

CURRICULUM VITAE

Name: **Helmut Mayer**
Date of birth: 09 August 1960
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DEGREES

1988 Diplom in Geology and Paleontology, Bayerische Julius-Maximilians-Universität, Würzburg
1992 Master of Science in Oceanography, University of California San Diego, La Jolla, California
1996 Dr. rer. nat. in Geology, Eberhard-Karls-Universität, Tübingen

OUTREACH ACTIVITIES

Series of lectures for the **local community** (including outfitters and tourist guides) in Ilulissat, Greenland, the land base of our glacier fieldwork in 1996, 1997, 1999 and 2005

Design and organization of an **exhibit booth** for the International Association for Mathematical Geology (IAMG) annually since 2001 at AGU Fall Meetings and occasionally at GSA Annual Meetings

Involvement of **high-school students** and undergraduate students in a GPS-oriented field program of snow surveys on Niwot Ridge, Colorado Front Range

TEACHING EXPERIENCE

Computer Applications for Geologists, 1988-1989, Institut für Geologie, Bayerische Julius-Maximilians-Universität Würzburg, Germany (as Lecturer)

General Geology, individual lectures, 1988-1989, Institut für Geologie, Bayerische Julius-Maximilians-Universität Würzburg, Germany (as Lecturer)

Plate Tectonics, individual lectures, 1988-1989, Institut für Geologie, Bayerische Julius-Maximilians-Universität Würzburg, Germany (as Lecturer)

Structural Geology Lab, 1988-1989, Institut für Geologie, Bayerische Julius-Maximilians-Universität Würzburg, Germany (as Lecturer)

Structural Geology Field Course, 1988-1989, Institut für Geologie, Bayerische Julius-Maximilians-Universität Würzburg, Germany (as Lecturer)

Introductory Geology Lab, 1989-1992, Scripps Institution of Oceanography, University of California San Diego, La Jolla, California, USA (as Teaching Assistant)

[Teaching Excellence Award]

Geological Mapping Field Course, 1990-1992, Scripps Institution of Oceanography, University of California San Diego, La Jolla, California, USA (as Teaching Assistant)

[Teaching Excellence Award]

Geophysics, individual lectures and lab sessions, 1994-1996, Institut für Geologie und Paläontologie, Eberhard-Karls-Universität Tübingen, Germany (as Researcher)

Geostatistics, software course for environmental science and geography students, 1996-2001, Fachbereich Geographie/Geowissenschaften, Universität Trier, Germany (as Lecturer)

Advanced Geomathematics, software course for environmental science and geography students, 1997-2001, Fachbereich Geographie/Geowissenschaften, Universität Trier, Germany (as Lecturer)

Statistics II, software course for environmental science and geography students, 1997-2001, Fachbereich Geographie/Geowissenschaften, Universität Trier, Germany (as Lecturer)

SELECTED RESEARCH PROJECTS

- 1994-1996 Magnetostratigraphic and Cyclostratigraphic Investigations of the Early Cretaceous Biancone Formation at Cisono and Pra da Stua (Southern Alps, Italy) with Palaeoclimatical, Geochronological and Geomathematical Implications [**Ph.D. project**, Universität Tübingen, funded by Deutsche Forschungsgemeinschaft (DFG)]
- 1997-2000 Investigation of surface roughness and glaciology of some outlet glaciers of the Greenland Inland Ice using satellite data and high-resolution ground surveys [**Co-PI responsible for GPS work**, Universität Trier, funded by DFG Polar Program]
- 2000-2002 Snow surface roughness --- data collection, geostatistical analysis, relationship to meteorologic observations and snow hydrologic models [**Co-PI responsible for GPS work, instrument operation in the field, GPS data processing**, University of Colorado Boulder, funded by NSF Hydrology]
- 2002-2006 Structural-glaciological characterization of the dynamics of various glacier types: a comparative study of selected glaciers in Iceland, Greenland, and Alaska [**PI, aerial glacier surveys involving GPS**, Technische Universität Darmstadt, funded by DFG]
- 1991 Cruise RAPA Leg 3 to the southern East Pacific Rise, R/V Thomas Washington, Scripps Institution of Oceanography, UCSD [Research Assistant, **plate-tectonic history** of the southern East Pacific Rise from shipboard bathymetric and geophysical surveys]
- 1991-1992 Paleomagnetic investigation of Ontong Java Plateau from ODP Leg 130 cores [Research Assistant, **plate-tectonic history** of the South Pacific]

SYNERGISTIC ACTIVITIES

- 1998-2001 Co-leader of a project involving **international student exchange**, snow surveys, **GPS** surveys on Niwot Ridge, Colorado Front Range [funded by NSF and DFG]
- 1996-2001 **Development of the Glacier Roughness Sensor**, an instrument designed specifically for high-resolution microtopographic measurement of snow and ice surfaces integrating mechanical, electronic and **GPS technologies**, in collaboration with Prof. Dr. U.C. Herzfeld and staff engineers Universität Trier]
- 2004 **Keynote lecturer** at the 32nd International Geological Congress (IGC), Firenze, Italy
- 2004 **Co-organizer and convener** of a session at the AGU Fall Meeting, San Francisco
- 2006 **Convener** of a session at the AGU Fall Meeting, San Francisco
- 2007 **Co-organizer** of a project for the International Polar Year
- 1992 **Invited participation** in the 29th IGC, Kyoto, Japan

EDUCATION

- 1967-1971 Grundschule auf dem Lindenberg, Kempten (Allgäu)
- 1971-1980 Carl-von-Linde-Gymnasium, Kempten (Allgäu)
- 1981-1987 Bayerische Julius-Maximilians-Universität, Würzburg, Germany: studies in geology and paleontology
- 1987-1988 Freie Universität Berlin, Germany: postgraduate course "Mathematical methods and models in the geosciences"
- 1989-1992 University of California San Diego, La Jolla, California, USA: graduate studies in marine geology and geophysics, oceanography
- 1994-1996 Eberhard-Karls-Universität, Tübingen, Germany: doctoral studies in geology and geophysics

EMPLOYMENT

- 1984 Internship in Hydrogeology, Wasserwerk Kempten (Allgäu)
- 1985 Internship in Petroleum Geology, Deep Drilling Site Hindelang 1, Preussag Erdöl und Erdgas, Hannover, Germany
- 1988-1989 Wissenschaftlicher Mitarbeiter [Lecturer and Researcher], Institut für Geologie, Bayerische Julius-Maximilians-Universität, Würzburg

1989-1992 Teaching and Research Assistant, Scripps Institution of Oceanography, University of California San Diego, La Jolla, California
 1993-1994 Visiting Scientist, USGS, Denver, Colorado (work on paleomagnetism and environmental magnetism in connection with dissertation research)
 1994-2000 Professional Research Assistant, Institute of Arctic and Alpine Research, University of Colorado Boulder, Boulder, Colorado
 1994-1996 Wissenschaftlicher Mitarbeiter [Researcher], Institut und Museum für Geologie und Paläontologie, Eberhard-Karls-Universität, Tübingen
 1997-2001 Research Scientist and Lecturer, Fachbereich Geographie / Geowissenschaften, Universität Trier, Trier, Germany
 2000-2002 Research Associate, University of Colorado Boulder, Boulder, Colorado, USA (Research Scientist I, Institute of Arctic and Alpine Research)
 2002-2006 Wissenschaftlicher Mitarbeiter [Research Associate], Fachbereich Mechanik, Technische Universität Darmstadt, Darmstadt, Germany
 2003-2007 Visiting Scientist, Earth Surface Processes Team, USGS, Denver, Colorado
 Since 2007 Education and Outreach Specialist, UNAVCO, Inc., Boulder, Colorado

AWARDS AND GRANTS

1989 Young Scientist Travel Grant to participate in the 28th International Geological Congress, Washington, D.C.; Geologische Vereinigung e.V., Mendig, Germany
 1990 Teaching Excellence Award, University of California San Diego, La Jolla, California
 1991 Student Travel Grant, Dolomieu Conference, Ortisei/St. Ulrich, Italy
 1993 Student Travel Grant, Silver Anniversary Meeting of the International Association for Mathematical Geology, Praha, Czechoslovakia
 1995 Travel Grant to participate in the IUGG General Assembly in Boulder, Colorado; Fachbereich Geowissenschaften, Eberhard-Karls-Universität, Tübingen
 2002-2006 Research Grant “Structural-glaciological characterization of the dynamics of various glacier types: a comparative study of selected glaciers in Iceland, Greenland, and Alaska”; DFG, PI (full salary)
 2007-2009 “Snow and Ice Surface Roughness as Indicator for Climatic and Dynamic Changes in the Cryosphere”, International Polar Year Project (790 Cry) collaborative with U.C. Herzfeld (University of Colorado), G.K.C. Clarke (University of British Columbia), R. Greve (Hokkaido University)
 2007-2009 “Observation and Interpretation of Changes in Surface Elevation, Roughness, Kinematics and Dynamics of Jakobshavn Isbrae, West Greenland”, NSF Arctic Natural Sciences IPY Announcement (pending), Co-PI

SELECTED PUBLICATIONS (from 36 in international journals and books)

MAYER, H., HERZFELD, U.C. (2001): A structural segmentation, kinematic analysis and dynamic interpretation of Jakobshavns Isbræ, West Greenland. — *Z. Gletscherk. Glazialgeol.*, **37**(2): 107–123.
 MAYER, H., HERZFELD, U.C., CLARKE, G.K.C. (2002): Analysis of deformation types in fast-moving glaciers. — *Terra Nostra*, **4**: 273–278.
 HERZFELD, U.C., CLARKE, G.K.C., MAYER, H., GREVE, R. (2004): Derivation of deformation characteristics in fast-moving glaciers. — *Computers & Geosci.*, **30**(3): 291–302.
 HERZFELD, U.C., BOX, J.E., STEFFEN, K., MAYER, H., CAINE, N., LOSLEBEN, M.V. (2006): A case study on the influence of snow and ice surface roughness on melt energy. — *Z. Gletscherk. Glazialgeol.*, **39**[2003/2004](1): 1–42.
 MAYER, H., HERZFELD, U.C. (subm.): The Rapid Retreat of Jakobshavns Isbræ, West Greenland: New Field Observations of 2005 and Structural Analysis of its Evolution. — *J. Geophys. Res.*
 TARDUNO, J.A., SLITER, W.V., KROENKE, L., LECKIE, M., MAYER, H. et al. (1991): Rapid Formation of Ontong Java Plateau by Aptian Mantle Plume Volcanism. — *Science*, **254**(5030): 399–403.
 MAYER, H. (1995): Flexural extension of the upper continental crust in collisional foredeeps: Discussion and reply. Discussion. — *GSA Bull.*, **107**(4): 499–501.

- MAYER, H. (1993): An Integrated Approach to Forward Modeling Carbonate Platform Development. — In: DAVIS, J.C. & HERZFELD, U.C. [ed.]: Computers in Geology — 25 Years of Progress, *IAMG Studies in Math. Geol.*, **5**: 169–180; New York (Oxford University Press).
- (15) MAYER, H. (1996): Magnetostratigraphic and Cyclostratigraphic Investigations of the Early Cretaceous Biancone Formation at Cismon and Pra da Stua (Southern Alps, Italy) with Palaeoclimatical, Geochronological and Geomathematical Implications. — *Tübinger Geowissenschaftliche Arbeiten, Reihe A*, **28**: 127 p., 44 figs., 10 tables; Tübingen.
- (17) MAYER, H. (1997): Seafloor Roughness and Spreading Rate: A Slope-Statistical Assessment. — In: PAWLOWSKY GLAHN, V. [ed.]: *Proceedings of IAMG'97. The Third Annual Conference of the International Association for Mathematical Geology*, Part 2: 591–596, 1 fig., 1 table; Barcelona (International Center for Numerical Methods in Engineering (CIMNE)).
- (18) MAYER, H. (1997): Magnetostratigraphy of Early Cretaceous Maiolica sections of the Southern Alps (Cismon and Pra da Stua, Italy). — *Geophysical Journal International*, **131**(2): 387–400, 12 figs.; Oxford.
- (20) MAYER, H. (1999): Calibration of the Early Cretaceous time scale by integration of magnetostratigraphy and cyclostratigraphy: Study of the Cismon Section (Southern Alps, Italy) and review. — *Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen*, **212**(1–3): 15–83, 16 figs., 7 tables; Stuttgart.
- (21) MAYER, H. & APPEL, E. (1999): Milankovitch cyclicity and rock-magnetic signatures of palaeoclimatic change in the Early Cretaceous Biancone Formation of the Southern Alps, Italy. — *Cretaceous Research*, **20**(2): 189–214, 12 figs., 5 tables; London.
- MAYER, H., HERZFELD, U.C. (2000): Structural glaciology of the fast-moving Jakobshavn Isbræ, Greenland, compared to the surging Bering Glacier, Alaska, U.S.A. — *Ann. Glac.*, **30**: 243–249.
- HERZFELD, U.C., MAYER, H., CAINE, N., LOSLEBEN, M., ERBRECHT, T. (2003): Morphogenesis of typical winter and summer snow surface patterns in a continental alpine environment. — *Hydrol. Processes*, **17**(3): 619–649.

RESEARCH EXPEDITIONS

- 1991 Cruise RAPA Leg 3 to the southern East Pacific Rise, R/V Thomas Washington, Scripps Institution of Oceanography, University of California San Diego, La Jolla, California
- 1995 Glaciological expedition to Bering Glacier, Alaska
- 1996 Glaciological expedition to Jakobshavns Isbræ, West Greenland
- 1997 Expedition MICROTOP 97 to the Greenland inland ice, Universität Trier
- 1999 Expedition MICROTOP 99 to the Greenland inland ice, Universität Trier
- 2001 Glaciological expedition to the Sermilik area, East Greenland, Universität Trier
- 2003 Glaciological expedition to the Glacier Bay area, Alaska, Technische Universität Darmstadt
- 2004 Glaciological expedition to Drangajökull and Vatnajökull, Iceland, Technische Universität Darmstadt
- 2005 Glaciological expedition to Jakobshavns Isbræ, West Greenland, Technische Universität Darmstadt

FIELD AREAS

- Frankenwald, Germany (sedimentology, tectonics, micropaleontology, Paleozoic stratigraphy)
- Penninic Alps, Switzerland (structural geology)
- Southern Alps, Italy (sedimentology, paleomagnetism, cyclostratigraphy, paleoclimatology, Cretaceous time scale)
- Bering Glacier, Alaska, USA (structural glaciology, glacier surge)
- Jakobshavns Isbræ, Greenland (structural glaciology, ice-surface roughness, instrument development)
- Niwot Ridge, Colorado, USA (snow-surface roughness, snow hydrology)
- Helheimgletscher, Fenrisgletscher, East Greenland (structural glaciology, ice-surface roughness)
- Glacier Bay area, Alaska, USA (structural glaciology, glacier surge)
- Drangajökull and Vatnajökull, Iceland (structural glaciology, glacier surge)

MEMBERSHIP IN SCIENTIFIC SOCIETIES

International Association for Mathematical Geology (Member of the Education Committee)

Geological Society of America

American Geophysical Union

American Association of Petroleum Geologists

Deutsche Geologische Gesellschaft

Geologische Vereinigung e.V.

Deutscher Alpenverein

American Alpine Club