryland, U.S.A., January 20, 2016
- (200) UTE HERZFELD and THOMAS TRANTOW, Greenland bed topography, elevation, and surface roughness: Data sets, grid production for modeling and relevance for modeling results, Community Earth System Modeling (CESM) Land Ice Working Group Meeting, 9-10 February 2016, National Center for Atmospheric Research, Boulder, Colorado, U.S.A. (<https://www2.cesm.ucar.edu/sites/default/files/wg/agendas/LIWG16.pdf>)
- (201) THOMAS TRANTOW and UTE HERZFELD, Modeling glacial deformation using Bering Glacier as a test case, Community Earth System Modeling (CESM) Land Ice Working Group Meeting, 9-10 February 2016, National Center for Atmospheric Research, Boulder, Colorado, U.S.A. (<https://www2.cesm.ucar.edu/sites/default/files/wg/agendas/LIWG16.pdf>)
- (202) UTE C. HERZFELD, ELIZABETH HUNKE, THOMAS TRANTOW, GAVIN MEDLEY, LUKAS GOETZ-WEISS, BRIAN MCDONALD and BRUCE WALLIN, Deformation parameters derived from

- suborbital remote sensing observations compared to CICE parameters, Community Earth System Modeling (CESM) Polar Climate Working Group, 9-10 February 2016, National Center for Atmospheric Research, Boulder, Colorado, U.S.A.
(<https://www2.cesm.ucar.edu/sites/default/files/wg/agendas/PCWG16.pdf>, Paper available under <http://www.cesm.ucar.edu/events/meetings/20160208/presentations/pcwg/herzfeld.pdf>)
- (203) UTE C. HERZFELD and THOMAS TRANTOW, Glacial Acceleration - Remote-Sensing Observations, Geomathematical Classification and Relevance for Sea-level Change Assessment, 35th International Geological Congress, Cape Town, South Africa, August 28 -September 4, 2016
- (204) THOMAS TRANTOW and UTE HERZFELD, Deformation on Bering Glacier, Alaska: Modeling of continuum damage with comparisons to aerial observations, 35th International Geological Congress, Cape Town, South Africa, August 28 -September 4, 2016
- (205) GAVIN MEDLEY, THOMAS TRANTOW, UTE HERZFELD, DAVID HARDING and PHILLIP DABNEY, Land ice surface detection and characterization from high altitude lidar data obtained by NASA's Slope Imaging Multi-polarization Photon-counting Lidar (SIMPL) Instrument, 35th International Geological Congress, Cape Town, South Africa, August 28 -September 4, 2016
- (206) UTE C. HERZFELD, THOMAS TRANTOW and GAVIN MEDLEY, Changes in surface roughness of Greenland tidewater glaciers — Indicators of glacial acceleration?, International Symposium on Interactions of Ice Sheets and Glaciers with the Ocean: Scripps Institution of Oceanography, La Jolla, California, USA, 10-15 July 2016, <http://www.igsoc.org/abstracts/74a/2123/>
- (207) TIMOTHY CREYTS, ANDREW FOUNTAIN and UTE HERZFELD, Greenland englacial drainage of water transport through a fractured aquifer, International Symposium on Interactions of Ice Sheets and Glaciers with the Ocean: Scripps Institution of Oceanography, La Jolla, California, USA, 10-15 July 2016, <http://www.igsoc.org/abstracts/74a/2128/>
- (208) UTE HERZFELD, THOMAS TRANTOW, MASON MARKLE, GAVIN MEDLEY, THORSTEN MARKUS and THOMAS NEUMANN, New approaches to observation and modeling of fast-moving glaciers and ice streams, American Geophysical Union Fall Meeting, San Francisco, California, Dec 12-16, 2016
- (209) GAVIN MEDLEY, UTE HERZFELD, THOMAS TRANTOW, STEVEN PALM, THORSTEN MARKUS, TOM NEUMANN, DAVID HARDING and PHILLIP DABNEY, The ICESat-2 Density Dimension Algorithm (DDA): Applications to Ice Surface Characterization and Cloud Layer Detection, American Geophysical Union Fall Meeting, San Francisco, California, Dec 12-16, 2016
- (210) MASON MARKLE, UTE HERZFELD, TOMAS JOHANNESSEN and GAVIN MEDLEY Elevation Change and Surface Roughness of Vatnajökull, Langjökull and Derived from Analysis of Airborne Lidar Altimeter Data and ICESat-2 Simulator Data, American Geophysical Union Fall Meeting, San Francisco, California, Dec 12-16, 2016
- (211) THOMAS TRANTOW and UTE HERZFELD, Crevasses as indicators of surge dynamics in the Bering Bagley Glacier System, Alaska: Numerical experiments and comparison to image data analysis, American Geophysical Union Fall Meeting, San Francisco, California, Dec 12-16, 2016
- (212) LUKAS GOETZ-WEISS, UTE HERZFELD and THOMAS TRANTOW Automated connectionist-geostatistical classification as an approach to identify sea ice and land ice types, properties and provinces, American Geophysical Union Fall Meeting, San Francisco, California, Dec 12-16, 2016
- Published Abstracts and Presentations 2017*
- (213) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, ICESat-2 Atmospheric Data and Applications to the Polar Region, 97th American Meteorological Society Annual Meeting, Seattle, Washington, January 22-26, 2017, <https://ams.confex.com/ams/97Annual/webprogram/Paper304399.html>
- (214) UTE HERZFELD, ELIZABETH HUNKE, THOMAS TRANTOW, MATTIA ASTARITA and SAMUEL BENNETTS, A Multi-Model and Model-Data Comparison Tool for ISMIP-6 and SIMIP-6, Land Ice Working Group and and Polar Climate Working Group, Community Earth System Modeling (CESM) Meeting, NCAR, Boulder, March 1, 2017
- (215) UTE HERZFELD, THOMAS TRANTOW, VEIT HELM, Challenges and approaches to altimeter-data analysis of rapidly changing and heavily crevassed glacier systems: The Bering-Bagley Glacier System, Alaska, during surge in the view of CryoSat-2, ICESat-2 and airborne altimetry, North-American CryoSat Science Meeting, 20-24 March 2017, Banff, Alberta, Canada
- (216) THOMAS TRANTOW and UTE HERZFELD, Numerical Experiments of surface crevassing during

- the surge of the Bering-Bagley Glacier System in 2011-2013 and sensitivity to CryoSat-2 processing, North-American CryoSat Science Meeting, 20-24 March 2017, Banff, Alberta, Canada
- (217) GAVIN MEDLEY, UTE HERZFELD and THOMAS TRANTOW, Surface characterization of crevassed glaciers, North-American CryoSat Science Meeting, 20-24 March 2017, Banff, Alberta, Canada
- (218) UTE HERZFELD, Measuring and modeling crevasses; Land Ice Working Group, 22nd Annual CESM Meeting 2017, Boulder, CO, 19-22 June 2017
- (219) THOMAS TRANTOW and UTE HERZFELD, Numerical Experiments of Surge Crevassing in the Bering Bagley Glacier System, Alaska, and Comparisons to Image Analysis; LIWG, 22nd Annual CESM Meeting 2017, Boulder, CO, 19-22 June 2017
- (220) UTE HERZFELD, THOMAS TRANTOW and SAMUEL BENNETTS, Observations of the Current Surge of Negribreen, Svalbard, International Symposium on Polar Ice, Polar Climate, Polar Change, Boulder, Colorado, 14-19 August 2017 (76A2639) [<https://www.igsoc.org/symposia/2017/boulder/proceedings/program>]
- (221) UTE HERZFELD, THOMAS TRANTOW and GAVIN MEDLEY, Crevassed Glaciers, Ice Streams and Ice Shelves in the Views of ICESat-2 and CryoSat-2, International Symposium on Polar Ice, Polar Climate, Polar Change, Boulder, Colorado, 14-19 August 2017 (76A2623) [<https://www.igsoc.org/symposia/2017/boulde>]
- (222) THOMAS TRANTOW and UTE HERZFELD, A numerical modeling approach to surge crevassing: validation and comparison with observations, exemplified for the Bering-Bagley Glacier System during surge, International Symposium on Polar Ice, Polar Climate, Polar Change, Boulder, Colorado, 14-19 August 2017 (76A2622) [<https://www.igsoc.org/symposia/2017/boulder/proceedings/profiles/postera.html>]
- (223) UTE HERZFELD, THOMAS TRANTOW and SAMUEL BENNETTS, Surge of Negribreen, Svalbard, American Geophysical Union Fall Meeting 2017, New Orleans, 11-15 Dec 2017 (<https://agu.confex.com/agu/fm17/prelin>)
- (224) THOMAS TRANTOW and UTE HERZFELD, Model-data comparisons of crevasses in accelerating glaciers exemplified for the 2011-2013 surge of Bering Glacier, Alaska, American Geophysical Union Fall Meeting 2017, New Orleans, 11-15 Dec 2017

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- (225) UTE HERZFELD, THOMAS TRANTOW and ELIZABETH HUNKE, Model-data comparison for glaciers, ice sheets and sea ice, Community Earth System Model (CESM) Meeting, Land Ice Working Group and Polar Working Group Joint Session, NCAR, Boulder, 11 Jan 2018 (oral presentation)
- (226) UTE HERZFELD, Surface-height and cloud retrieval from ICESat-2 over complex surfaces and relevance for modeling of complex processes, Inter-Agency Arctic Workshop, National Center for Atmospheric Research, Boulder, April 9, 2018 (oral presentation)
- (227) UTE HERZFELD, THOMAS TRANTOW (2018) GAVIN MEDLEY, ALEC STILLER, SAMUEL BENNETTS, STEPHEN PALM, DAVID HARDING, PHIL DABNEY (2018) Airborne and ICESat-2 Surface Height Retrieval over Complex and Crevassed Terrain — Relevance for Ice-Dynamic Modeling and Elevation-Change Assessment, Community Earth System Modeling (CESM) Workshop, Joint Land Ice and Polar Climate Working Group Session, National Center for Atmospheric Research, Boulder, 18-20 June 2018 (oral presentation)
- (228) THOMAS TRANTOW, UTE HERZFELD (2018), Constraining Model Parameters using Surge Crevassing, Community Earth System Modeling (CESM) Workshop, Joint Land Ice and Polar Climate Working Group Session, National Center for Atmospheric Research, Boulder, 18-20 June 2018 (oral presentation)
- (229) UTE HERZFELD, STEPHEN PALM, THOMAS TRANTOW and TASHA MARKLEY, Detection of tenuous cloud layers, aerosols and blowing snow and applications in climate science and transportation hazard assessment ? Post-launch update, ICESat-2 Early Adopter Benchmark Meeting, Boulder, Oct 31-Nov 1, 2018
- (230) UTE HERZFELD, THOMAS TRANTOW, CONNOR MYERS, ANNIE ZAINO (2018), Evaluation of ICESat-2 Surface Height Determination over Crevassed and Other Complex Ice Surfaces: Negribreen, Svalbard, During Surge and Fast-Moving Greenland Glaciers, American Geophysical Union Fall Meeting 2018, Washington, DC, 10-14 December 2018 (abstract and presentation)
- (231) THOMAS TRANTOW, UTE HERZFELD, VEIT HELM, JOHAN NILSSON (2018) Effects of CryoSat-2 Processing Techniques on Modeled Ice Dynamics in a Large Alaskan Mountain Glacier, American Geophysical Union Fall Meeting 2018, Washington, DC, 10-14 December 2018 (abstract and presen-

tation)

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- (232) UTE HERZFELD, THOMAS TRANTOW (2019) Towards a new community software for data-model connection, Community Earth System Modeling (CESM) Workshop, Joint Land Ice, and Polar Climate and Paleoclimate Working Group Meeting, National Center for Atmospheric Research, Boulder, 4-5 February 2019 (oral presentation)
- (233) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, ICESat-2 Lidar Measurements of the Polar Atmosphere, American Meteorological Society, 99th Annual Meeting, Phoenix, Arizona, USA, 6-10 January 2019

Select Recent Oral Presentations not Included in Abstracts Section (2005-2019)

Presentations 2005-2010

- (1) HERZFELD, U.C. (with contributions from Patrick McBride, Jay Zwally, John DiMarzio, Robert Thomas, William Krabill, Serdar Manizade, Gino Casassa and Andres Rivera), New DEMs for Pine Island Glacier from GLAS — Data Analysis and Glaciologic Change Detection, ICESat Science Team Meeting, March 2005, Boulder, Colorado (Oral Presentation)
- (2) HERZFELD, U.C., Recent Rapid Changes in Alaskan and Greenland Glaciers—Results from Field Work, Satellite Observations and Geostatistical Analysis, Geophysics Seminar, Colorado School of Mines, March 2005
- (3) HERZFELD, U.C., Classification of Sea-Ice Properties from Data at Multiple Scales, Cryospheric and Polar Processes Seminar, CIRES, Jan 2007 (Seminar)
- (4) HERZFELD, U.C., From Centimeter Scale to Continental Scale — Applications of Geoinformatics in Oceanography, Geophysics and Cryospheric, University of Northern Colorado, Greeley, Geophysics Seminar, 28 September 2007
- (5) HERZFELD, U.C., Complex Structures in Arctic Sea Ice and a Note on Walgreen Coast, Antarctica; ICESat Science Team Meeting, March 2008, LASP, Boulder (Oral Presentation)
- (6) HERZFELD, U.C. (with input from Ron Kwok, Jay Zwally, Alexander Marshak, Bob adler, John Degnan, John Heinrichs, Bruce Wallin, Danielle Lirette and Steve Sucht), Experiments on Assessment of Information Gain Using a Multi-Beam Channel for ICESat-2, ICESat-2 ad-hoc Science Definition Team Meeting, Sept. 4-5, 2008, Boulder, Colorado (Oral Presentation)
- (7) HERZFELD, U.C., Spatial Statistical Estimation and Classification — Theory and Applications from Centimeter to Continental Scale, Seminar at Colorado State University, Fort Collins, Department of Statistics, 15 September 2008
- (8) HERZFELD, U.C., Spatial Statistics Between Remote-Sensing Technology and Cryospheric Sciences – Theory and Applications from Centimeter to Continental Scale, Seminar Electrical and Computer Engineering, University of Colorado Boulder, 23 September 2008
- (9) HERZFELD, U.C. , Notes on the Influence of the Estimation Algorithm and Track Spacing on DEM Accuracy, ICESat Science Team Meeting, Buffalo, New York, Sept. 30 - Oct. 2, 2008 (Oral Presentation)
- (10) HERZFELD, U.C. (with input from PatrickMcBricde, Bruce Wallin, Danielle Lirette, Steve Sucht, Jay Zwally and John DiMarzio), Analysis of Elevation Changes of Pine Island Glacier and Simulation of its Spatial Characteristics, ICESat Science Team Meeting, Buffalo, New York, Sept. 30 - Oct. 2, 2008 (Oral Presentation)
- (11) HERZFELD, U.C. , Using Satellite Data, Field Expeditions and Spatial Statistics to Study Physical Changes in Greenland and Antarctic Glaciers, Physics Seminar, Colorado State University Pueblo (February 2009)
- (12) HERZFELD, U.C., Interpolation — Simulation — Classification: Approaches to Understanding Complex Morphogenesis of Sea Ice, Oral Presentation at NASA IPY Project Workshop, University of Colorado, Boulder, March 2009
- (13) HERZFELD, U.C., On the Role of Ice Surface Roughness and Surface Features at Several Scales in

- Detection of Cryospheric Changes with ICESat and CryoSat, CryoSat/ ICESat Meeting, University of Iceland, Reykjavik, Iceland, June 2009 (Oral Presentation)
- (14) Zaugg, E., Long, D., Edwards, M., Fladeland, M., Kolyer, R., Crocker, R., Maslanik, J., Herzfeld, U., 2009, Environmental Science Combining Data from a Small SAR on an Unmanned Aircraft with Satellite Observations: The microASAR on the NASA SIERRA UAS for the Characterization of Arctic Sea Ice Experiment (CASIE), CEOS SAR 2009: CEOS SAR Workshop Calibration and Validation, <http://uavsar.jpl.nasa.gov/ceos2009/ceoscalval.html>, Pasadena, California, (Presentation by M. Edwards)
 - (15) HERZFELD, U.C., B. WALLIN, Surface Roughness as Indicator of Geophysical Change in Greenland Glaciers and Ice Streams — Conclusions from ICESat and IceBridge Data Analysis (- and Model Implications?), Land Ice Working Group Meeting, Community Climate System Model, NCAR, Boulder, February 17, 2010 (see <http://www.cesm.ucar.edu/>)
 - (16) HERZFELD, U.C., Measurement Requirements and New Observation Technology in Quest of Studying Cryospheric Change — Examples of Using Spatial Statistics to Connect Science and Engineering, Seminar, Department of Electrical, Computer and Energy Engineering, University of Colorado Boulder, February 23, 2010
 - (17) E. Zaugg, D. Long, M. Edwards, M. Fladeland, R. Kolyer, I. Crocker, J. Maslanik, U. Herzfeld, and B. Wallin, Using the MicroASAR on the NASA SIERRA UAS in the Characterization of Arctic Sea Ice Experiment, IEEE Radar Conference, May 2010, <http://www.radar2010.com/>, (Presentation by E. Zaugg)
 - (18) HERZFELD, U.C., B. WALLIN, Ice Surface Roughness – Laser Signals – Geophysical Processes: Conclusions from ICESat and IceBridge Data Analysis, ICESat-2 Science Definition Team Meeting Presentation May 2010, Boulder, Colorado, <http://icesat.gsfc.nasa.gov/icesat2/internal/index.php>
 - (19) HERZFELD, U.C., B. MCDONALD and B. WALLIN, Algorithm Development and Data Analysis of SIGMA Photon-Counting Aircraft Altimeter Measurements and Relevance for MABEL and ICESat-2 Observations, Presentation at ICESat-2 Surface and Canopy Height Finding Algorithm Workshop (Teleconference), 31 Oct 2010 and 2 Nov 2010,
 - (20) HERZFELD, U.C., B. MCDONALD and B. WALLIN, Algorithm Development and Data Analysis of SIGMA Photon-Counting Aircraft Altimeter Measurements and Relevance for MABEL and ICESat-2 Observations — New Results, Presentation at ICESat-2 Science Definition Team Vegetation Teleconference, 16 Nov 2010
 - (21) HERZFELD, U.C., Bridging Observations and Models Through Physically Constrained Mathematical Data Analysis, talk presented at a special AGU dinner meeting “Observational Requirements to Improve Ice Sheet Models”, organized by Center for Remote Sensing of Ice Sheets (CReSIS), University of Kansas, AGU Fall Meeting Dec 13. 2010
- Presentations 2011 (Presentations without Abstracts or Available on Password-Protected Sites)*
- (22) HERZFELD, U.C., B.F. WALLIN, P.A. CHEN, C. LEUSCHEN, R. GREVE and A. ASCHWANDEN, Connecting Observations and Modeling: Importance of Bed Topography in Dynamic Ice Sheet Models and Scale-dependent Simulations, Community Earth System Modeling (CESM) Land Ice Working Group Meeting, NCAR, Boulder, Colorado, Jan 12-13, 2011, Presentation at <http://www.cesm.ucar.edu/>
 - (23) HERZFELD, UTE C., Spatial Roughness and Spatial Characterization of Sea Ice, Community Earth System Modeling (CESM) Polar Working Group Meeting, NCAR, Boulder, March 1, 2011, Presentation at <http://www.cesm.ucar.edu/>
 - (24) HERZFELD, UTE C., Algorithm Development and Data Analysis of SIGMA Photon-Counting Aircraft Altimeter Measurements and Relevance for MABEL and ICESat-2 Observations, ICESat-2 Science Definition Team Meeting, February 23-24, 2011, NASA Goddard Space Flight Center, Greenbelt, Maryland, Oral presentation available on ICESat-2 Science Definition Team website
 - (25) HERZFELD, UTE C., Roughness and Ice Dynamics From Spatial Statistics and Waveform Analysis, ICESat-2 Science Definition Team Meeting, February 23-24, 2011, NASA Goddard Space Flight Center, Greenbelt, Maryland, Oral presentation available on ICESat-2 Science Definition Team website
 - (26) HERZFELD, UTE C., Interpolation - Simulation - Classification: Mathematics as a Bridge Between Cryospheric Sciences, Observations and Engineering, NASA Goddard Space Flight Center, Cryospheric Sciences Branch, Greenbelt, Maryland, Seminar February 25, 2011

- (27) HERZFELD, UTE C., First results from analyses of MABEL data over forested areas and snow surfaces [and remarks on processing of ICESat-2 data from complex and diffuse reflectors (forests, clouds, blowing snow, rough ice areas)], ICESat-2 Science Definition Team Meeting, University of California San Diego, La Jolla, California, September 7-8, 2011, Oral presentation available on ICESat-2 Science Definition Team website

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- (28) HERZFELD, UTE C., Complexity in Sea Ice, Glaciers and Ice Sheets – Observation, Analysis, Parameterization and Implications for Modeling, Seminar, Los Alamos National Laboratory, March 7, 2012
- (29) HERZFELD, UTE C. and BRIAN MCDONALD, Surges of Bering Glacier, Cordova High School, Science class (9th grade science class, September 2012)
- (30) HERZFELD, UTE C. and BRIAN MCDONALD, Surges of Bering Glacier, Cordova High School, Science class (11 and 12th grade science classes, September 2012)
- (31) HERZFELD, UTE C., STEPHEN PALM and BRIAN MCDONALD, Algorithm Development for MABEL and Implications for ICESat-2 Data Analysis: Applications to Atmosphere and Ice Surfaces, ICESat-2 Science Definition Team Meeting, University of Texas Austin, October 29-30, 2012 (Presentation; Talk available on ICESat-2 Science Definition Team website)
- (32) STEPHEN PALM, YUEKI YANG and UTE HERZFELD, ICESat-2 Atmospheric Data Products and Algorithm Development, ICESat-2 Science Definition Team Meeting, University of Texas Austin, October 29-30, 2012 (Presentation given by UCH; Talk available on ICESat-2 Science Definition Team website)
- (33) HERZFELD, UTE C., From ICESat-2 to Bering Glacier, Alaska — New Approaches in Laser Altimetry to Help Us Understand Changes and Dynamics of the Cryosphere, Department Seminar, Electrical, Computer and Energy Engineering, University of Colorado Boulder, November 6, 2012

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- (34) HERZFELD, UTE C., The 2011-2012 Surge of Bering Glacier, Alaska, Lafayette Elementary School, 4th Grade, Science class, 23 January 2013
- (35) HERZFELD, UTE C., STEPHEN PALM, BRIAN MCDONALD and JESSICA SEERSMA, Results from Analyses of MABEL Data: Cloud Boundaries and Cloud Layers, Vegetation and Ice Surfaces, ICESat-2 Science Definition Team Meeting, NASA Goddard Space Flight Center, 5-6 May 2013 (Presentation available on ICESat-2 Science Definition Team website) Science Definition Team
- (36) STEPHEN PALM, YUEKI YANG and UTE HERZFELD, ICESat-2 Atmospheric Data Products and Algorithm Development, ICESat-2 Science Definition Team Meeting, NASA Goddard Space Flight Center, 5-6 May 2013 (Presentation available on ICESat-2 Science Definition Team website)
- (37) STEPHEN PALM, YUEKI YANG and UTE HERZFELD, Progress in ICESat-2 Atmospheric Data Products and Algorithm Development, ICESat-2 Atmosphere Algorithm Telecon, August 2013 (Presentation available on ICESat-2 Science Definition Team website)

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- (38) STEPHEN PALM, YUEKI YANG and UTE HERZFELD, ICESat-2 Atmospheric Data Products and Algorithm Development, ICESat-2 Science Definition Team Meeting, University of California San Diego, January 2014 (Presentation available on ICESat-2 Science Definition Team website)
- (39) HERZFELD, UTE C., MICHAEL LEFSKY, DAVID HARDING, BRIAN MCDONALD and BRUCE WALLIN, 2014, MABEL and MATLAS Data Analysis: Mathematical Algorithms, Application and Validation using GLIHT data, ICESat-2 Science Definition Team Meeting, NASA Goddard Space Flight Center, 11-12 May 2014 (Presentation available on ICESat-2 Science Definition Team website)
- (40) HERZFELD, UTE C., STEPHEN PALM and BRIAN MCDONALD, 2014, Detection of clouds and other atmospheric layers in MABEL and M-ATLAS data using a density dimension algorithm, ICESat-2 Science Definition Team Meeting, NASA Goddard Space Flight Center, 11-12 May 2014 (Presentation available on ICESat-2 Science Definition Team website)

- (41) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, 2014, ICESat-2 Atmospheric Data Products and Algorithm Development, ICESat-2 Science Definition Team Meeting, NASA Goddard Space Flight Center, 11-12 May 2014 (Presentation available on ICESat-2 Science Definition Team website)

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- (42) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, Atmospheric Applications of ICESat-2, ICESat-2 Science Definition Team Meeting, NASA Goddard Space Flight Center, February 2015 (Presentation available on ICESat-2 Science Definition Team website)
- (43) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, ICESat-2 Atmosphere Algorithm Theoretical Base Document (ATBD), Presentation given to NASA's ICESat-2 ATBD Review Panel, February 2015
- (44) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, ICESat-2 Atmospheric Data Products and Algorithm Development, ICESat-2 Science Definition Team Meeting, University of Washington, Seattle, October 2015 (Presentation available on ICESat-2 Science Definition Team website)

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- (45) UTE HERZFELD, Greenland and Alaska Ice Surface Roughness, Firn Cover and Glacial Acceleration — Challenges and Possibilities Indicated by Analysis of MABEL and SIMPL Data, ICESat-2 Science Definition Team Meeting, Jet Propulsion Laboratory, Pasadena, California, April 11-14, 2016
- (46) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, ICESat-2 Atmospheric Data Products and Algorithm Development, ICESat-2 Science Definition Team Meeting, Jet Propulsion Laboratory, Pasadena, California, April 11-14, 2016
- (47) UTE C. HERZFELD, THOMAS TRANTOW, GAVIN MEDLEY, DAVID HARDING, WILLIAM COOK, THORSTEN MARKUS, THOMAS NEUMANN and KELLY BRUNT, Changes in Greenland and Alaska Ice Surface Roughness and Relationships to Glacial Acceleration - Analyses using Altimeter Data from ICESat GLAS and ICESat-2 Simulator Instruments, CIRES Science Rendezvous, May 13, 2016
- (48) THOMAS TRANTOW and UTE HERZFELD, Changes in the Earth's largest surge glacier system from satellite and airborne altimetry and imagery, CIRES Science Rendezvous, May 13, 2016
- (49) UTE C. HERZFELD, THOMAS TRANTOW, GAVIN MEDLEY A Multi-Model-Data Comparison Approach for ISMIP-6 and Greenland Observations: MAPCOMP, ICESat-2 Outlook and Greenland Bed Topography, ISMIP-6 Workshop, San Francisco, Dec 11, 2106

Presentations 2017 (Presentations without Abstracts or Available on Password-Protected Sites)

- (50) UTE HERZFELD, STEPHEN PALM and MARK VAUGHAN, Detection of tenuous cloud layers, aerosols and blowing snow and applications in climate science and transportation hazard assessment, Joint ICESat-2 Atmospheric Tutorial with CALIPSO, EARTH-CARE, ADM-AEOLUS and CATS, May 31-June 1, 2017, hosted by the NASA Ice, Cloud and land Elevation Satellite-2 (ICESat-2) Mission and the University of Colorado Boulder
- (51) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, The ICESat-2 Atmospheric Channel: Characteristics and Planned Products, Joint ICESat-2 Atmospheric Tutorial with CALIPSO, EARTH-CARE, ADM-AEOLUS and CATS, May 31-June 1, 2017, hosted by the NASA Ice, Cloud and land Elevation Satellite-2 (ICESat-2) Mission and the University of Colorado Boulder
- (52) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, Validation of ICESat-2 Atmospheric Data Products, ICESat-2 Science Definition Team Meeting, Boulder, Colorado, 16-18 October 2017
- (53) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, Status of Algorithm Development for Atmospheric Data Products, ICESat-2 Science Definition Team Meeting, Boulder, Colorado, 16-18 October 2017

Presentations 2018 (Presentations without Abstracts or Available on Password-Protected Sites)

- (54) UTE HERZFELD, Applications of Blowing Snow Information in Transportation Hazard Warning and Climate Model Sensitivity, Early Adopter Round Table - ICESat-2 Land-Vegetation and Atmospheric Science Data, 20 Feb 2018, online workshop hosted by the NASA Ice, Cloud and land Elevation Satellite-2 (ICESat-2) Mission (oral presentation)

- (55) UTE HERZFELD, STEPHEN PALM and MARK VAUGHAN, Detection of tenuous cloud layers, aerosols and blowing snow and applications in climate science and transportation hazard assessment, Early Adopter Round Table - ICESat-2 Land-Vegetation and Atmospheric Science Data, 20 Feb 2018, online workshop hosted by the NASA Ice, Cloud and land Elevation Satellite-2 (ICESat-2) Mission (oral presentation)
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- (58) UTE HERZFELD, THOMAS TRANTOW, CONNOR MYERS and ANNIE ZAINO, Lasers Large and Small — From the Surge of Negribreen, Svalbard, to NASA's ICESat-2 Mission: Update on Data Collection under the SIOS Pilot Project 2018; Seminar presented at the University Centre in Svalbard (UNIS), 20 July 2018
- (59) UTE HERZFELD, Lasers Large and Small — From the Surge of Negribreen, Svalbard, to NASA's ICESat-2 Mission, Outreach presentation at Centaurus High School, Lafayette, Colorado, 30 November 2018
- (60) UTE HERZFELD, STEPHEN PALM, THOMAS TRANTOW and TASHA MARKLEY, Analysis of Post-Launch ICESat-2 Atmosphere Data: Parameter Optimization for Layer Detection, Quality Assessment and Comparison of Beams, ICESat-2 Science Definition Team Meeting NASA Goddard Space Flight Center, Nov 13-14, 2018 (oral presentation)
- (61) STEPHEN PALM, YUEKUI YANG and UTE HERZFELD, ICESat-2 Atmospheric Data Products, Update after Launch of ICESat-2, ICESat-2 Science Definition Team Meeting NASA Goddard Space Flight Center, Nov 13-14, 2018 (oral presentation)
- (61) UTE HERZFELD, STEPHEN PALM, ICESat-2 ATBD for the Atmosphere: Quality Assessment, Evaluation and Improvement Plans after Launch: Atmospheric Layer Products, ICESat-2 SDT and ATBD Meeting, CalTech, Pasadena, California, 1-3 May 2018

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- (3) NEFF, T., Boulder scientist maps Antarctica, *Daily Camera*, Boulder, Colorado, 18 May 2005, p. 3A
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- (6) Negribreen - a surging glacier under investigation through an SIOS access project (July 2018), https://sios-svalbard.org/NegribreenSurge_2018 (report written by UTE HERZFELD and INGER JENNINGS, SIOS)