

Curriculum Vitae of Hajo Eicken

PERSONAL INFORMATION

University address: Geophysical Institute and Dept. of Geology & Geophysics, University of Alaska Fairbanks, P.O. Box 757320, Fairbanks, AK 99775-7320, phone: 907-474-7280, e-mail: hajo.eicken@gi.alaska.edu

ACADEMIC CAREER

Academic degrees

December 1990: Ph. D. degree (Geophysics program) from the University of Bremen, Germany

January 1988: Diploma Degree in Mineralogy, Technical University of Clausthal, Germany

Professional Record

March 1998 - present: Associate Professor of Geophysics / Sea-ice geophysicist at the Dept. of Geology and Geophysics and the Geophysical Institute, University of Alaska Fairbanks

October 1995 - February 1998: Senior scientist at the Alfred Wegener Institute (Department of Oceanic and Atmospheric Physics, head of research group "Sea ice physics and remote sensing")

August 1992 - September 1995: Employment as staff scientist at the Alfred Wegener Institute (Department of Oceanic and Atmospheric Physics)

February 1991 - July 1992: Employment as Postdoctoral scientist at the Alfred Wegener Institute (Department of Geophysics and Glaciology)

May 1988 - January 1991: Employment as Ph. D. student at the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany (Department of Geophysics and Glaciology)

January - April 1988: Visiting Scientist at the Cold Regions Research and Engineering Laboratory, Hanover, N. H.

University teaching

Since Fall Semester 1998 at UAF: GEOS 120 Glaciers, volcanoes and earthquakes (Glaciers module of the course), GEOS 615 Sea ice geophysics, GEOS 692 Image-processing applications in the geosciences, GEOS 692 Field techniques in interdisciplinary sea-ice research (offered jointly with Hokkaido University, Sapporo, Japan)

September 1996 - August 1997: Lecturer at the University of Bremen, Dept. of Geosciences (Courses taught in "Physical chemistry and phase relations in petrology", "Technical rock physics")

Graduate student advising

Christian Haas (Principal research advisor, University of Bremen, completion in 1996), Josef Kolatschek (Principal research advisor, University of Bremen, completion in 1998), Johannes Freitag (Principal research advisor, University of Bremen, completion in 1999), Karoline Frey (Chair of Advisory Committee, 1999-2002, deceased), Aaron Stierle (Chair of Advisory Committee, 1999-2001), Andrew Mahoney (Chair of Advisory Committee, 2000-), Lars Backstrom (2002-), Heike Merkel (2003-), Jeremy Miner (2003-)

COMMITTEE MEMBERSHIP, PROFESSIONAL & PUBLIC SERVICE

Membership in professional societies

American Geophysical Union

International Glaciological Society

German Society for Polar Research

National Association of Geoscience Teachers

Appointment to professional committees

Member, American Geophysical Union – Cryosphere Executive Committee, 2000-

Member, Arctic Ocean Sciences Board (ASOB) Core Group on "Arctic Paleo-River Discharge" (APARD), 1998-present

Member, Science Steering Committee of Scientific Committee on Antarctic Research (SCAR) Program "Antarctic Sea Ice Processes and Climate" (ASPeCt), 1997-2004

Member, Sea-Ice Commission of the International Association for the Physical Sciences of the Ocean (IAPSO), 1995-present

Other professional activities

Member, International Conference on Arctic Research Planning (ICARP II) Working Group on Arctic Shelf Seas, 2004-

Session Co-Chair and Program Committee Member, IEEE International Geoscience Remote Sensing Symposium (IGARSS), Anchorage, 2004

Selection Editor "Cryosphere" (AGU Virtual Journal), 2003-

Member, Science Definition Team, NASA Jupiter Icy Moons Orbiter, 2003-

Chair, Barrow Arctic Science Consortium (BASC) Science Advisory Group, 2001-
Member, NASA Europa Focus Group, 2000- (Team Leader of EFG Terrestrial Analogs
Group, 2001-)
Member, Steering Committee of NSF ARCSS Ocean-Atmosphere-Ice Interaction
Program (OAI), 2000-2004
Associate Editor, Journal of Geophysical Research - Oceans, 1999-2003
Member of Scientific Steering Committee of Interagency "Study of Environmental Arctic
Change (SEARCH)", 1999-2003
Coordinator, European Research Program on "Ice-tank studies of physical-biological
interactions in the sea-ice cover" (INTERICE), 1996-1998
Group leader (Modern sea-ice processes), Russian-German Collaborational Research
Project on the "System Laptev Sea", 1994-1998
Member of organizing committee and Co-Editor for International Symposium on "Sea ice
and its interactions with the ocean, atmosphere and biosphere", Fairbanks, June 2000
Member of organising committee, International Association of Hydraulic Research
(IAHR) 14th Symposium on Ice, July 1998, Potsdam, N.Y. (incl. organization of Special
Session on "Studies of sea-ice processes in ice-tank environments: challenges,
achievements and limitations")

PUBLICATION RECORD (2001-2004 AND SELECTED EARLIER PUBLICATIONS)

Journal articles (Peer-reviewed)

- Dmitrenko I. A., K. N. Tyshko, V. N. Churun, J. A. Hoelemann, H. Eicken, H. Kassens,
and S. A. Kirillov (in press) Impact of flaw polynyas on the hydrography of the
Laptev Sea. *Global Planet. Change*.
- Eicken, H.; Dmitrenko, I.; Tyshko, K.; Darovskikh, A.; Dierking, W.; Blahak, U.;
Groves, J., and Kassens, H. (in press) Zonation of the Laptev Sea landfast ice cover
and its importance in a frozen estuary. *Global Planet. Change*.
- Mahoney, A., H. Eicken, L. Shapiro, T. C. Grenfell (submitted) Mechanisms and driving
forces during a spring ice shove on the Alaskan Chukchi coast. Submitted to *J.
Glaciol.*
- Cole, D. M., H. Eicken, K. Frey, L. H. Shapiro (2004) Observations of banding in first-
year Arctic sea ice. *J. Geophys. Res.* 2004;
109(C08012):doi:10.1029/2003JC001993.
- Eicken, H., T. C. Grenfell, D. K. Perovich, J. A. Richter-Menge, K. Frey (2004)
Hydraulic controls of summer Arctic pack ice albedo. *J. Geophys. Res.*,
109(C08007):doi:10.1029/2003JC001989.
- Junge, K., H. Eicken, J. W. Deming (2004) Bacterial activity at -2 to -20°C in Arctic
wintertime sea ice. *Appl. Environm. Microbiol.*, 70(1), 550-557.

- Pfirman, S., W. Haxby, H. Eicken, M. Jeffries, D. Bauch (2004) Drifting Arctic sea ice archives changes in ocean surface conditions. *Geophys. Res. Lett.*, 31, doi:10.1029/2004GL020666.
- Freitag J., and H. Eicken (2003) Melt water circulation and permeability of Arctic summer sea ice derived from hydrological field experiments. *J. Glaciol.*, 49(166), 349-358.
- Junge, K., H. Eicken and J.W. Deming (2003) Motility of *Colwellia psychrerythra* strain 34H at subzero temperatures, *Appl. Env. Microbiol.*, 69(7), 4282-4284
- Marion, G. M., C. Fritsen, H. Eicken, M. C. Payne (2003) The search for life on Europa: Limiting environmental factors, potential habitats, and Earth analogues. *Astrobiol.*, 3(4):785-811.
- Notz, D., M. G. McPhee, M. G. Worster, G. A. Maykut, K. H. Schluenzen, H. Eicken (2003) Impact of Underwater-Ice Evolution on Arctic Summer Sea Ice, *J. Geophys. Res.*, 108(C7), 3223, doi:10.1029/2001JC001173
- Perovich D. K., T. C. Grenfell, J. A. Richter-Menge, B. Light, W. B. Tucker III, and H. Eicken (2003) Thin and thinner: Sea ice mass balance measurements during SHEBA. *J. Geophys. Res.*, 108(C3), 10.1029/2001JC001079
- Wang, J., R. Kwok, F. J. Saucier, J. Hutchings, M. Ikeda, W. D. Hibler III, J. Haapala, M. D. Coon, H. E. M. Meier, H. Eicken, N. Tanaka, D. Prentki, W. Johnson (2003) Working toward improved small-scale sea ice-ocean modeling in the Arctic seas. *Eos, Transact. Am. Geophys. Un.*, 84(34), 325, 329-330.
- Cole, D. M., H. Eicken, L. H. Shapiro, K. Frey (2002) Some observations of high porosity layers and brine drainage features in first-year sea ice. Proceedings of the 16th IAHR International Symposium on Ice: Ice in the Environment, Dunedin, New Zealand, 2nd-6th Dec. 2002, vol. 2, 179-186.
- Dmitrenko, I., J. Holemann, S. Kirillov, S. Berezovskaya, D. Ivanova, H. Eicken, H. Kassens (2002) The impacts of sea ice on the periodic shallow water dynamics in the Laptev Sea (Siberian Arctic). Proceedings of the 16th IAHR International Symposium on Ice: Ice in the Environment, Dunedin, New Zealand, 2nd-6th Dec. 2002, vol. 2, 375-381.
- Eicken H., H. R. Krouse, D. Kadko, and D. K. Perovich (2002) Tracer studies of pathways and rates of meltwater transport through Arctic summer sea ice. *J. Geophys. Res.*, 107(10), 10.1029/2000JC000583.
- Krembs, C., H. Eicken, K. Junge, J. W. Deming (2002) High concentrations of exopolymeric substances in Arctic winter sea ice: implications for the polar ocean carbon cycle and cryoprotection of diatoms, *Deep-Sea Res.*, 49(12), 2163-2181
- Stierle, A. P., H. Eicken (2002) Sedimentary inclusions in Alaskan coastal sea ice: Small-scale distribution, interannual variability and entrainment requirements. *Arct. Antarct. Alpine Res.*, 34(4), 103-114.
- Eicken, H., W. B. Tucker III, and D. K. Perovich (2001) Indirect measurements of the mass balance of summer Arctic sea ice with an electromagnetic induction technique. *Ann. Glaciol.*, 33, 194-200

- Frey K., H. Eicken, D. K. Perovich, T. C. Grenfell, B. Light, L. H. Shapiro, and A. P. Stierle (2001) Heat budget and decay of clean and sediment-laden sea ice off the northern coast of Alaska. *Proc. Conf. Port Ocean Eng. Arctic Cond.*, Vol. 3, 1405-1412.
- Haas, C. and H. Eicken (2001) Interannual variability of summer sea ice thickness in the Siberian and Central Arctic under different atmospheric circulation regimes, *J. Geophys. Res.*, 106, 4449-4462.
- Junge, K., C. Krembs, J. Deming, A. Stierle, and H. Eicken (2001) A Microscopic Approach to Investigate Bacteria under In-Situ Conditions in Sea-Ice Samples., *Ann. Glaciol.*, 33, 304-310
- Massom, R. A., H. Eicken, and 12 others (2001) Snow on Antarctic sea ice. *Rev. Geophys.*, 39(3), 413-445.
- Alexandrov V. Yu, T. Martin, J. Kolatschek, H. Eicken, M. Kreyscher, and A. Makshtas (2000) Sea-ice circulation in the Laptev Sea and ice export to the Arctic Ocean: Results from satellite remote sensing and numerical modelling. *J. Geophys. Res.*, 105, 17143-17159.
- Eicken H., J. Kolatschek, F. Lindemann, I. Dmitrenko, J. Freitag, and H. Kassens (2000) Identifying a major source area and constraints on entrainment for basin-scale sediment transport by Arctic sea ice, *Geophys. Res. Lett.*, 27, 1919-1922.
- Eicken, H., Bock, C., Wittig, R., Miller, H., and Poertner, H.-O. (2000) Nuclear magnetic resonance imaging of sea ice pore fluids: Methods and thermal evolution of pore microstructure. *Cold Reg. Sci. Technol.*, 31, 207-225
- Perovich, D. K., E. L. Andreas, J. A. Curry, H. Eicken, and 19 others (1999) Year on ice gives climate insights, *Eos, Transact. Am. Geophys. Union*, 80, 481, 485-486.
- Eicken, H. (1998) Factors determining microstructure, salinity and stable-isotope composition of Antarctic sea ice: Deriving modes and rates of ice growth in the Weddell Sea. AGU Antarctic Research Series, 74 (Antarctic Sea Ice Physical Processes, Interactions and Variability, edited by M. O. Jeffries), 89-122
- Eicken, H., E. Reimnitz, V. Alexandrov, T. Martin, H. Kassens, T. Viehoff (1997) Sea-ice processes in the Laptev Sea and their importance for sediment export, *Continental Shelf Res.*, 17(2), 205-233.
- Pfirman, S., R. Colony, D. Nürnberg, H. Eicken, I. Rigor (1997) Reconstructing the origin and trajectory of drifting Arctic sea ice, *J. Geophys. Res.*, 102(C6), 12575-12586.
- Eicken, H., H. Fischer, P. Lemke (1995) Effects of the snow cover on Antarctic sea ice and potential modulation of its response to climate change. *Ann. Glaciol.*, 21, 369-376
- Eicken, H., M. Lensu, M. Leppäranta, W. B. Tucker III, A. J. Gow, O. Salmela (1995) Thickness, structure, and properties of level summer multi-year ice in the Eurasian sector of the Arctic Ocean. *J. Geophys. Res.*, 100, 22697-22710.

- Pfirman, S., H. Eicken, D. Bauch, W. F. Weeks (1995) Potential transport of radionuclides and other pollutants by Arctic sea ice, *Sci. Tot. Environm.*, 159, 129-146
- Thorsteinsson, T., J. Kipfstuhl, H. Eicken, S. J. Johnsen, K. Fuhrer (1995) Crystal size variations in Eemian-age ice from the GRIP ice core, Central Greenland, *Earth Planet. Sci. Let.*, 131, 381-394.
- Eicken, H., M. A. Lange, H.-W. Hubberten, P. Wadhams (1994) Characteristics and distribution patterns of snow and meteoric ice in the Weddell Sea and their contribution to the mass balance of sea ice, *Ann. Geophys.*, 12, 80-93.
- Eicken, H., H. Oerter, H. Miller, W. Graf, J. Kipfstuhl (1994) Textural characteristics and impurity content of meteoric and marine ice in the Ronne Ice Shelf, Antarctica. *J. Glaciol.*, 40(135), 386-398
- Eicken, H. (1993) Automated image analysis of ice thin sections: instrumentation, methods and extraction of stereological and textural parameters. *J. Glaciol.*, 39(132), 341-352.
- Eicken, H. (1992) The role of sea ice in structuring Antarctic ecosystems. *Polar Biol.*, 12, 3-13.
- Smetacek, V., R. Scharek, L. I. Gordon, H. Eicken, E. Fahrbach, G. Rohardt, S. Moore (1992) Early spring phytoplankton blooms in ice platelet layers of the southern Weddell Sea, Antarctica. *Deep-Sea Res.*, 39, 153-168.
- Eicken, H., M. A. Lange, G. S. Dieckmann (1991) Spatial variability of sea-ice properties in the northwestern Weddell Sea. *J. Geophys. Res.*, 96, 10603-10615.
- Lange, M. A., H. Eicken (1991) The sea ice thickness distribution in the northwestern Weddell Sea. *J. Geophys. Res.*, 96, 4821-4837.
- Eicken, H., M. A. Lange (1989) Development and properties of sea ice in the coastal regime of the southeastern Weddell Sea. *J. Geophys. Res.* 94, 8193-8206.

Book chapters etc.

- Deming, J. W. and H. Eicken (in press) Life in ice; in: Baross, J. and W. Sullivan (eds.) *Planets and life: The emerging science of astrobiology*, Cambridge University Press, Cambridge.
- Eicken, H. (2003) From the microscopic to the macroscopic to the regional scale: Growth, microstructure and properties of sea ice. In: Thomas, D. N. and Dieckmann, G. S. (eds.) *Sea ice - An introduction to its physics, biology, chemistry and geology*. Blackwell Science, London, pp. 22-81.
- Eicken, H. (2003) The role of Arctic sea ice in transporting and cycling terrestrial organic matter. In: Stein, R. and Macdonald, R. W. (eds.) *The Organic Carbon Cycle in the Arctic Ocean: Present and Past*. Springer-Verlag, Berlin, pp. 45-53.

- Eicken, H. (2002) Meereis (Sea ice), in "Lexikon der Geowissenschaften (Encyclopedia of the Earth Sciences)", Spektrum Verlag, Heidelberg (incl. 5 contributions for shorter entries in Encyclopedia)
- Eicken, H. and P. Lemke (2001) The response of polar sea ice to climate variability and change. In: *Climate of the 21st century: Changes and risks*, edited by Lozan, J. L. et al., pp. 206-211, Wissenschaftliche Auswertungen/GEO, Hamburg.
- Kassens, H., H. Bauch, I. Dmitrenko, H. Eicken, H.-W. Hubberten, M. Melles, J. Thiede, L. Timokhov (eds.) (1999) *Land-Ocean Systems in the Siberian Arctic: Dynamics and History*. Springer-Verlag, Berlin.
- Eicken, H., P. Lemke (1998) Variabilität der polaren Meereisdecke als Anzeiger für Klimaschwankungen (Variability of polar sea-ice extent in the context of climatic change). In: "Warnsignal Klima - Wissenschaftliche Fakten", J. L. Lozán, H. Graß, M. Hupfer (eds.), Wissenschaftliche Auswertungen/GEO, Hamburg, 207-212.
- Eicken, H. (1995) Wie polar wird ein Polarmeer durch das Meereis? (How does sea ice affect the polar seas?), in: I. Hempel, G. Hempel (Hrsg.) *Biologie der Polarmeere*, Fischer-Verlag, Jena, 58-76.

Articles, non-reviewed

- Junge, K., J. W. Deming, and H. Eicken (2003) A microscopic approach to investigate bacteria under in situ conditions in Arctic lake ice: Initial comparisons to sea ice. In *Bioastronomy 2002: Life Amongst the Stars*, ed. R. Norris and F. Stottman. Australia: Astronomical Society of the Pacific, IAU Symposium Series, **213**, 381–388.
- Mahoney, A.; Eicken, H., and Shapiro, L. (2003) Alaskan landfast sea ice variability and episodic events. *Ber. Polarforsch.*, 443, 60-63.
- Eicken, H., K. Frey, D. K. Perovich, J. A. Richter-Menge, T. C. Grenfell (2002) Spatial and temporal variability of Arctic summer sea-ice albedo and its dependence on meltwater hydraulics. *Glaciol. Data Rep. GD-30*, National Snow and Ice Data Center, Boulder, pp. 55-56, 126.
- Dmitrenko, I. A., J. Hoemann, S. A. Kirillov, S. L. Berezovskaya, H. Eicken, D. A. Ivanova, and H. Kassens (2002) Transformation of Baroclinic Tidal Internal Waves under the Influence of Ice Cover on the Laptev Sea Shelf. *Doklady Earth Sciences* (English translation of Russian Journal *Doklady Akademii Nauk*), Vol. 385, No. 5, 2002, p.609-614
- Eicken, H. (2001) Physical characteristics of the European Polar Seas with special attention to the sea ice cover. Lange, M. A. (Ed.) *Integrated Regional Impact Studies in the European North (IRISEN)*, Proceedings of an Advanced Study Course at Abisko Research Station, Sweden, on July 4-16, 1999; pp. 193-206.