

CURRICULUM VITAE : KONRAD STEFFEN

Swiss Federal Research Institute WSL
 Zürcherstr. 111, CH-8903 Birmendorf, Switzerland
 Tel: +41 44 739 24 55; Konrad.steffen@wsl.ch, koni@ethz.ch
 US and Swiss Citizen, married and two kids

EDUCATION

Dr.sc.nat.ETH,1984 Surface temperature distribution of an Arctic polynya: North Water in winter; advisor
 Prof. Dr. Atsumu Ohmura, ETH-Zürich.
 Dipl.nat.ETH, 1977 Snow distribution on tundra and glaciers on Axel Heiberg Island, NWT, Canada; advisor
 Prof. Dr. Fritz Müller, ETH-Zürich.

PROFESSIONAL EXPERIENCES

2017-present Science Director, Swiss Polar Institute
 2012-present Director, Swiss Federal Research Institute WSL
 2012-present Professor, Inst. Atmosphere & Climate, ETH-Zürich
 2012-present Professor, Architecture, Civil and Environmental Engineering, EPF-Lausanne
 2005- 2012 Director, Cooperative Institute for Research in Environmental Sciences (CIRES),
 University of Colorado (CU)
 2004-2005 Interim Director, CIRES, University of Colorado (CU)
 2003-2004 Deputy Director, CIRES, University of Colorado (CU)
 2002-2003 Interim Director, CIRES, University of Colorado (CU)
 1998-2005 Associate Director Cryosphere and Polar Processes, CIRES
 1997-2012 Professor at Dept. of Geography, University of Colorado at Boulder
 1993-2012 Faculty, Program in Atmospheric and Oceanic Sciences
 1991-1997 Associate Professor at Dept. of Geography, University of Colorado
 1991-2012 Fellow CIRES, University of Colorado at Boulder
 Sept.-Oct. 1987 Visiting Professor at Dept. of Geography, McGill University, Montreal
 1986-1988 Visiting Fellow at Cooperative Institute for Research in Environmental Sciences
 (CIRES), on leave from ETH for two years
 1985-1990 Oberassistent (Lecturer) at Climate Research Group, ETH, Zürich, Switzerland
 1983-1985 Assistant at Climate Research Group, ETH, Zürich, Switzerland

RECENT GRADUATE STUDENTS

Dr. Waleed Abdalati, University of Colorado, Prof. in Geography, Director of CIRES
 Dr. Atsu Muto, Penn State University, Post-Doc
 Dr. Thomas Phillips, University of Colorado, Post-Doc
 Dr. Jason Box, Ohio State University, Assoc. Prof. in Geography
 Dr. Nicolas Cullen, Department of Geography, University of Otago, Dunedin, New Zealand
 Dr. John Heinrichs, Fort Hays State University, Assoc. Prof. in Dept. Geosciences
 Dr. Marcel Haefliger, Swiss Meteorological Institute, CH-8044 Zurich; Switzerland
 Dr. Axel Schweiger, Polar Science Center/Applied Physics Lab, University of Washington
 Dr. Julianne Stroeve, NSIDC, University of Colorado
 Dr. Sandy Starkweather, NOAA/CIRES Boulder, Colorado
 Dr. Andrew Slater, NSIDC/CIRES, University of Colorado, Boulder, USA
 Dr. David Levinson, Climate Monitoring Branch, NOAA/NESDIS, Asheville, NC
 Dr. Russell Huff, GIS Company, Boulder, CO
 Dr. Dan McGrath, University of Colorado, CIRES, post-doc
 Dr. John Adler, NOAA Washington D.C.
 Dr. Liam Colgan, University of Copenhagen, post Doc
 Dr. Reza Naderpour, Swiss Federal Research Institute WSL, post-doc

Mr. John Maurer, Hawaii Ocean Observing System
 Ms. Molly Mcallister, NISDC, University of Colorado at Boulder
 Mr. Kevin Sampson, NCAR, Boulder, CO
 Ms. Kate Daniels, Law Office, Boulder, CO

SUMMARY OF GRADUATE STUDENTS AND POSTDOCTORALS SCHOOLARS SPONSERED

1992-2019 7 Master Students; 25 Ph.D. Students; 10 Post. Docs

TEACHING [HTTP://CIRES.COLORADO.EDU/SCIENCE/GROUPS/STEFFEN/CLASSES/](http://CIRES.COLORADO.EDU/SCIENCE/GROUPS/STEFFEN/CLASSES/)

University of Colorado at Boulder (CU)

Physical Climatology: Principles (GEOG 4211), Applied (GEOG 4221)

Physical Climatology: Field Methods (GEOG 5231/4231)

Remote Sensing of the Environment (GEOG/GEOL 4093/5093)

Remote Sensing Field Methods (GEOG 6181)

Reading in Climatology (GEOG 6211)

RESEARCH [HTTP://CIRES.COLORADO.EDU/SCIENCE/GROUPS/STEFFEN/PROJECTS/](http://CIRES.COLORADO.EDU/SCIENCE/GROUPS/STEFFEN/PROJECTS/)

- 1976-1984: North Water Project, Canadian high Arctic, jointly sponsored by the US National Science Foundation, Petro Canada Ltd., Calgary, Canada, and the Swiss National Science Foundation.
- 1979-1981 Energy flux measurements in the Swiss Alps (RHONEX, ALPEX).
- 1984-1985 Reevaluation of energy balance in North Water area.
- 1985-1987 Energy flux measurements on Glacier No.1, Tianshan, China.
- 1987-1990 Validation of sea ice parameters derived from passive microwave data of the Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSM/I), NASA, Principal Investigator, June 1987 - March 90 US\$ 223,000.
- 1987-1993 Reevaluation of global energy balance, Co-PI, Swiss National Science Foundation 1986, April 1987 - April 1993, Co-PI, \$US 452,000.
- 1990-1992 Greenland Ice Cap, Climate and Climate Processes, Swiss Federal Institute of Technology, Swiss National Science Foundation, Co-PI, March 1990 - March 1992, \$US 550,000.
- 1990-1993 Sea Ice - Atmosphere Interaction: Application of Multispectral Satellite Data in Polar Surface Energy Flux Estimates. Principal Investigator, NASA, April 1990 - April 1993, US\$ 440,000.
- 1991-1995 Parametrization and Scaling of Arctic Ice Conditions in the Context of Ice-Atmosphere Processes, NASA, April 1991 - December 1995, Co-PI, \$US 290,000.
- 1993-1994 Energie und Massenbilanz auf dem grönländischen Eisschild, Swiss National Science Foundation, Co-PI, US\$ 24,000.
- 1993-1996 Ice Surface Retrieval from AVHRR, ATSR, and Passive Microwave Satellite Data: Algorithm Development and Application, NASA, April 1993 - March 1996, Co-PI, US\$ 237,000.
- 1993-1996 Assessment of Climate Variability of the Greenland Ice Sheet: Integration of in situ and Satellite Data, NASA, April 1993 - March 1996, PI, US\$ 560,000.
- 1994-1996 Spatial and Temporal Variability of the Arctic Surface Radiation Budget, NSF/OPP, Jan 1994 - Jan 1996, Co-PI, US\$ 239,000.
- 1994-1996 Energie- und Massenbilanz auf dem grönländischen Eisschild: Fernerkundungsmethoden, Swiss National Science Foundation, Co-PI, US\$ 232,000.

- 1995-1997 Assessment of Variations in the Snow Accumulation Rate in northern Greenland, National Science Foundation, April 1995-March 1997, US\$ 320,000.
- 1995-1996 Assessment of Climate Variability of the Greenland Ice Sheet: Integration of in situ and Satellite Data, NASA, April 1995 - March 1995, Additional Funding for Greenland Climate network, PI, US\$ 74,000.
- 1995-1997 Absolute Gravity/GPS Measurements in Greenland, NASA, May 1995 - April 1997, Co-PI, US\$ 105,000.
- 1996-1997 Instrumentation for Snow Hydrological Research, DoD, June 1996-May 1997, CoPI: \$ 270,000.
- 1996-1999 Sea Ice and Ocean Processes in Baffin Bay: A Study using Radarsat Data and Numerical Modeling, NASA, Jan 1996 - Dec 1998, PI, US\$ 313,000.
- 1996-2000 Greenland Ice Sheet Climatology and Surface Energy Balance Modeling: Greenland Climate network, NASA, April 1996-March 2000, PI, US\$ 825,000.
- 1997-1999 Hyperspectral Imaging and Related Field Methods: Building the Science, NASA-MTPE, Co-PI, US\$ 420,000.
- 1997-2000 Documenting, Understanding, and Predicting the Aggregate Scale Surface Radiation Flux for SHEBA, April 1997 March 2000, CoPI, NASA, US\$ 311,000.
- 1997-2000 Documenting, Understanding, and Predicting the Aggregate Scale Surface Radiation Flux for SHEBA, October 1997 - September 2000, CoPI, NSF-OPP, US\$ 302,000.
- 1998-2006 Aerosol - Cloud - Climate Interactions, NASA-GSFC, PI: US\$ 780,000.
- 1999-2002 Investigation of Photochemical Transformation within Snow and their Effects on Snow and Atmospheric Composition, Sept. 1999- August 2002, NSF/OPP, PI: US\$ 138,721.
- 1999-2000 NASA Cryospheric Sciences, RADARSAT Wide ScanSAR images over Bering Sea and Baffin Bay, Co-PI: \$49,800.
- 2000-2004 Climatology of Arctic Canada, March 2000 – Feb 2004, NASA-GSFC, PI: US\$ 240,472.
- 2001-2005 Greenland Ice Sheet Climatology and Surface Energy Balance Modeling: Greenland Climate network, NASA, April 2001-March 2005, PI, US\$ 879,000.
- 2002-2005 Assessment of Basal Melt of Petermann Gletscher in Northwestern Greenland, NSF/NASA, March 2002 – February 2005, PI: US\$ 246,981.
- 2002-2005 NASA Cryospheric Sciences, Greenland ice sheet melt climatology based on passive and active satellite data: SSM/I and QuikSCAT data, PI: \$390,000.
- 2002-2005 NASA Cryospheric Sciences, Reanalysis of the energy Budget of the ice sheet, Co-PI: \$275,000.
- 2004-2005 NOAA Cooperative Agreement Funding: US\$ 19,300,000,
- 2005-2007 Greenland - Accumulation and Melt Layer, PI, NASA Cryospheric Processes, US\$ 510,000.
- 2005-2006 NOAA Cooperative Agreement Funding: US\$20,440,000.
- 2006-2008 Melt flow acceleration of the Greenland ice sheet, NASA GSFC, US\$122,221.
- 2006-2007 Monitoring Moulin Depth and Pathways in the Pakisoq Region, West-Greenland Ice Sheet, PI, NASA Cryospheric Processes, US\$ 12,000.
- 2006-2007 NOAA Cooperative Agreement Funding: US\$ 20,950,000.
- 2007-2008 NOAA Cooperative Agreement Funding: US\$ 22,840,000.
- 2008-2011 Stability of Larsen C Ice shelf in a warming climate, NSF OPP, US\$360,000.
- 2008-2011 Melt flow acceleration of the Greenland ice sheet, (same title then 2007, 2nd year funding) NASA GSFC, US\$ 417,000.

2008-2009	NOAA Cooperative Agreement Funding: US\$ 24,180,000.
2009-2011	Surface Processes of the Greenland ice sheet under a warming climate, NASA Cryospheric Sciences, US\$ 930,000.
2009-2010	NOAA Cooperative Agreement Funding: US\$ 28,040,000.
2011-2014	Surface Processes, Glacio-Hydrology, and Englacial Modeling of the Greenland Ice, NASA Cryospheric Sciences, US\$ 386,937.
2011-2015	Western Water Assessment, NOAA-OAR, US\$ 6,574,000.

PROFESSIONAL EXPERIENCE

- experimental climate measurements of heat fluxes and radiation balance; (RHONEX, ALPEX, 1979, 1980, 1981), (Axel Heiberg Expedition, North Water Expedition, 1975 - 1984), Tienshan, China (1986), Arctic Sea Ice Validation (1987 – 1988), Greenland ice sheet (1990-present)
- instrument development for spectral bidirectional reflectance measurements.
- aircraft and satellite remote sensing data collection and analysis in visible, thermal IR, and microwave (passive and active) regions for cryosphere-atmosphere interaction in climate research.
- sensor evaluation for Earth Observing System (EOS) passive microwave instrument, and validation of sea ice products derived from DMSP SSM/I satellite.
- surface energy balance measurements, eddy-correlation and bulk transfer methods over the Greenland ice sheet.
- remote climate recording, instrument development, and maintaining the Greenland Climate Network

NATIONAL AND INTERNATIONAL COMMITTEE AND EDITORIAL MEMBERSHIP

1986-1987	Associate Scientific Editor, Annals of Glaciology
1986-1991	Member, executive board of "Schweizerische Geographische Gesellschaft".
1987-1991	Member, SSM/I Validation Team, NASA Goddard Space Flight Center, Greenbelt.
1988-1991	Member, SSM/I Sea Ice Archive Working Team (SSIAWT), NASA GSFC.
1989-1993	Member, executive board of the Program for International Polar Ocean Research (PIPOR).
1991-1992	Chief Editor, Annals of Glaciology – Remote Sensing of Snow and Ice
1991-1999	Chairman, Polar Data Archive Distribution Advisory Group, NASA/EOSDIS.
1992-1995	Council Member, Executive Board, International Glaciological Society.
1994-1998	Member of EOS Science Operation Focus Team, NASA/EOSDIS.
1995-2003	Member, Radarsat Geophysical Processor System Team (NASA/RGPS)
1995-2102	Member, Program for Arctic Regional Climate Assessment (NASA/PARCA)
1996-1999	Council Member, Executive Board, International Glaciological Society.
1996-2001	Associate Editor, Journal of Applied Meteorology
1999-2000	Chief Editor, Annals of Glaciology - Cryosphere Models and Validation
1999-2004	Chairman, World Climate Research Program ,CliC Observation Products Panel
2003-2005	Vice President, International Commission of Snow and Ice, IAHS
2003-2012	Theme leader for sea level change, WCRP/CliC
2003-2011	SEARCH Science Steering committee member

2004-2007	Vice President IUGG Commission on the Cryospheric Sciences (CCS)
2007-2012	Association for Cryospheric Sciences, liaison for WMO/WCRP/CliC
2008-2012	Chair WCRP/Climate and Cryosphere program
2006-2008	CRISIS advising board chair, NSF STC, University of Kansas
2006 –2013	NASA Advisory Council Earth Science Subcommittee Member
2006-2010	Zeitschrift fuer Gletscherkunde and Glazialgeologie, Editorial Board
2007-2010	CCSP 3.4: Abrupt Climate Change, Cryosphere chapter lead
2007-2010	Chair, NOAA Cooperative Institutes Executive Committee
2007-2011	National Academy, Polar Research Board member
2007-2012	GCOS Observation Panel for Climate (TOPC) member
2009-2011	NRC Committee on Stabilization Targets for Atmospheric Greenhouse Gas Concentrations
2009 – 2012	Honorary Consul of Switzerland in Denver, certified by US Dept. of State
2010-2013	IPCC AR5 Lead Author for Cryosphere Chapter
2010-2017	Scientific Advisory Board, Alfred Wegner Institute for Polar and Marine Research
2012-2016	GCOS Observation Panel for Climate (TOPC) chair
2012-2016	World Climate Research Program, Data Panel member
2012-present	Honorary Member of the International Polar Foundation
2013-present	Member, Swiss Committee on Polar and High-Altitude Research
2014-present	Scientific Committee on Antarctic Research (SCAR) Delegate for Switzerland
2014-present	Member ESA Climate Change Advisory Board
2014-2018	Scientific Advisory Board Agroscope
2015-present	Member of Advising Board Swedish Polar Research Secretariat
2016-2017	Board of Directors, Swiss Polar Institute
2017-present	Science Director of Swiss Polar Institute
2017-2019	IPCC special report on oceanography and cryosphere, lead author
2017-present	International Risk Governance Center, Advisory Board Member
2017-2018	President Swiss Polar Project Foundation advising board

INTERNATIONAL ORGANIZATIONS MEMBERSHIP

International Glaciological Society, Cambridge, England

American Geophysical Union

American Meteorological Society

PEER-REVIEWED PUBLICATIONS

Thomson Reuters Research ID: C-6027-2013; **h-index: 44**; **Sum of citation: 7451** (June,2020)

Google Scholar: h-index: 61; i10-index: 154; Sum of citation 14746 (June 2020)

1. Steffen, K., Sea ice classification from TIR, *International Archives of ISPRS*, Vol. 34-VII/1, 767-776, 1982.

2. Steffen, K., Warm Water cells in the North Water, northern Baffin Bay during winter. *J. Geophys. Res.*, 90(C5), 9129-9136, 1985.
3. Steffen, K., and A. Ohmura, Heat exchange and surface conditions in the North Water, Northern Baffin Bay, *Annals of Glaciol.*, 6, 178-181, 1985.
4. Steffen, K., Ice conditions of an arctic polynya: North Water in winter, *J. Glaciol.*, 32(112), 383-390, 1986.
5. Steffen, K., Bidirectional reflectance of snow at 500 - 600 nm, *IAHS publication*, 166, 415-425, 1987.
6. Steffen, K., Fractures in arctic winter pack ice, North Water, northern Baffin Bay, *Annals of Glaciology*, 9, 211-214, 1987.
7. Steffen K., and J.E. Lewis, Surface temperatures and sea ice typing for northern Baffin Bay, *International Journal of Remote Sensing*, 9(3), 409-422, 1988.
8. Steffen K., and J.M. Maslanik, Comparison of Nimbus 7 Scanning Multichannel Microwave Radiometer radiance and derived sea ice concentration with Landsat imagery for the North Water area of Baffin Bay, *J. Geophys. Res.*, 93(C9), 10,769-10,781, 1988.
9. Steffen, K., and A.J. Schweiger, A multisensor approach to sea ice classification for the validation of DMSP-SSM/I passive microwave derived sea ice products, *Photogrammetric Engineering and Remote Sensing*, 55, 75-82, 1990.
10. Steffen, K., Energy flux density estimation over sea ice based on satellite passive microwave measurements, *Annals Glaciol.*, 15, 178-183, 1991.
11. Steffen, K., and A. Schweiger. NASA team algorithm for sea ice concentration retrieval from Defense Meteorological Satellite Program special sensor microwave imager: comparison with Landsat satellite data, *J. Geophys. Res.*, 96(C12), 21,971-21,987, 1991.
12. Emery, W.J., M. Radebaugh, C.W. Fowler, D. Cavalieri, and K. Steffen. An intercomparison of sea ice parameters computed from AVHRR and Landsat satellite imagery and from airborne passive microwave radiometry, *J. Geophys. Res.*, 96(C12), 22,075-22,086, 1991.
13. Steffen, K., and A. Schweiger, Ocean surface energy flux estimates from satellite data in Arctic regions, *Marine Technol. Society*, Volume II, 434-440, 1992.
14. Steffen, K, W. Abdalati, and J. Stroeve. Climate sensitivity studies of the Greenland ice sheet using satellite AVHRR, SMMR, SSM/I and in situ data, *Meteorology and Atmosph. Physics*, 239-258, 1993.
15. Steffen, K., R. Bindshadler, J. Comiso, D. Eppler, F. Fetterer, J. Hawkins, J. Key, D. Rothrock, R. Thomas, and R. Weaver, Snow and ice applications of AVHRR in polar regions, *Annals of Glaciol.*, 17, 1-16, 1993.
16. Haefliger, M., K. Steffen, C. Fowler, AVHRR surface temperature and narrow-band albedo comparison with ground measurements for the Greenland ice sheet, *Annals of Glaciol.*, 17, 49-54, 1993.
17. Barry, R.G., J. Maslanik, K. Steffen, R.L. Weaver, V. Troisi, D.J. Cavalieri, and S. Martin, Advances in sea-ice research based on remotely sensed passive microwave data, *Oceanography*, 6(1), 4-12, 1993.
18. Nolin, A.W., K. Steffen, and J. Dozier, Measurement and modeling of the bidirectional reflectance of snow, IGAARS '94 – 1994 *International Geoscience and Remote Sensing Symposium Volumes 1-4*, 1919-1921, 1994.
19. Steffen, K., and J. Heinrichs, Feasibility of sea ice typing with Synthetic Aperture Radar: merging of Landsat Thematic mapper and ERS-1 SAR satellite imagery, *J. Geophys. Res.*, 99(C11), 22,413-22,424, 1994.

20. Steffen, K., and T. DeMaria, Surface energy balance of Arctic sea ice in winter, Fourth Conference on Polar Meteorology and Oceanography, 75-78, 1995.
21. Steffen, K., Surface energy exchange during the onset of melt at the equilibrium line altitude of the Greenland ice sheet, *Annals of Glaciol.*, 21, 13-18, 1995.
22. Abdalati, W., K. Steffen, and K. Jezek, Comparison of brightness temperatures from SSM/I instruments on the DMSP F8 and F11 satellites for Antarctica and Greenland ice sheet, *Intern. J. Rem. Sens.*, 16(7), 1223-1229, 1995.
23. Abdalati, W., and K. Steffen, Passive microwave-derived snowmelt regions on the Greenland ice sheet, *Geophys. Res. Letters*, 22(7), 787-790, 1995.
24. Steffen, K., and T. DeMaria, Surface energy fluxes of Arctic winter sea ice in Barrow Strait, *J. Appl. Meteorol.*, 35, 2067-2079, 1996.
25. J. Heinrichs, J. Maslanik, K. Steffen, Validation of sea ice model using forward simulation of ERS-1 SAR data: A case study in the Beaufort Sea, IGAARS '96 – 1996 International Geoscience and Remote Sensing Symposium: Remote Sensing for a sustainable future, Vol. I-IV, 950-952, 1996.
26. Stroeve, J., M. Haefliger, and K. Steffen, Surface temperature from ERS-1 ATSR infra-red thermal satellite data in polar regions, *J. Appl. Meteorol.*, 35, 1231-1239, 1996.
27. Abdalati, W., and K. Steffen, Snow melt on the Greenland ice sheet as derived from passive microwave satellite data, *J. Climate*, 10, 165-175, 1997.
28. Abdalati, W., and K. Steffen, The apparent effects of the Mt. Pinatubo eruption on the Greenland ice sheet melt extent, *Geophys. Res. Lett.*, 24(14), 1795-1797, 1997.
29. Stroeve, J., A. Nolin, and K. Steffen, Comparison of AVHRR-derived and in situ surface albedo over the Greenland ice sheet, *Rem. Sens. Env.*, 62, 262-277, 1997.
30. Steffen, K., Hemispheric and directional reflectance of snow: Observations on the Greenland ice Sheet, IRS '96: Current Problems in Atmospheric Radiation, Eds. W. Smith and K. Stamnes, Deepak Publishing, 41-44, 1997.
31. Serreze, M.C., J.R. Key, J. E. Box, J.A. Maslanik, and K. Steffen, A new monthly climatology of global radiation for the Arctic and comparison with NCEP-NCAR reanalysis and ISCCP-C2 fields, *J. Climate*, 11, 121-136, 1998.
32. Stroeve, J., and K. Steffen, Variability of AVHRR-derived clear-sky surface temperature over the Greenland ice sheet, *J. Appl. Meteorol.*, 37, 23-31, 1998.
33. Anklin, M., R.C. Bales. E. Mosley-Thompson, and K. Steffen, Annual accumulation at two sites in northwestern Greenland during recent centuries, *J. Geophys. Res.*, 103(D22), 28775-28,783, 1998.
34. Abdalati, W., K. Steffen, Accumulation and hoar effects on microwave emission on the Greenland ice sheet dry snow zones, *J. Glaciol.*, 44(148), 523-531, 1998.
35. Steffen, K., W. Abdalati, and I. Seherjal, Faceted crystal formation on NE-Greenland low accumulation region, *J. Glaciol.*, 45(149), 63-68, 1999.
36. Steffen, K., Radiation climatology of the Greenland ice sheet: Seasonal and interannual variations, IRS: Current Problems in Atmospheric Radiation 2001.
37. Weaver, R., K. Steffen, J. Heinrichs, J. Maslanik, and G. Flato, Data assimilation in sea ice monitoring, *Annals of Glaciol.*, 31, 327-332, 2000.
38. Shuman, C., K. Steffen, J. Box, and C. Stearn, A dozen years of temperature observations at the Summit: Central Greenland automatic weather stations 1987-1999, *J. Appl. Meteorol.*, 40(4),741-752, 2001.
39. Steffen, K., and J. Heinrichs, C-band SAR backscatter characteristics of Arctic sea ice and land during winter, *Atmosphere-Ocean*, 39(3), 289-299, 2001.

40. Thomas, R., and PARCA instigators, Program for Arctic Regional Climate Assessment (PARCA): Goals, key findings, and future directions, *J. Geophys. Res.*, *106*(D24), 33,691-33706, 2001.
41. Steffen, K., and J.E. Box, Surface climatology of the Greenland ice sheet: Greenland climate network 1995-1999, *J. Geophys. Res.*, *106*(D24), 33,951-33,964, 2001.
42. Box, J.E. and K. Steffen, Sublimation on the Greenland ice sheet from automated weather station observations, *J. Geophys. Res.*, *106*(D24), 33,965-33,982, 2001.
43. Abdalati, W. and K. Steffen, Greenland ice sheet melt extent: 1979-1999, *J. Geophys. Res.*, *106*(D24), 33,983-33,989, 2001.
44. Mosley-Thompson, E., J.R. McConnell, R.C. Bales, Z. Li, P.-N. Lin, K. Steffen, L.G. Thompson, R. Edwards, D. Bathke, Local to regional-scale variability of annual net accumulation on the Greenland ice sheet from PARCA cores, *J. Geophys. Res.*, *106*(D24), 33,839-33852, 2001.
45. Nghiem, S.V., K. Steffen, R. Kwok, and W.Y. Tsai, Detection of snowmelt regions on the Greenland ice sheet using backscatter change, *J. Glaciol.*, *47*(159), 539-547, 2001.
46. Cassano, J.J., J.E. Box, D.H. Bromwich, L. Li, and K. Steffen, Evaluation of Polar MM5 simulations of Greenland's atmospheric circulation, *J. Geophys. Res.*, *106*(D24), 33,867-33,890, 2001.
47. Bromwich, D., J. Cassano, T. Klein, G. Heinemann, K. Hines, K. Steffen and J. Box, Mesoscale modeling of katabatic winds over Greenland with Polar MM5, *Mon. Weather Review*, *129*, 2290-2309, 2001.
48. Comiso, J.C., and K. Steffen, Studies of Antarctic sea ice concentrations from satellite data and their applications, *J. Geophys. Res.*, *106*(C12), 31,361-31,386, 2001.
49. Cullen, N., and K. Steffen, Unstable near-surface boundary conditions in summer on top of the Greenland ice sheet, *Geophys. Res. Lett.*, *28*(23), 4491-4494, 2001.
50. Jacobi, H.W., M.M. Fey, M.A. Hutterli, R.C. Bales, N.J. Cullen, K. Steffen and C. Koehler, Measurements of hydrogen peroxide and formaldehyde exchange between the atmosphere and surface snow at Summit, Greenland, *Atm. Environm.*, *36*, 2619-2628, 2002.
51. Helmig, D, J. Boulter, D. David, J. Birk, N. Cullen, K. Steffen, B. Johnson, S. Oltmans, Ozone and meteorological boundary-layer conditions at Summit, Greenland, *Atm. Environm.*, *36*, 2595-2608, 2002.
52. Honrath, R.E. Y.Y. Lu, M.C. Peterson, J.E. Dibb, M.A. Arseault, N.J. Cullen, and K. Steffen. Vertical fluxes of NO_x, HONO, and HNO₃ above the snowpack at Summit, Greenland. *Atm. Environm*, *36*, 2629-2640, 2002.
53. Dassau, T.M., A. Sumer, S. Koeniger, P. Shepson, J. Yang, R. Honrath, N. Cullen, K. Steffen, Investigation of the role of the snowpack on atmospheric formaldehyde chemistry at Summit, Greenland, *J. Geophys. Res.*, *107*(D19), ACH 9.1-14, 36, 2595-2608, 2002.
54. Zwally, H.J. W. Abdalati, T. Herring, K. Larsen, J. Saba, and K. Steffen. Surface melt-induced acceleration of Greenland ice-sheet flow, *Science*, *297*, 218-222, 2002.
55. Thomas, R.H., W. Abdalati, E. Frederick, W.B. Krabill, S. Manizade, and K. Steffen, Investigation of surface melting and dynamic thinning on Jakobshavn Isbrea, Greenland, *J. Glaciol.*, *49*(165), 231-239, 2003.
56. Smith, L.C., Y. Sheng, R.R. Foster, K. Steffen, K.E. Frey, and D.E. Alsdorf, Melting of small Arctic ice caps observed from ERS scatterometer time series, *Geophys. Res. Lett.*, *30*(20), CRY 2-14, 2003.
57. Steffen, K., S.V. Nghiem, R. Huff, and G. Neumann, The melt anomaly of 2002 on the Greenland Ice Sheet from active and passive microwave satellite observations, *Geophys. Res. Lett.*, *31*(20), L2040210.1029/2004GL020444, 2004.
58. Orr, A., E. Hanna, J. Hunt, J. Cappelen, K. Steffen and A. Stephens, Characteristics of stable flow over southern Greenland, *Pure and Applied Geophysics (PAGEOPH)*, *161*(7), 2004.

59. Nghiem, S.V., K. Steffen, G. Neumann, and R. Huff, Mapping of ice layer extent and snow accumulation in the percolation zone of the Greenland ice sheet, *J. Geophys. Res.*, 110, F02017, doi:10.1029/2004JF000234, 2005.
60. Hanna, H., P.Huybrechts, I. Janssens, J..Cappelen, K. Steffen, and A. Stephens, Runoff and mass balance of the Greenland ice sheet: 1958–2003, *J. Geophys. Res.*, 110, D13108, doi:10.1029/2004JD005641, 2005.
61. Box, J.E., D.H. Bromwich, B.A. Veenhuis, L-S Bai, J.C. Stroeve, J.C. Rogers, K. Steffen, T. Haran, S-H Wang, Greenland Ice Sheet Surface Mass Balance Variability (1988-2004) from Calibrated Polar MM5 Output, *J. Climate*, 19 (12), 2783-2800, 2006.
62. Cullen, N. J., T. Mölg, G. Kaser, K. Hussein, K. Steffen, and D. R. Hardy, Kilimanjaro Glaciers: Recent areal extent from satellite data and new interpretation of observed 20th century retreat rates, *Geophys. Res. Lett.*, 33, L16502, doi:10.1029/2006GL027084, 2006.
63. Cullen, N.J., K. Steffen, and P. D Blanken, Nonstationarity of Turbulent Heat Fluxes at Summit, Greenland, *Boundary-Layer Meteorology*, DOI 10.1007/s10546-006-9112-2, 2006.
64. Herzfeld, U.C., J.E. Box, K. Steffen, H. Mayer, N.Caine, and M. Losleben, A case study on the influence of snow and ice surface roughness on melt energy, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 39, 1-42, 2006.
65. Alfieri, J. G., P.D. Blanken, D.N. Yates, and K. Steffen, Variability in the environmental factors driving evapotranspiration from a grazed rangeland during severe drought conditions, *J. Hydrometeorology*, 8(2), 207-220, 2007.
66. Nghiem, S.V., K. Steffen, G. Neumann, and R. Huff, Snow Accumulation and Snowmelt Monitoring in Greenland and Antarctica, International Association of Geodesy Publication, Dynamic Planet , Chapter 5, 31-38, 2007.
67. Parry, V., P. Mair, J. Scott, B. Hubbard, K. Steffen, and D. Wingham, Investigations of meltwater refreezing and density variations in the snowpack and firn within the percolation zone of the Greenland Ice Sheet, *Ann. Glaciol.*, 46, 621-68, 2007.
68. Cullen, N.J., Mölg, T., Kaser, G., K. Steffen, and D. R. Hardy, Energy Balance Model Validation on the top of Kilimanjaro using Eddy Covariance Data, *Ann. Glaciol.*, 46, 227-233, 2007.
69. Painter, T.H., N.P. Molotch, M. Cassidy, M. Flanner, and K. Steffen, Contact spectroscopy for determination of stratigraphy of snow grain size, *J. Glaciol.*, 53(180) 121-127, 2007.
70. Wang, L., M. Sharp, B. Rivard, and K. Steffen, Melt duration and ice layer formation on the Greenland ice sheet, 2000-2004, *J. Geophys. Res.*, 112, F04013, doi:10.1029/2007JF000760 2007.
71. Hanna, E., P. Huybrechts, K. Steffen, J. Cappelen, R. Huff, Ch. Shuman, T. Irvine-Fynn, S. Wise, and M. Griffiths. Increased runoff from melt from the Greenland Ice Sheet: a response to global warming. *J. Climate*, 21, 331-341, DOI: 10.1175/2007JCLI1964.1, 2008.
72. Rignot, E., and K. Steffen, Channelized bottom melting and stability of floating ice shelves, *Geophys. Res., Lett.*, 35, L02503, doi:10.1029/2007GL031765, 2008.
73. Comiso, J.C., and K. Steffen, Introduction to special section on Large-Scale Characteristics of the Sea Ice Cover from AMSR-E and Other Satellite Sensors, *J. Geophys. Res.*, 113, C02S01, oi:10.1029/2007JC004442, 2008.
74. Hall, D.K., J.E. Box, K.A. Casey, S.J. Hook, C.A. Shuman and K. Steffen, Comparison of satellite-derived and in-situ observations of ice and snow surface temperatures over Greenland, *Remote Sensing of the Environment*, 112(10), 3739-3749, 2008.
75. Mernild, S., G. Liston, Ch. Hiemstra, K. Steffen, Surface melt area and water balance modeling on the Greenland ice sheet 1995-2005, *J. Hydrometeorology*, 9, DOI: 10.1175/2008JHM957.1, 2008.
76. Doherty, S.J., S. Bojinski, A. Henderson-Sellers, K. Noone, D. Goodrich, N.L. Bindoff, J.A. Church, K.A. Hibbard, T.R. Karl, L. Kaiifez-Bogataj, A.H. Lynch, D.E. Parker, I.C. Prentice, V.

- Ramaswamy, R.J. Simmons, M.S. Smith, K. Steffen, T.F. Stocker, P.W. Thorne, K. E. Trenberth, M.M. Vestraete, and F.W. Zwiers, Lessons learned from IPCC AR4: Future scientific developments needed to understand, predict and respond to climate change, *BAM*, 90(4), 497-513, 2009.
77. Church, J., N. White, C. Domingues, J. Gregory, and K. Steffen, Understanding sea level change over the last century and its implications for the future, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012007, 2009.
 78. McGrath, D, K. Steffen, and I. Overeem, Sediment plumes in Søndre Strømfjord, Greenland as a proxy for run-off from the Greenland ice sheet, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012033, 2009.
 79. Adler, J, and K. Steffen, Supraglacial lake volumes on the Jakobshavn Isbrae, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012019, 2009.
 80. Behar, A, H. Wang, A. Elliot, S. O'Hern, C. Lutz, S. Martin, K. Steffen, D. McGrath, and T. Phillips, The Moulin Explorer: a novel instrument to study Greenland ice sheet melt-water flow, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012020, 2009.
 81. Casassa, G., et al, The Patagonian ice field: an updated assessment of sea level contribution, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012006, 2009.
 82. Phillips, T., H. Rajaram, and K. Steffen, Melt water influence on englacial temperature distribution, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012036, 2009.
 83. Colgan, W., and K. Steffen, Modelling the spatial distribution of Moulins near Jakobshavn, Greenland, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012022, 2009.
 84. Rial, J., C. Tang, and K. Steffen, Glacial Rumbblings from Greenland's Jakobshavn Ice Stream, *J. Glaciol.*, 15(191), 398-399, 2009.
 85. Mernild, S.H., G.E. Liston, C.A. Hiemstra, K. Steffen, E. Hanna, and J.H. Christensen, Greenland Ice Sheet surface mass-balance modeling and freshwater flux for 2007, and in a 1995–2007 perspective, *Hydrological Processes*, DOI: 10.1002/hyp.7354, 2009.
 86. Steffen, K., and A. Behar, Arctic warming, Greenland melt and moulins, IOP Conference Series: *Earth and Environmental Science*, 6, DOI: 10.1088/1755-1307/6/1/012015, 2009.
 87. Fausto, R.S., A.P. Ahlstram, D. Van As, S.J. Johnsen, P.L. Langen , and K.Steffen, Improving surface boundary conditions with focus on coupling snow densification and meltwater retention in large-scale ice sheet models of Greenland, *J. Glaciol.*, 55(193), 869-878, 2009.
 88. Munneke, P.K., M. R. van den Broeke, C. H. Reijmer, M. M. Helsen, W. Boot, M. Schneebeli, and K. Steffen, The role of radiation penetration in the energy budget of the snowpack at Summit, Greenland. *The Cryosphere*, 3, 277-306, 2009.
 89. Merlid, S.H., G. Liston, K. Steffen, and P. Chylek, Meltwater flux and runoff modeling in the ablation area of Jakobshavn Isbrae, West Greenland. *J. Glaciol.*, 56(195), 20-32, 2010.
 90. Ettema, J., M. R. van den Broeke, E. van Meijgaard, W. J. van de Berg, J. E. Box, and K. Steffen, Climate of the Greenland ice sheet using a high-resolution climate model, Part 1: Evaluation, *The Cryosphere*, 4, 511–527, doi:10.5194/tc-4-511-2010, 2010.
 91. Mernild, S.H., G. E. Liston, K. Steffen, M. van den Broeke, and B. Hasholt, Runoff and mass balance simulations from the Greenland Ice Sheet at Kangerlussuaq (Søndre Strømfjord) in a 30-year perspective, 1979–2008, *The Cryosphere*, 4, 231-242, doi:10.5194/tc-4-231-2010, 2010.

92. Mernild, S.H., G. E. Liston, I.M. Howat, Y. Ahn, K. Steffen, B.H. Jakobsen, B. Hasholt, B. Fog, and D. van As, Freshwater flux to Sermilik Fjord, SE Greenland, *The Cryosphere*, 4, 453-465, 2010, doi:10.5194/tcd-4-453-2010.
93. McGrath, D., K. Steffen, I. Overeem, S. Mernild, B. Hasholt, and M. van der Broeke, Sediment plumes as a proxy for local ice sheet runoff on the Kangerlussuaq Fjord, West Greenland. *J. Glaciol.*, 56(199), 813-821, 2010.
94. Phillips, T., H. Rajaram, K. Steffen, Cryo-hydrologic warming: A potential mechanism for rapid thermal response of ice sheets, *Geophys. Res. Lett.*, 37, L20503, doi:10.1029/2010GL044397, 2010.
95. Steen-Larsen, H.C., V. Masson-Delmotte, J. Sjolte, S.J. Johnsen, B.M. Vinther, F-M Bréon, H.B. Clausen, D. Dahl-Jensen, S. Falourd, X. Fettweis, H. Gallée, J. Jouzel, M. Kageyama, H. Lerche, B. Minster, G. Picard, H. J. Punge, C. Risi, D. Salas, J. Schwander, K. Steffen, A E. Sveinbjörnsdóttir, A. Svensso, J. White, Understanding the climatic signal in the water stable isotope records from the NEEM shallow firn/ice cores in North-West Greenland, *J. Geophys. Res.*, 116,D06108,doi:10.1029/2010JD014311, 2011.
96. Colgan, W., H. Rajaram, R. Anderson, K. Steffen, T. Phillips, I. Joughin, H.J. Zwally, and W. Abdalati, The annual glaciohydrology cycle in the ablation zone of the Greenland ice sheet: Part I. Hydrology Model, *J. Glaciol.*, 57(204), 2011.
97. Falkner, K.K., H. Melling, A.M. Münchow, J.E. Box, T. Wohlleben, H.L. Johnson, P. Gudmandsen, R. Samelson, L. Copland, K. Steffen, E. Rignot, and A.K. Higgins, Context for the Recent Massive Petermann Glacier Calving Event, *EOS*, 92(14), 2011.
98. Phillips, T., S. Leyk, H. Rajaram, W. Colgan, W. Abdalati, and K. Steffen, Modeling moulin distribution on Sermeq Avannarleq Glacier using ASTER and WorldView imagery and fuzzy set theory, *Remote Sensing of the Environment*, 115, 2292-21301, 2011.
99. Fausto, R.S., A.P. Ahlstrom, D. Van As, and K. Steffen, Present-day temperature standard deviation parameterization for Greenland for application in ice sheet modeling, *J. Glaciol.*, 57(206), 1181-1183, 2011.
100. McGrath, D., W Colgan, K. Steffen, P. Lauffenburger, and J. Balog, Assessing the summer water budget of a moulin basin in the Sermeq Avannarleq ablation region, Greenland Ice Sheet, *J. Glaciol.*,57(205), 954-964, 2011.
101. Hanna, E., P. Huybrechts, J. Cappelen, K. Steffen, R. C. Bales, E. Burgess, J. McConnell, J.P. Steffensen, M. Van den Broeke, L.Wake, G. Bigg, M. Griffiths, and D. Savas, Greenland Ice Sheet surface mass balance 1870 to 2010 based on Twentieth Century Reanalysis, and links with global climate forcing, *Geophys. Res., Atmosphere*, 116, D24121, doi:10.1029/2011JD016387, 2011.
102. Muto, A., T.A. Scambos, K. Steffen, A.G. Slater, and G.D. Clow, Recent surface temperature trends in the interior of East Antarctica from borehole firn temperature measurements and geophysical inverse methods. *Geophys. Res. Lett.* 38, L15502, doi:10.1029/2011GL048086, 2011.
103. Colgan, W., H.Rajaram, K. Steffen, I. Joughin, W. Abdalati, T. Phillips, and R. Anderson, An increase in crevasse extent, West Greenland: Hydrologic implication, *Geophys. Res. Lett.*, 38, L18502, doi:10.1029/2011GL048491, 2011.
104. McGrath, D., K. Steffen, T. Scambos, H. Rajaram, G. Casassa, and J.L. Rodriguez, Basal crevasses on the Larsen C ice shelf: Mechanism for rapid collapse? *Ann. Glaciol.*, 53(60), 10-18, doi: 10.3189/2012AoG60A005, 2012.
105. Colgan, W., H. Rajaram, R.S. Anderson, K. Steffen, H. J. Zwally, T. Phillips, and W. Abdalati, The annual glaciohydrology cycle in the ablation zone of the Greenland Ice Sheet: Part 2. Observed and Modeled Ice Flow, *J. Glaciol.*, 58(207), doi:10.3189/2012JoG11J081, 2012.
106. Tedesco, M., M. Lüthje, K. Steffen, N. Steiner, X. Fettweis, I. Willis, N. Bayou and A. Banwell, Measurement and modeling of ablation of the bottom of supraglacial lakes in Western Greenland, *Geophys. Res. Lett.*, L. 39, L02502, doi:10.1029/2011GL049882, 2012.

107. Liang, Y.L., W. Colgan, Q. Lv, K. Steffen, W. Abdalati, J. Stroeve, D. Gallaher, and N. Bayou, A decadal investigation of supraglacial lakes in West 2 Greenland using a fully automatic detection and 3 tracking algorithm, *Rem. Sens. Environm.*, 123, 127–138, doi:10.1016/j.rse.2012.03.020, 2012.
108. Box, J., X. Fettweis, J. Stroeve, M. Tedesco, D.K. Hall, and K. Steffen, Greenland ice sheet albedo feedback: thermodynamics and atmospheric drivers, *The Cryosphere*, 6, 821-839, doi:10.5194/tc-6-821-2012, 2012.
109. Hanna, E., S.H. Mernild, J. Cappelen,, and K. Steffen, Recent warming in Greenland in a long-term instrumental (1881-2012) climatic context, Part 1: Evaluation of surface air temperature records, *Environ. Res. Lett.*, 7, doi:10.1088/1748-9326/7/4/045404, 2012.
110. McGrath, D., and K. Steffen, Recent cooler conditions on the northern Antarctic Peninsula, State of Climate 2011, *BAMS*, 93(7), 154-5, 2012.
111. McGrath, D., K. Steffen, H. Rajaram, T. Scambos, W. Abdalati, and E. Rignot, Basal crevasses on the Larsen C Ice Shelf, Antarctica: Implications for meltwater ponding and hydrofracture, *Geophys. Res. Lett.* 39, L16504, doi:10.1029/2012GL052413, 2012.
112. Dahl-Jensen, D., M. R. Albert, A. Aldahan, N. Azuma, D. Balslev-Clausen, M. Baumgartner, A.-M. Berggren, M. Bigler, T. Binder, T. Blunier, J.C.Bourgeois, E. J. Brook, S. L. Buchardt, C. Buizert, E. Capron, J. Chappellaz, J. Chung, H. B. Clausen, I. Cvijanovic, S. M. Davies, P.Ditlevsen, O. Eicher, H. Fischer, D. A. Fisher, L.G. Fleet, G. Gfeller, V.Gkinis, S. Gogineni, K. Goto-Azuma, A.Grinsted, H. Gudlaugsdottir, M. Guillevic, S. B.Hansen, M.Hansson, M. Hirabayashi, S. Hong, S.D.Hur, P. Huybrechts, C.S.Hvidberg, Y. Iizuka1, T. Jenk, S. J. Johnsen, T. R. Jones, J. Jouzel, N. B. Karlsson, K. Kawamura, K. Keegan, E. Kettner, S. Kipfstuhl, H. A. Kjær, M. Koutnik, T. Kuramoto, P.Koehler, T. Laepple, A. Landais, P. L. Langen, L. B. Larsen, D. Leuenberger, M. Leuenberger, C. Leuschen, J. Li, V. Lipenkov, P. Martinerie, O. J. Maselli, V. Masson-Delmotte, J. R. McConnell, H. Miller, O.Mini, A. Miyamoto, M. Montagnat-Rentier, R. Mulvaney, R. Muscheler, A. J.Orsi, J. Paden, C. Panton, F. Pattyn, J.-R. Petit, K. Pol, T. Popp, G. Possnert, F. Prie, M. Prokopiou, A. Quiquet, S. O. Rasmussen, D.Raynaud, J.Ren, C. Reutenauer, C. Ritz, T. Roeckmann, J. L. Rosen, M. Rubino, O. Rybak, D. Samyn, C. J. Sapart, A. Schilt, A.M. Z.Schmidt, J. Schwander, S.Schuepbach, I.Seierstad, J.P. Severinghaus, S. Sheldon, S.B.Simonsen, J.Sjolte, A. M. Solgaard, T. Sowers, P. Sperlic, H. C. Steen-Larsen, K. Steffen, J. P. Steffensen, D. Steinhage, T. F. Stocker, C. Stowasser, A. S. Sturevik, W. T. Sturges, A. Sveinbjornsdottir, A. Svensson1, J.-L. Tison, J.Uetake, P. Vallelonga1, R. S. W. van de Wal, G. van der Wel, B. H. Vaughn, B. Vinther, E. Waddington, A. Wegner, I.Weikusat, J.W. C. White, F.Wilhelms, M. Winstrup, E. Witrant, E.W.Wolff, C.Xiao & J. Zheng , Eemian interglacial reconstructed from a Greenland folded ice core. *Nature*, doi:10.1038/nature11789,493, 2012.
113. Tedesco, M., P. Alexander, J. E. Box, J. Cappelen, T. Mote, K. Steffen, R. S. W. van de Wal, J. Wahr, and B. Woutersand Coauthors, [Arctic] Greenland ice sheet [in “State of the Climate in 2012”]. *Bull. Amer. Meteor. Soc.*, 94 (8), S121–S123, 2013.
114. Hanna, E., J.M. Jones, J. Cappelen, S.H. Mernild, L. Wood, K. Steffen, P. Huybrechts, The influence of North Atlantic atmospheric and oceanic forcing effects on 1900-2010 Greenland summer climate and melt/runoff, *Int. J. Climatology*, 33, 862-880, DOI: 10.1002/joc.3475, 2013.
115. Petrenko, V.V., P. Martinerie, P. Novelli, D. M. Etheridge, I. Levin, Z. Wang, T. Blunier, J. Chappellaz, J. Kaiser, P. Lang, L. P. Steele, S. Hammer, J. Mak, R. L. Langenfelds, J. Schwander, J. P. Severinghaus, E. Witrant, G. Petron, M. O. Battle, G. Forster, W. T. Sturges, J.-F. Lamarque, K. Steffen, and J. W. C. White, A 60-yr record of atmospheric carbon monoxide reconstructed from Greenland firn air, *Atmos. Chem. Phys.*. *Atmos. Chem. Phys.*, 13, 7567–7585, doi:10.5194/acp-13-7567-2013, 2013.
116. McGrath, D., W. Colgan, N. Bayou, A. Muto, and K. Steffen. Recent warming at Summit, Greenland: Global context and implications, *Geophys. Res. Lett.*, 40, 1-6, doi:10.1002/grl.50456, 2013.

117. Bennartz, R., M. D. Shupe, D.D. Turner, V. P. Walden, K. Steffen, C. J. Cox, M. S. Kulie, N. B. Miller, and C. Pettersen, July 2012 Greenland melt extent enhanced by low-level liquid clouds, *Nature*, 496, 4 April 2013, doi:10.1038/nature12002, 2013.
118. Phillips, T., H. Rajaram, W. Colgan, K. Steffen, and W. Abdalati. Evaluation of cryo-hydrologic warming as an explanation for increased ice velocities in the snow zone, Semeq Avannarleq, West Greenland, *J. Geophys. Res.*, 118, 1-16. doi:10.1002/jgrf.20079, 2013.
119. Hansen, J., P., P. Kharecha, M. Sato, V. Masson-Delmotte, F. Ackerman, D. Beerling, P.J. Hearty, O. Hoegh-Guldberg, S.L. Hsu, C. Parmesan, J. Rockstrom, E.J. Rohling, J. Sachs, P. Smith, K. Steffen, L. V. Susteren, K. von Schuckmann, J.C. Zachos, Scientific Prescription to Avoid Dangerous Climate Change for Young People, Future Generations, and Nature, *PlosOne*, Vol.8, Issue 12, e81648, 1-26. December 2013.
120. Fernandez-Prieto, D., et al. Earth observation and cryosphere science: the way forward. *Proceedings of Earth Observation and Cryosphere Science*, 204-18, 2013.
121. Vaughan, D.G., J.C. Comiso, I. Allison, J. Carrasco, G. Kaser, R. Kwok, P. Mote, T. Murray, F. Paul, J. Ren, E. Rignot, O. Solomina, K. Steffen, and T. Zhang, Observatioon: Cryopshere. In: *Climate Change 2013: The Physical Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Stocker, T.F., D. Qin, G.-K. Platter, M. Tignor, S.D.K. Allen, J. Boschung, A. Naueles, Y. Xia, V. Bex, and P.M. Midgley (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, U.S.A. 317-381, 2013.
122. Hanna, E., X. Fettweis, S. H. Mernild, J. Cappelen, M.H. Ribergaard, Ch. Shuman, K Steffen, L. Wood, and T.L. Mote, Atmospheric and oceanic climate forcing of the exceptional Greenland ice sheet surface melt in summer 2012, *Int. J.. Climatology*, doi:10.1002/joc.3743., 2014.
123. Van As, D., M.L. Andersen, D. Petersen, X. Fettweis, J.H. Van Angelen, JTM. Lenaerts, M.R. Van den Broeke, J.M. Lea, C.E. Bøggild, A.P. Ahlstrøm, and K. Steffen, Increasing meltwater discharge from the Nuuk region of the Greenland ice sheet and implications for mass balance (1960-2012). *J. Glac.*, 60 (220), 314-322 (doi: 10.3189/2014JoG13J065), 2014.
124. Steen-Larsen, H.C., V. Masson-Delmotte, M. Hirabayashi, R. Winkler, K. Satow, F. Prié, N. Bayou, E. Brun, K. M. Cuffey, D. Dahl-Jensen, M. Dumont, M. Guillevic, J. Kipfstuhl, A. Landais, T. Popp, C. Risi, K. Steffen, B. Stenni, A. Sveinbjörnsdóttir, What controls the isotopic composition of Greenland surface snow? *Clim. Past*, 10, 377–392, doi:10.5194/cp-10-377-2014, 2014.
125. McGrath, D., K. Steffen, P. Holland, T. Scambos, H. Rajaram, W. Abdalati and E. Rignot, The structure and effect of suture zones in Larsen C Ice Shelf, Antarctica, *J. Geophys. Res. Earth Surf.*, 10.1002/2013JF002935, 2014.
126. Van As, D., R. Fausto, and K. Steffen. Katabatic winds and piteraqa storms: observation from the Greenland ice sheet, *Geological Survey of Denmark and Greenland Bulletin*, 31, 83-86, 2014.
127. Cullen, N., T. Moelg, J. Conway, and K. Steffen, Assessing the role of sublimation in the dry snow zone of the Greenland ice sheet in a warming world, *J. Geophys. Res., Atmosphere*, 119, doi:10.1002/2014JD021557, 2014.
128. Cox, C.J., Von P. Walden, G.P. Compo, P.M. Rowe, M.D. Shupe, and K. Steffen, Downwelling longwave flux over Summit, Greenland, 2010-2012: Analysis of surface observations and evaluation of ERA-Interim using wavelets, *J. Geophys. Res. Atm.*, DOI: 10.1002/2014JD021975, 2014.
129. Dutrioux, P., C. Stewart, A. Jenkins, K.W. Nicholls, H.F.J. Corr, E. Rignot, and K. Steffen, Basal terraces on melting ice shelves, *Geophys. Res. Lett.*, 41, DOI:10.1002/2014GL060618, 2014.
130. Mernild, S.H., D. Holland, C. Gladish, D. Holland, A. Rosing-Asvid, J.C. Yde, and K. Steffen., Freshwater Flux and Spatiotemporal Simulated Runoff Variability into Ilulissat Icefjord, West Greenland, Linked to Salinity and Temperature Observations near Tidewater Glacier Margins Obtained Using Instrumented Ringed Seals, 45(5), 1426-1445, *J. Phys. Oceanography* doi: http://dx.doi.org/10.1175/JPO-D-14-0217, 2015.

131. Mernild, S.E., Hanna, J. McConnell, M. Sigl, A. Beckerman, J. Yde, J. Cappelen, J. Malmros, and K. Steffen, Greenland precipitation trends in a long-term instrumental climate context (1890-2012): Evaluation of coastal and ice core records, *Int. J. Climatol.*, 35, 303-320, DOI: 10.1002/joc.3986, 2015.
132. Miller, N., M. Shupe, Ch. Cox, D. Von Walden, D. Turner, and K. Steffen, Cloud radiative forcing at Summit, Greenland, *J. Climate*, 28(15), 6267-6280, doi: <http://dx.doi.org/10.1175/JCLI-D-15-0076.1>, 2015.
133. Munneke, P.K., S.R.M. Ligtenberg, B.P.Y. Noël, I.M. Howat, J. E. Box, E. Mosley-Thomson, J. R. McConnell, K. Steffen, J.T. Harper, S.B. Das, and M R. van den Broeke, Elevation change of the Greenland ice sheet due to surface mass balance and firn processes, 1960–2014, *The Cryosphere*, 9, 2009–2025, doi:10.5194/tc-9-2009-2015, 2015.
134. Machguth, H., H.H. Thomsen A. Weidick, J. Abermann, M.L. Andersen, S.B. Andersen, D. Van As, C.E. Bggild, J. Box, R.J. Braithwait, M. Citterio, W. Colgan, R. S. Fausto, K. Gleie, B. Hynek, H. Oerter, .K. Steffen, M. Stober, and R.S.W. Van de Wal, A comprehensive database of glacier surface mass balance observations from the ablation area of the ice sheet and the local glaciers of Greenland, *J. Glaciol.*, doi: 10.1017/jog.2016.75, 62(235) 861–88, 2016.
135. Berkelhammer, M., D. Noone, HC Steen-Larsen, A. Bailey, C. Cox, M. O’Neill, D. Schneider, K. Steffen, and J.W.C. White, Surface-atmosphere decoupling limits accumulation over Greenland, *Science Advances*, 29 Apr 2016: Vol. 2, no. 4, e1501704 DOI: 10.1126/sciadv.1501704, 2016.
136. Munneke1, P.K., D. McGrath, B. Medley, A. Luckman, S. Bevan, B. Kulesa, D. Jansen, A. Booth, P. Smeets, B. Hubbard, D. Ashmore, M. Van den Broeke, H. Sevestre, K. Steffen, A. Shepherd, and N. Gourmelen, Observationally constrained surface mass balance of Larsen C Ice Shelf, Antarctica, *The Cryosphere*, 11, doi.org/10.5194/tc-11-2411-2017.
137. Miller, N.B., M.D. Shupe, Ch.J. Cox, D. Noone, P.O.G. Perrson, and K. Steffen, Surface energy budget responses to radiative forcing at Summit, Greenland, *The Cryosphere*, doi:10.5194/tc-11-497-2017, 11, 497–516, 2017.
138. Naderpour, R., M. Schwank, Ch. Mätzler, J. Lemmetyinen, and K. Steffen, Snow Density and Ground Permittivity Retrieved 2 from L-Band Radiometry: A Retrieval Sensitivity Analysis, *J. Selected Topics in Applied Earth Observations and Remote Sensing* 10(7), 1939-1404, 10.1109/JSTARS.2017.2669336, 2017.
139. Kupiers P., P. Munneki, D. McxGrath, B. Medely, A. Luckman, S. Bevan, B. Kulesa, D. Jansen, A. Booth, P.Smeets, B. Hubbard D. Ashmore, M. van den Broeke, H. Sevestre, K. Steffen, A. Shepherd, and N. Gourmelen, Observationally constrained surface mass balance of Larsen C Ice Shelf, Antarctica, *The Cryosphere*, 11, 2411–2426, 2017.
140. Munneke1, P.K., D. McGrath, B. Medley, A. Luckman, S. Bevan, B. Kulesa, D. Jansen, A. Booth, P. Smeets, B. Hubbard, D. Ashmore, M. Van den Broeke, H. Sevestre, K. Steffen, A. Shepherd, and N. Gourmelen, Observationally constrained surface mass balance of Larsen C Ice Shelf, Antarctica, *The Cryosphere*, 11, 2411–2426, 2017
141. Vandecrux, B., R.S. Fausto, P.L. Langen, D. van As, M. MacFerrin, W.T. Colgan, T. Ingeman-Nielsen, K. Steffen, N.S. Jensen, M. T. Møller, and J.E. Box. Drivers of densification on the Greenland Ice Sheet Revealed by Weather Station Observations and Modelling. *J. Geophys. Res., Earth Surface*, 123, 2563–2576. <https://doi.org/10.1029/2017JF004597>, 2018.
142. Fausto, R.S., J.E. Box, B. Vandecrux, D. van As, K. Steffen, M.J. MacFerrin, H. Machguth, L. Koenig, D. McGrath, C. Charalampidis and R. Braithwaite: A snow density dataset for improving surface boundary conditions in Greenland ice sheet firn modeling, *Frontiers in Earth Science*, section *Cryospheric Sciences*, <https://doi.org/10.3389/feart.2018.00051>, 2018.
143. Iosifescu, I., G.K. Plattner, L.E. Pernas, D.H. Artho, S. Bischof, M. Lehning, and K. Steffen, The EnviDat Concept for an Institutional Environmental Data Portal, *Data Science Journal*, XX: XX, pp. 1–17. DOI: <https://doi.org/10.5334/dsj-2018-028>, 2018.

144. Iosifescu Enescu, I., M. Fraefel, G.-K. Plattner, L. Espona Pernas, D. Haas-Artho, M. Lehning, and K. Steffen, Fostering Open Science at WSL with the EnviDat Environmental Data Portal. *PeerJ Preprints* 6:e27211v1 <https://doi.org/10.7287/peerj.preprints.27211v1>, 2018.
145. Chox J.C, D.C. Noone, M. Berkelhammer, M. O'Neill, M.D. Shupe, W.D. Neff, N.B. Miller, V.P. Walden, and K. Steffen, Supercooled liquid fogs over the central Greenland ice sheet, *Atmos. Chem. Phys.*, 19, 1–19, 2019, <https://doi.org/10.5194/acp-19-1-2019>.
146. Mori, T., K. Goto-Azuma, Y. Kondo, Y. Ogawa-Tsukagawa, K. Miura, M. Hirabayashi, N. Oshima, M. Koike, K. Kupiainen, N. Moteki, S. Ohata, P. R. Sinha, K. Sugiura, T. Aoki, M. Schneebeli, K. Steffen, A. Sato, A. Tsushima, V. Makarov, S. Omiya, A. Sugimoto, and S. Takano, Black Carbon and Inorganic Aerosols in Arctic Snowpack, *J. Geophys. Res. Atm.*, <https://doi.org/10.1029/2019JD030623>, 2019.
147. Houtz D., R. Naderpour, M. Schwank, and K. Steffen, Snow Wetness and Density Retrieved from L-band Satellite Radiometer Observations over a Site in the West Greenland Ablation *J. Remote Sensing of Environment.*, doi.org/10.1016/j.rse.2019.111361, Vol. 235, 2019.
148. Leidman, S.Z., A. K. Rennermalm, A. Broccoli, D. van As, A. Hubbard, K. Steffen, M. Van Den Broeke, Methods for Predicting the Likelihood of Safe Fieldwork Conditions in Harsh Environments, *Frontiers in Earth Science, section Cryospheric Sciences*, submitted, 2019.
149. Hanna, E., J. Cappelen, X. Fettweis, S. H. Mernild, T. L. Mote, R. Mottram, K. Steffen, T. J. Ballinger, R. Hall., Greenland surface air temperature changes from 1981 to 2019 and implications for future ice-sheet melt and mass-balance change, *Int. J. of Climatolo.* submitted, 2019.
150. Abram, N., J.-P. Gattuso, A. Prakash, L. Cheng, M.P. Chidichimo, S. Crate, H. Enomoto, M. Garschagen, N. Gruber, S. Harper, E. Holland, R.M. Kudela, J. Rice, K. Steffen, and K. von Schuckmann, 2019: Framing and Context of the Report. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]. 2019.
151. Heilig, A., O. Eisen, M. Schneebeli, M. MacFerrin, C. M. Stevens, and K. Steffen, Spatial and temporal variability pattern of snow accumulation for the South-Western Greenland Ice Sheet, *The Cryosphere*, 14, 385–402, 2020.
152. Houtz, D., Ch. Mätzler, R. Naderpour, M. Schwank, K. Steffen, Quantifying Melt and Total Liquid Water on Greenland using L-band Radiometry, submitted 2020.
153. Vandecrux, B., R. S. Fausto, , D. van As, W. Colgal, P. L. Langen, K. Haubner, T. Ingeman-Nielsen, A. Heilig, C. M. Stevens, M. MacFerrin, M. Niwano, K. Steffen ,and J.E. Box. Firn cold content evolution at nine sites on the Greenland ice sheet between 1998 and 2017, *J. Glaciology*, 1–12. <https://doi.org/10.1017/jog.2020.30>, 2020.

Book Chapters and Books

1. Steffen, K., J. Comiso, K. StGermain, P. Gloersen, J. Key, and I. Rubinstei, Microwave Remote Sensing of Sea Ice: Chapter 10: The Estimation of Geophysical Parameters Using Passive Microwave Algorithms, ed. F. Carsey, AGU Monograph, 201-228, 1992.
2. Grenfell, T.C., D. Cavalieri, D. Comiso, and K. Steffen, Microwave Remote Sensing of Sea Ice Chapter 14: Considerations for Microwave Remote Sensing of Thin Sea Ice, ed. F. Carsey, AGU Monograph, 291-300, 1992.
3. Seelye, M., K. Steffen, and D. Cavalieri, Microwave Remote Sensing of Sea Ice: Chapter 15: Microwave Remote Sensing of Polynyas, ed. F. Carsey, AGU Monograph, 303-312, 1992.
4. Steffen, K., AVHRR applications for ice surface studies; in: Oceanographic Applications of Remote Sensing, ed. M. Ikeda and F. W. Dobson, CRC Press, INC., 307-320, 1995.

5. Steffen, K., P.U. Clark, J.G. Cogley, D. Holland, S. Marshall, E. Rignot, and R. Thomas, Rapid changes in glaciers and ice sheets and their impacts on sea level. In: *Abrupt Climate Change*. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. U.S. Geological Survey, Reston, VA, pp. 60–142, 2008.
6. Clark, P.U., A.J. Weaver, E. Brook, E.R. Cook, T.L. Delworth, and K. Steffen, Executive Summary. In: *Abrupt Climate Change*. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. U.S. Geological Survey, Reston, VA, pp. 1–7, 2008.
7. Dahl-Jensen, D., J. Bamber, C.E. Bøggild E. Buch, J.H. Christensen, K. Dethloff, M. Fahnestock, S. Marshall, M. Rosing, K. Steffen, R. Thomas, M. Truffer, M. van den Broeke and C.J. van der Veen. AMAP 2009. The Greenland ice sheet in a changing climate: snow, ice and permafrost (SWIPS), 2009. Arctic Monitoring and Assessment Programme (AMAP), Oslo, 115p., ISBN 13 978 82 7971 052 3.
8. Becker, O.O. and K. Steffen, *Above Zero*, Hatje Cantz Verlag, Austria, pp.175, ISBN 978-3-7757-2437-1, 2009.
9. Njastad, K., R. Armstrong, R.W. Corell, D.D. Jensen, K.R. Leslie, A. Rivera, Y. Tandong, J.D. Winther, and K. Steffen. *Melting snow and ice: call for action*, Center for Ice, Climate and Ecosystems, Norwegian Polar Institute, pp.92, ISBN 978-82-7666-264-1, 2009.
10. Allison, I., et al., *The Copenhagen Diagnosis: Updating the World on the Latest Climate Change*, The University of South Wales Climate Change Research Center (CCRC), Sydney, Australia, pp.60, ISBN 978-0-9873216-0-6, 2009.
11. Steffen, K., R. Thomas, E. Rignot, G. Cogley, M. Dyurgerov, S. Raper, P. Huybrechts, E. Hanna, *Cryospheric Contributions to Sea Level Variability*, in: *Understanding sea-level rise and variability* (eds. J.A. Church, P.L. Woodworth, T. Aarup, and W.S. Wilson), Wiley-Blackwell Publishing Ltd., pp. 177-225, 2010.
12. Solomon, S., D. Battisti, S. Doney, K. Hayhoe, I.M. Held, D.P. Lettenmaier, D. Lobell, H.D. Matthews, R. Pierrehubert, M. Raphael, R. Richels, R.L. Root, K. Steffen, C. Tebalidi, G.W. Yohe, *Climate Stabilization Targets: Emission, Concentrations, and Impacts over Decades to millennia*, National Research Council, Washington D.C., pp. 286, 2011.
13. Steffen K., et al., ACSYS – A Scientific Foundation for the Climate and Cryosphere Programme (CliC), in: *Arctic Climate Change*, eds. Lemke, P., and H.W. Jacobi, Springer Verlag, *Atmospheric and Oceanographic Science Library* 42, p. 437-461, 2011.
14. Tedesco et al., *Remote Sensing of the Cryosphere*, Wiley, SBN-13: 978-1118368855 Oxford, 2015.

OTHER PUBLICATIONS

1. Steffen, K., Lokale Schneeverteilung auf Axel Heiberg Island, NWT *Geographica Helvetica*, 32(4), 195-202, 1977.
2. Steffen, K., Mount Rundle, *Geographica Helvetica*, 32(4), 219-221, 1977.
3. Steffen, K., and F. Müller, Local snow distribution on Axel Heiberg Island, Canada: an empirical method of extrapolation from snow-course data on White Glacier, *Polar Geography and Geology*, 4(4), 211-223, 1980.
4. Steffen, K., Schneeverteilung auf Axel Heiberg Island, N.W.T. - Empirische Methode zur Bestimmung von Schneehöhen auf dem White Glacier; Schneevariationen auf der Tundra und Gletscher, Diploma Thesis, Dept. of Geography, Swiss Federal Institute of Technology, Zürich, p. 73, 1977.

5. Steffen, K., Sea ice classification from infrared thermometry over the North Water, Winter 1980/81. *Berichte und Skripten*, Geographisches Institut ETH Zürich, p. 10, 1982.
6. Steffen, K., The North Water Project. *Hasselblad* 74, 19, 22-25, 1983.
7. Steffen, K., Oberflächentemperatur einer arktischen Polynya; North Water in Winter. PhD. Thesis, Dept. of Geography, Swiss Federal Institute of Technology, Zürich, p. 193, 1984.
8. Steffen, K., Emission coefficients of different cloud types in the spectral range 9.5-11.5 μm . *Zürcher Geographische Schriften*, 14, (Applied Climatology), 81-82, 1984.
9. Steffen, K., Surface temperature and sea ice of an arctic polynya: North Water in winter. Canadian and Greenlandic high Arctic. *Zürcher Geographische Schriften*, 19, p. 193, 1985.
10. Steffen, K., North Water Project: 1972 - 1985, Axel Heiberg Expedition: 1961 - 1985. List of Publications. *Berichte und Scripten*, 23, Geographisches Institute ETH Zürich, p. 26, 1986.
11. Steffen, K., The Iceland Excursion (21 papers), *Berichte und Scripten*, Geographisches Institut ETH, Zürich, p. 120, 1986.
12. Steffen, K., Atlas of sea ice types, deformation processes and openings in the ice. *Zürcher Geographische Schriften*, 20, p. 55, 1986.
13. Steffen, K., Sea ice distribution derived from passive microwave data for the North Water in winter. Conference on polynyas with special reference to the North Water, McGill University, Montreal, p. 21, 1988.
14. Steffen, K., and A.J. Schweiger, Sensitivity of passive microwave sea ice concentration algorithms to the selection of locally and seasonally adjusted tie points, *International Geoscience and Remote Sensing, Quantitative Remote Sensing*, 2, 773-776, 1989.
15. Schweiger A.J., and K. Steffen, Comparison of sea ice parameters retrieved from passive microwave (SSM/I), Landsat MSS and AVHRR imagery, *International Geoscience and Remote Sensing, Quantitative Remote Sensing*, 2, 769-772, 1989.
16. Steffen, K., Energy flux estimation over sea ice in northern Baffin Bay based on satellite passive microwave measurements, International Geographical Union, Study Group on Marine Geography, Sea-Ice/Atmosphere Interface, Wilhelmshaven, p. 12, 1989.
17. Steffen, K. Bidirectional Reflectance of Snow at 500 - 600 nm, *Zürcher Geographische Schriften* No. 38 (ed. A. Ohmura, H. Lang), 109-123, 1990.
18. Cavalieri, D., J. Crawford, B. Holt, D. Eppler, L.D. Farmer, K. Steffen and C.T. Swift. NASA Sea Ice Validation Program for the DMSP SSM/I, CRREL Monograph 90-1 (Sea ice Properties and Processes), 197- 202, 1990.
19. Steffen, K., Climatology of the Arctic ocean: Historical data sets, ARCUSS Modeling workshop proceedings, Pacific Grove, CA, 13-17 July 1992, Joint Oceanographic Institutions Inc., 46-48, 1992.
20. Steffen, K., and A. Schweiger, Application of passive microwave satellite data in arctic climate research. *Glaciological Data, Passive Microwave Research*, Univ. of Colorado at Boulder, GD-24, 19-28, 1992.
21. Steffen, K., and A. Schweiger. Sea ice retrieval comparison with Landsat satellite and aerial photography of the Bering Sea. 2nd WMO Operational Ice Remote Sensing Workshop, Atmospheric Environmental Service, Vol. 2, 121-130, 1992.
22. Steffen, K., J. Heinrichs, J. Maslanik, and J. Key, Sea ice feature and type identification in merged ERS-1 SAR and Landsat Thematic Mapper imagery, *Proceedings First ERS-1 Symposium*, France, 4-6 Nov. 1992, ESA SP 359, 361-365, 1992.

23. Steffen, K., Polynyas: open water in frozen sea, in Polar Regions, Weldon Owen Publ., 40-41, 1995.
24. Steffen, K. and T. DeMaria, Surface energy balance of Arctic sea ice win winter, 4th Conf. On Polar Met. & Ocean, Dallas, 75-78, 1995.
25. Steffen, K., J. Box and W. Abdalati, Greenland Climate network: GC-Net, CRREL Report on Glacier, Ice Sheets and Volcanoes, No. 96-27, 98-103, 1996.
26. Steffen, K., and J. E. Box, Recent climate variability of the Greenland ice sheet: First results from the Greenland Climate network, , 5th Conf. On Polar met. And Ocean., Dallas, 83-86, 1999.
27. Partington, K.C. and K. Steffen, Development of a joint scientific-operational Arctic-wide sea ice product, White paper prepared for NASA and NOAA, pp.27, 1998.
28. Box, J.E., and K. Steffen, An empirically-based model for estimating blowing snow mass flux for the Greenland ice sheet, 5th Conf. On Polar Met. & Ocean., Dallas, 466-69, 1999.
29. Steffen, K., Solar zenith dependence of anisotropic reflectance of snow, IRS '02: Current Problems in Atmospheric Radiation, 2002.
30. Mernild, S.H., G.E. Liston, C.A., Hiemstra, C.A., and K. Steffen, Record 2007 Greenland ice sheet surface melt extent and runoff, *EOS*, 90, 13-14, (Jan 13), 2009.
31. Steffen, K., and A. Rigling, Globale Prozesse verlangen nach regionalen Lösungen (Essay), *Schweiz. Z. Forstwes.* 165(8), 236-239, 2014.

REPORTS

1. Steffen, K., Remote Sensing of North Water by airborne radiation thermometry, North Water Progress Report V, McGill University, Montreal and ETH, Zurich, p. 121-126, 1978.
2. Steffen, K., Remote Sensing of surface temperatures in the North Water polynya and energy exchange study over thin ice in Resolute Passage, winter 1978/79, North Water Progress Report VI, McGill University, Montreal and ETH, Zürich, p. 45-89, 1979.
3. Steffen, K., R. Barry, and A. Schweiger, DMSP-SSM/I NASA algorithm validation using primarily Landsat, and secondarily DMSP and/or AVHRR visible and thermal infrared satellite imagery, Annual progress report to NASA, Cooperative Institute for Research in Environmental Sciences, Univ. of Colorado, Boulder, p. 106, 1988.
4. Steffen K., A. Schweiger, R. Barry, and R. Weaver, DMSP-SSM/I NASA algorithm validation using primarily Landsat, and secondarily DMSP and/or AVHRR visible and thermal infrared satellite imagery, Mid-annual progress report to NASA, Swiss Federal Institute of Technology, Zürich and Cooperative Institute for Research in Environmental Sciences, Univ. of Colorado, Boulder, p. 38, 1988.
5. Steffen K., A. Schweiger, R. Barry, and R. Weaver, DMSP-SSM/I NASA algorithm validation using primarily Landsat, and secondarily DMSP and/or AVHRR visible and thermal infrared satellite imagery, Progress report to NASA, Swiss Federal Institute of Technology, Zürich and Cooperative Institute for Research in Environmental Sciences, Univ. of Colorado, Boulder, p. 40, 1989.
6. Steffen K., A. Schweiger, R and R. Weaver, DMSP-SSM/I NASA algorithm validation using primarily Landsat, and secondarily DMSP and/or AVHRR visible and thermal infrared satellite imagery, Final report to NASA, Swiss Federal Institute of Technology, Zürich and Cooperative Institute for Research in Environmental Sciences, Univ. of Colorado, Boulder, p. 44, 1989.
7. Steffen, K., A. Schweiger, J. Maslanik, J. Key, R. Weaver, R. Barry. Sea Ice - Atmosphere Interaction: Application of Multispectral Satellite Data in Polar Surface Energy Flux Estimates,

- Progress Report to NASA, Swiss Federal Institute of Technology, Zürich and CIRES, University of Colorado at Boulder, p. 37, 1990.
8. Steffen, K., A. Schweiger, J. Maslanik, J. Key, R. Weaver. Sea Ice - Atmosphere Interaction: Application of Multispectral Satellite Data in Polar Surface Energy Flux Estimates, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 14, 1991.
 9. Steffen, K. Spectral reflectance of snow. ETH Greenland Expedition: Progress Report No.1, April 1990 to February 1991. Dept. of Geography, Swiss Federal Institute of Technology, Zürich, 71-76, 1991.
 10. Steffen, K., and A. Ouchi. Upper air sounding. ETH Greenland Expedition: Progress Report No.1, April 1990 to February 1991. Dept. of Geography, Swiss Federal Institute of Technology, Zürich, 60-67, 1991.
 11. Steffen, K. and A. Schweiger. DMSP-SSM/I NASA algorithm validation using Landsat satellite imagery. NASA Technical Memorandum 104559, 33-46, 1992.
 12. Steffen, K., J. Key, A. Schweiger, J. Maslanik, M. Haefliger, C. Fowler, Sea Ice - Atmosphere Interaction: Application of Multispectral Satellite Data in Polar Surface Energy Flux Estimates, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 44, 1992.
 13. Steffen, K. and A. Schweiger. DMSP-SSM/I NASA algorithm validation using Landsat satellite imagery. NASA Technical Memorandum 104559, 33-46, 1992.
 14. Steffen, K., J. Key, A. Schweiger, J. Maslanik, M. Haefliger, C. Fowler, Sea Ice - Atmosphere Interaction: Application of Multispectral Satellite Data in Polar Surface Energy Flux Estimates, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 44, 1992.
 15. Steffen, K. Spectral reflectance of snow. ETH Greenland Expedition, Progress Report 2, eds A. Ohmura. Dept. of Geography, Swiss Federal Institute of Technology, Zürich, 63-69, 1992.
 16. Barry, R.G., J. Key, J. Maslanik, K. Steffen, R. Weaver. Parameterization of scaling of Arctic ice conditions in the context of ice-atmosphere processes. Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 35, 1992.
 17. Comiso, J., K. Steffen, D. Rothrock. Polar applications of AVHRR data. NASA Technical Memorandum, p. 38, 1992.
 18. Steffen, K., J.R. Key and J.A. Maslanik, Sea ice - atmosphere interaction: Application of multispectral satellite data in polar surface energy flux estimates, NASA triennial Report, p.7, 1993.
 19. Barry, R.G., K. Steffen, J.A. Maslanik, and J.R. Key, Parameterization and scaling of arctic conditions in the context of ice-atmospheric processes, NASA triennial Report, p.7, 1993.
 20. Steffen, K., J. Key, J. Maslanik, and A. Schweiger, Sea ice - atmosphere interaction: Application of multispectral satellite data in polar surface energy flux estimates, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 20, 1993.
 21. Barry, R.G., J. Key, J. Maslanik, K. Steffen, R. Weaver. Parameterization of scaling of Arctic ice conditions in the context of ice-atmosphere processes. Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 29, 1993.
 22. Steffen, K., W. Abdalati, J. Stroeve, and J. Key, Assessment of climate variability of the Greenland ice sheet: integration of in situ and satellite measurements, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 26, 1994.
 23. Key, J., J. Maslanik, and K. Steffen, Ice surface temperature retrieval from AVHRR, ATSR, and passive microwave satellite data: algorithm development and application, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 14, 1994.

24. Barry, R.G., J. Key, J. Maslanik, K. Steffen, R. Weaver. Parameterization of scaling of Arctic ice conditions in the context of ice-atmosphere processes. Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 33, 1994.
25. Steffen, K., W. Abdalati, J. Stroeve, and J. Key, Assessment of climate variability of the Greenland ice sheet: integration of in situ and satellite measurements, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 39, 1995.
26. Barry, R.G., J. Key, J. Maslanik, K. Steffen, R. Weaver. Parameterization of scaling of Arctic ice conditions in the context of ice-atmosphere processes. Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 66, 1995.
27. Key, J., J. Maslanik, and K. Steffen, Ice surface temperature retrieval from AVHRR, ATSR, and passive microwave satellite data: algorithm development and application, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 15, 1995.
28. Steffen, K., Program for Regional Arctic Climate Assessment, NASA Project Guideline Report, CIRES, University of Colorado at Boulder, p. 32, 1995
29. Steffen, K., W. Abdalati, J. Stroeve, and J. Key, Assessment of climate variability of the Greenland ice sheet: integration of in situ and satellite measurements, Progress Report to NASA, CIRES, University of Colorado at Boulder, p. 43, 1996.
30. Steffen, K., A. Nolin, J. White, Assessment of variations in the snow accumulation rate in northern, Progress Report to NSF/OPP, CIRES, University of Colorado at Boulder, p. 13, 1996.
31. Steffen, K., J. Box, and W. Abdalati, Greenland surface climatology and GC-Net, Program for Arctic and Regional Climate Assessment Report, University of Colorado, CIRES, p.25-30, 1996.
32. Steffen, K., A. Nolin, and J. White, Snow accumulation rates in northern Greenland, Program for Arctic and Regional Climate Assessment Report, University of Colorado, CIRES, p.34-36, 1996.
33. Box, J., and K. Steffen, Daytime ice sheet cloud climatology from AWS and modeled data, Program for Arctic and Regional Climate Assessment Report, University of Colorado, CIRES, p.30-33, 1996.
34. Abdalati, W., and K. Steffen, Accumulation and hoar effects on microwave emission in the firn, Program for Arctic and Regional Climate Assessment Report, University of Colorado, CIRES, p.75-77 30, 1996.
35. Abdalati, W., and K. Steffen, The response of the Greenland ice sheet to the eruption of Mt. Pinatubo, Program for Arctic and Regional Climate Assessment Report, University of Colorado, CIRES, p.78-79, 1996.
36. Stroeve, J., K. Steffen, and A. Nolin, Greenland ice sheet radiation characteristics from AVHRR, Program for Arctic and Regional Climate Assessment Report, University of Colorado, CIRES, p.89-92, 1996.
37. Steffen, K., A. Nolin, and J. White, Assessment of variations in the snow accumulation rate in northern Greenland, NSF Report, pp. 12, 1997.
38. Steffen, K., J. Box, J. Weber, Greenland ice sheet climatology and surface energy balance modeling: Greenland climate network (GC-Net), NASA Report, pp.21, 1997.
39. Steffen, K., and J. Heinrichs, Sea ice and ocean processes in Baffin Bay: A study using Radarsat data and numerical modeling, NASA Report, pp. 12, 1997.
40. Steffen, K., J. Box, J. Weber, Greenland ice sheet climatology and surface energy balance modeling: Greenland climate network (GC-Net), NASA Report, pp.22, 1998.

41. Steffen, K., and J. Heinrichs, Sea ice and ocean processes in Baffin Bay: A study using Radarsat data and numerical modeling, NASA Report, pp. 14 1998.
42. Steffen, K., and R. Weaver, Sea ice monitoring into the next millennium, NASA Report on the Workshop to evaluate new approaches to sea ice observations, Boulder, pp. 10, 1998.
43. Steffen, K., J. Box, N. Cullen, Greenland ice sheet climatology and surface energy balance modeling: Greenland climate network (GC-Net), NASA Report, pp.23, 1999.
44. Steffen, K., Aerosol, cloud, climate interactions, NASA Report, pp.10, 1999.
45. Steffen, K., J. Box, N. Cullen, Greenland ice sheet climatology and surface energy balance modeling: Greenland climate network (GC-Net), NASA Report, pp.49, 2000.
46. Steffen, K., and S. Starkweather, Aerosol, cloud, climate interactions, NASA Report, pp.33, 2000.
47. Steffen, K., V. Sloan, and J. Heinrichs, Sea ice and ocean processes in Baffin Bay: A study using Radarsat data and numerical modeling, NASA Report, pp. 35, 2000.
48. Steffen, K., World Climate Research Program, ACSYS Operational Product Panel, 1st Meeting, WMO report, pp.12, 2000.
49. Steffen, K., J. Box, N. Cullen, Greenland ice sheet climatology and surface energy balance modeling: Greenland climate network (GC-Net), NASA Report, pp.35, 2001.
50. Steffen, K., and K. Daniels, Climatology of Arctic Canada, NASA Report, pp.24, 2001.
51. Steffen, K., and S. Starkweather, Aerosol, cloud, climate interactions, NASA Report, pp.21, 2001.
52. Steffen, K., World Climate Research Program, ACSYS Operational Product Panel, WMO report, 2nd meeting, pp.23, 2001.
53. Steffen, K., J. Box, N. Cullen, Greenland ice sheet climatology and surface energy balance modeling: Greenland climate network (GC-Net), NASA Report, pp.24, 2002.
54. Steffen, K., and S. Starkweather, Aerosol, cloud, climate interactions, NASA Report, pp.15, 2002.
55. Steffen, K., World Climate Research Program, ACSYS Operational Product Panel, WMO report, 2nd meeting, pp.16, 2002.
56. Steffen, K., N. Cullen, R. Huff, Assessment of basal melt of Petermann Gletscher in northwestern Greenland, NASA Report, pp.18, 2002.
57. Steffen, K., and K. Daniels, Climatology of Arctic Canada, NASA Report, pp.17, 2002.
58. Steffen, K., N. Cullen, T. Albert, S. Starkweather, and R. Huff, Variability and forcing of climate parameters on the Greenland ice sheet: Greenland Climate Network (GC-Net)), NASA Report, pp.26, 2003.
59. Steffen, K., and S. Starkweather, Aerosol, cloud, climate interactions, NASA Report, pp.19, 2003.
60. Steffen, K., and J. Box, Radiation climatology of the Greenland ice sheet derived from climate network data, NASA Report, pp.18, 2003.
61. Steffen, K., N. Cullen, R. Huff, Assessment of basal melt of Petermann Gletscher in northwestern Greenland, NASA Report, pp.18, 2003.
62. Steffen, K., World Climate Research Program, ACSYS Operational Product Panel, WMO report, 3rd meeting, pp.24, 2003.
63. Steffen, K., Ice thickness measurements from moored ice profiling sonars: calibration, data processing and applications, WMO/World Climate Research Program, CliC report, pp.35, 2004.

64. Steffen, K., N. Cullen, R. Huff, S. Starkweather, T. Albert, M. McAllister, Variability and forcing of climate parameters of the Greenland ice sheet: Greenland climate network (GC-Net), NASA Report NAG5-10857, pp. 31, March 2004.
65. Steffen, K., and Sandy Starkweather, Aerosol - Cloud - Climate Interactions, NASA Report NAG5-10966, pp. 17, April 2004.
66. Steffen, K., R. Huff, Greenland Ice Sheet Melt Climatology Based on Passive and Active Satellite Data: Combining SSM/I and QuikSCAT Data, NASA Report NAG5-12381, pp. 24, 2004.
67. Steffen, K., N. Cullen, and R. Huff, Assessment of Basal Melt of Petermann Gletscher in Northwestern Greenland, NASA and NSF Report NAG5-12075, pp. 24, February 2004.
68. Steffen, K., and K. Daniels, Climatology of Arctic Canada, Final Report NAG5-9043 to NASA, pp. 20, January 2004.
69. Steffen, K., World Climate Research Programme (WCRP) Arctic Climate System Study (ACSYS) (ACSYS) and Climate and Cryosphere (CliC), Report of the second session of the ACSYS/CliC Observation Products Panel, pp. 32, October 2004.
70. Steffen, K., and S. Starkweather, Aerosol - Cloud - Climate Interactions, NASA Report NNG04GM25G, pp. 20, April 2005.
71. Steffen, K., N. Cullen, R. Huff, J. Maurer, Variability and forcing of climate parameters of the Greenland ice sheet: Greenland climate network (GC-Net), NASA Report NAG5-10857, pp. 36, February 2005.
72. Steffen, K., and R. Huff, Greenland Ice Sheet Melt Climatology Based on Passive and Active Satellite Data: Combining SSM/I and QuikSCAT Data, NASA Report NAG5-12381, pp. 22, 2005.
73. Steffen, K., N. Cullen, and R. Huff, Assessment of Basal Melt of Petermann Gletscher in Northwestern Greenland, NASA and NSF Report NAG5-12075, pp. 8, February 2005.
74. Steffen, K., R. Huff, Surface Climate Analysis of the Greenland Ice sheet, NASA PARCA report, pp. 5, December 2005. Huff, R., K. Steffen, Surface Melt Anomalies of the Greenland Ice Sheet, NASA PARCA Report, pp. 4, December 2005.
75. Steffen, K., N. Cullen, and R. Huff, Assessment of Basal Melt of Petermann Gletscher in Northwestern Greenland, Final NASA and NSF Report NAG5-12075, pp. 15, August 2006.
76. Steffen, K., and R. Huff, Greenland Ice Sheet Melt Climatology Based on Passive and Active Satellite Data: Combining SSM/I and QuikSCAT Data, Final NASA Report NAG5-12381, pp. 28, October 2006.
77. Steffen, K., N. Cullen, R. Huff, J. Maurer, Variability and forcing of climate parameters of the Greenland ice sheet: Greenland climate network (GC-Net), Final NASA Report NAG5-10857, pp. 29, March 2006.
78. Steffen, K., R. Huff, and J. Rial, Mapping of annual ice layer extent and snow accumulation in the percolation zone of the Greenland ice sheet: QuickSCAT application and Greenland climate network, NASA Report NASA Grant NNG06GB08G, pp. 36, December 2006.
79. Steffen, K., and R. Huff, Greenland Ice Sheet Melt Climatology Based on Passive and Active Satellite Data: Combining SSM/I and QuikSCAT Data, Final NASA Report NAG5-12381, pp. 28, October 2006.
80. Steffen, K., N. Cullen, and R. Huff, Assessment of Basal Melt of Petermann Glacier in Northwestern Greenland, Final NASA and NSF Report NAG5-12075, pp. 15, August 2006.

81. Steffen, K., T. Philips, J. Adler, K. Sampson, W. Colgan, Mapping of annual ice layer extent and snow accumulation in the percolation zone of the Greenland ice sheet: QuickSCAT application and Greenland climate network, NASA Report NASA Grant NNG06GB08G, pp. 41, December 2007.
82. Steffen, K., Melt flow acceleration of the Greenland ice Sheet, NASA report NNX07AF15G, 15p, 2007.
83. Steffen, K., T. Philips, J. Adler, K., W., Colgan, Mapping of annual ice layer extent and snow accumulation in the percolation zone of the Greenland ice sheet: QuickSCAT application and Greenland climate network, NASA Report NASA Grant NNG06GB08G, pp. 38, December 2008.
84. Steffen, K., Melt flow acceleration of the Greenland ice Sheet, NASA report NNX07AF15G, 12p, 2008.
85. Steffen, K., T. Phillips, K. Sampson, Surface processes of the Greenland ice sheet under a warming climate, NASA report NNX08AT85G, 18 p, 2009.
86. Steffen, K. Melt-flow acceleration of the Greenland ice sheet, NASA report NNX08AR96G, p.14, 2009.
87. Steffen, K., T. Phillips, L. Colgan, and D. McGrath, Surface processes of the Greenland ice sheet under a warming climate, NASA report NNX08AT85G, 42p, 2010.
88. Steffen, K. Melt-flow acceleration of the Greenland ice sheet, NASA report NNX09AR99G, p.15, 2010.
89. Steffen, K., L. Colgan, N. Bayou, and T. Phillips, Surface processes of the Greenland ice sheet under a warming climate, NASA report NNX08AT85G, 32p, 2011.
90. Steffen, K. Melt-flow acceleration of the Greenland ice sheet, NASA report NNX09AR99G, p.14, 2011.
91. Steffen, K., L. Colgan, and N. Bayou, Surface processes of the Greenland ice sheet under a warming climate, NASA report NNX08AT85G, 32p, 2012.
92. Steffen, K., Surface processes of the Greenland ice sheet under a warming climate, NASA final report NNX08AT85G, 21p, 2012.
93. Steffen, K. Melt-flow acceleration of the Greenland ice sheet, NASA report NNX09AR99G, p.12, 2012.
94. Steffen, K., L. Colgan, and N. Bayou, Surface processes, glacio-hydrology, and englacial modeling of the Greenland ice sheet, NASA progress report NNX11AF47G, 32, 2012.
95. Steffen, K. Melt-flow acceleration of the Greenland ice sheet, NASA final report NNX09AR99G, p.16, 2013.
96. Steffen, K., and N. Bayou, Surface processes, glacio-hydrology, and englacial modeling of the Greenland ice sheet, NASA progress report NNX11AF47G, 23, 2013.
97. Fernández-Prieto, D., et al. Earth Observation and Cryosphere Science Conf.' Frascati, Italy, 13-16 November 2012 (ESA SP-712, May 2013).
98. Steffen, K., Surface processes, glacio-hydrology, and englacial modeling of the Greenland ice sheet, NASA progress report NNX11AF47G, 27, 2014.