

CARMEN BOENING

Education

- Nov. 2005 – Jul. 2009: PhD (Dr. rer. nat). Department of Physics and Engineering, University of Bremen, Germany (Thesis: *Validation of ocean mass variability derived from the Gravity Recovery and Climate Experiment - Studies utilizing in-situ observations and results from a Finite Element Sea ice - Ocean Model*)
- Advisors: Prof. Dr. Dirk Olbers (University of Bremen), Dr. Jens Schroeter (Alfred Wegener Institute, Bremerhaven)
- Oct. 2000 - Nov. 2005: MSc Mathematics ('Diplom Mathematik'). Major *mathematics*/Minor *computer science*. Department of Mathematics and Computer Science, University of Bremen, Germany.

Professional experience

- Since June 2011: Research Scientist at Jet Propulsion Laboratory/ California Institute of Technology, Pasadena, CA, USA
- Aug. 2009 – June 2011: Postdoctoral Scholar at Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA
- Sep. 1997 - Aug. 2000: Apprenticeship/employment as *mathematical technical assistant* (applied mathematics, software engineering and development) at STN Atlas Elektronik GmbH, Bremen, Germany (in collaboration with Astrium/Airbus)

Leadership Experience

- Since 2018: Deputy Manager – Earth Science Section
- Since 2016: PI on Cross-Directorate Project on Verification, Validation, Uncertainty Quantification efforts for mission formulation, development, implementation, and data products
- Since 2015: GRACE Project Scientist
- Since 2014: NASA Sea Level Change Team PI: *A NASA Web Portal for Sea Level Change*
- 2015 - 2018: Group Supervisor – Sea Level and Ice
- 2016 - 2018: Strategic RTD Science Lead: *Under Ice-Shelf Ocean Exploration*

- 2014 - 2017: Strategic RTD PI: *Science System Engineering and Uncertainty Quantification for Sea Level Rise Predictions*
- 2013 - 2015: President's and Director's Fund: *Ocean Ice Dynamics: Towards Improved Sea Level Rise Predictions*

Awards and Acknowledgements

- NASA Exceptional Public Achievement Medal (2018)
- JPL People Leadership Award for Exceptional People Leadership (2017)
- NASA Early Career Achievement Medal (2014):
 - *For outstanding interdisciplinary research utilizing multiple satellite datasets and coordinating research on sea level rise.*
- JPL Ed Stone Award (2014):
 - *The 2011 La Niña: So strong, the oceans fell*
- JPL Lew Allen Award for Excellence (2013):
 - *For performing fundamental interdisciplinary research in climate science and coordinating research on sea level rise at JPL.*
- JPL Outstanding Postdoc Poster Award (2010):
 - *For research on "Record-High Ocean Bottom Pressure in the South Pacific Observed by GRACE"*

Professional Activities and Research Highlights

Internal:

- Review Board – GRACE-FO Pre-Ship Review (Nov. 9-11, 2017) and PLAR
- Support for NASA HQ PO Program (July/August 2017)
- GRACE Project Scientist, GRACE FO SDS, Project Scientist for Gravity in PO.DAAC
- Mission Proposal Reviews: GNSS-R (SLIM) (EVI-2); Winds and Currents Mission (EVI-3)
- Senior Review Proposal (review): Aquarius (2015); CloudSat (2013); Jason (2013)
- Senior Review Proposal (author): GRACE (2013, 2015)
- Planning for future gravity missions, US/German collaboration: GRACE/GRACE Follow-On Internal Team Workshop on Future Time Variable Gravity Missions (2015), GFZ, Potsdam, Germany; Gravity Summit (Sep. 2017), Berlin, Germany
- Participation in JPL technical workshops: Systems Engineering Workshop, Oxnard (2015), Scientist/Mission Interface Workshop, JPL (2015)
- Participation in NASA APPEL International Project Management Workshop, Cocoa Beach, Florida (2016)
- Workshop organizer:
 - *"Science Mission Interface Workshop (SMI-3)", JPL, Sep. 6, 2017*

- *"Understanding Sea Level Rise: The Roles of Coupled Systems"*, JPL, Aug. 29-31, 2011;
- *"Using GRACE Data for Water Cycle Analysis and Climate Modelling"*, Caltech, July 15-17, 2013
- Lead for JPL/NASA Sea Level RFI -1&2 response for 2017 Decadal Survey
- Member of the JPL Innovators and Entrepreneurs group (2014-2016)
- Presenting 8x science to visitors (e.g. HQ, OSTP, Members of Congress) and review boards (e.g. NAC, JPL Advisory Council)
- Reviewer for NASA and NSF proposals
- Visiting Associate in Environmental Science and Engineering at Caltech (since 2013)

External:

- NASA Sea Level Change Team (since 2014)
- GRACE/G-FO Science Team (since 2009)
- GGOS Committee on Satellite Missions (member)
- IAG SC 2.3: Satellite Gravity Missions (member)
- Future Gravity Summits: EU Events: Tea Time Event at HGF Bureau, Brussels, March 2017, Dinner Event (*"Observing water transport from space a vision for the evolution of Copernicus"*) at Radisson Red, Brussels, May 2017
 - Presentation: Our changing view on Earth: New perspectives and chances through GRACE, GRACE-FO, and beyond
- Workshop organizer:
 - *"IAG Workshop: Satellite Geodesy for Climate Studies"*, Bonn, Germany, Sep. 19-20, 2017
 - *"Using GRACE Data for Water Cycle Analysis and Climate Modeling"*, Caltech, July 15-17, 2013
 - *"Understanding Sea Level Rise: The Roles of Coupled Systems"*, JPL, Aug. 29-31, 2011;
- Session convener:
 - Validation, Verification, and Uncertainty Quantification (VVUQ) in Earth and Space Sciences and Decision Making (2017 AGU)
 - Spaceborne geodetic sensor observations: From high-frequency geophysical fluid signals to applications in hydro-geodesy, oceanography, and cryospheric sciences (2016 EGU)
 - NASA Sea Level Change Team Town Hall (2015, 2016 AGU)
 - Ice Sheet/Ocean Interaction and its contribution to Sea Level Rise (2013 Fall AGU meeting)

- Southern Ocean variability (2010 Fall AGU meeting)
- Reviewer for Science, Nature Climate Change, NSF, SURP, NASA NESSF, GRL, JPO, JGR, Journal of Geodynamics, Ocean Science Discussions
- Proposal reviewer for DFG, Netherlands Space Office (NSO)

Selected media/outreach highlights:

- Interviews with EarthEcho, NYT, CNN, The Weather Channel, Australian ABC News, German NDR
- Selected features in scientific press:
 - Nature: "La Niña made the oceans fall"
 - Science: "A Drop in the Ocean"
 - Physics Today: Snowfall thickens the East Antarctic ice sheet
 - GRL Editors Highlight: La Niña Caused Global Sea Level Drop
 - Article featured in Nature Geoscience: "Bulge in the ocean"
 - NASA/JPL press release on sea level decline in 2010
 - Weekend Australian, Australia: "Sea level fall defies climate warnings"
 - Articles featured in German online news magazine "Spiegel"
 - "Forscher entdecken riesigen Wasserhügel":
 - "Wetterumschwung senkt globalen Meeresspiegel":

Field work

R/V Polarstern, cruise ANT-XXIV/3, 06.02.2008 - 16.04.2008, Weddell Sea, Drake Passage, supply N/J Phys. oceanography, geosciences, IPY CASO, GEOTRACES

Fahrbach, E. (ed), de Baar, H. (ed)(2010).The expedition of the research vessel "Polarstern" to the Antarctic in 2008 (ANT-XXIV/3) / ed. by Eberhard Fahrbach and Hein de Baar, *Berichte zur Polar- und Meeresforschung = Reports on polar and marine research*, 606, 232 p.

Publications

2018

Schlegel, N., (2018) Exploration of Antarctic Ice Sheet 100-year contribution to sea level rise and associated model uncertainties using the ISSM framework, *The Cryosphere*, accepted

Demory, M.-E. and **Boening, C.** (2018), "The use of GRACE satellite data to validate the global hydrological cycle as simulated by a global climate model", submitted

Boening, C., Limonadi, D., Schlegel, N., Seroussi, H., Schodlok, M., Larour, E., Watkins, M. (2018), "Global mean sea level rise science system engineering – UQ Exploration", in prep.

Boening, C. and Watkins, M.M. (2018), "Variability in Deep Ocean Currents from GRACE", *Geophysical Research Letters*, in revision

Menemenlis, D., **Boening, C.**, Zhang, H., Watkins, M. (2018), GRACE assimilation into ECCO2, in prep.

2016

Mazloff, M. R., and **C. Boening** (2016), Rapid variability of Antarctic Bottom Water transport into the Pacific Ocean inferred from GRACE, *Geophys. Res. Lett.*, 43, 3822–3829, doi:10.1002/2016GL068474.

Hughes, C.W., J. Williams, A. Hibbert, **C. Boening**, J. Oram (2016), "A Rossby Whistle: A resonant basin mode observed in the Caribbean Sea", *Geophysical Research Letters*, 43, 7036–7043, doi:10.1002/2016GL069573.

2015

Bentel, K., F. W. Landerer, and **C. Boening**. "Monitoring Atlantic overturning circulation variability with GRACE-type ocean bottom pressure observations—a sensitivity study." *Ocean Sci. Discuss* 12 (2015): 1765-1791.

Landerer, F. W., D. N. Wiese, K. Bentel, **C. Boening**, and M. M. Watkins (2015), North Atlantic meridional overturning circulation variations from GRACE ocean bottom pressure anomalies, *Geophysical Research Letters*, 42(19), 8114-8121, doi: <http://dx.doi.org/10.1002/2015gl065730>.

Li, J. F., W. -L. Lee, T. Lee, E. Fetzer, J. Yu, T. L. Kubar, and **C. Boening** (2015), The impacts of cloud snow radiative effects on Pacific Ocean surface heat fluxes, surface wind stress, and ocean temperatures in coupled GCM simulations. *J. Geophys. Res. Atmos.*, 120, 2242–2260. doi: 10.1002/2014JD022538.

Watkins, M. M., D. N. Wiese, D.-N. Yuan, **C. Boening**, and F. W. Landerer (2015), Improved methods for observing Earth's time variable mass distribution with GRACE using spherical cap mascons, *J. Geophys. Res. Solid Earth*, 120, doi: 10.1002/2014JB011547.

2014

Boening, C. (2014) Oceanography: Detecting sea-level rise, *Nature Climate Change*, 4, 327–328, doi:10.1038/nclimate2205

2013

Fasullo, J. T., **C. Boening**, F. W. Landerer, and R. S. Nerem (2013), Australia's unique influence on global sea level in 2010–2011, *Geophys. Res. Lett.*, 40, 4368–4373, doi:10.1002/grl.50834.

2012

Boening, C., M. Lebsock, F. Landerer, and G. Stephens (2012), Snowfall-driven mass change on the East Antarctic ice sheet, *Geophys. Res. Lett.*, 39, L21501, doi:10.1029/2012GL053316.

Boening, C., J. K. Willis, F. W. Landerer, R. S. Nerem, and J. Fasullo, (2012) The 2011 La Niña: So Strong, the Oceans Fell, *Geophys. Res. Lett.*, 39, L19602, doi:10.1029/2012GL053055

2011

Boening, C., T. Lee, and V. Zlotnicki (2011), A record-high ocean bottom pressure in the South Pacific observed by GRACE, *Geophys. Res. Lett.*, 38, L04602, doi:10.1029/2010GL046013.

2010

Böning, C., Timmermann, R., Danilov, S., Schröter, J. (2010). On the representation of transport variability of the Antarctic Circumpolar Current in GRACE gravity solutions and numerical ocean model simulations, In Flechtner F, Gruber T, Güntner A, Manda M, Rothacher M, Schöne T, Wickert J (eds) *Satellite Geodesy and Earth System Science*, Springer-Verlag, Berlin, Heidelberg, Part 2, 187-199, DOI: 10.1007/978-3-642-10228-8_15

Macrander, A., **Böning, C.**, Boebel, O., Schröter, J. (2010). GRACE Validation by in-situ data of Ocean Bottom Pressure. In Flechtner F, Gruber T, Güntner A, Manda M, Rothacher M, Schöne T, Wickert J (eds) *Satellite Geodesy and Earth System Science*, Springer-Verlag, Berlin, Heidelberg, Part 2, 169-185, DOI: 10.1007/978-3-642-10228-8_14

2009

Böning, C. (2009), Validation of ocean mass variability derived from the Gravity Recovery and Climate Experiment - Studies utilizing in-situ observations and results from a Finite Element Sea ice - Ocean Model, Bremen, Univ., Diss., 2009,
<http://nbn-resolving.de/urn:nbn:de:gbv:46-diss000115268>

Timmermann, R., Danilov, S., Schröter, J., **Böning, C.**, Sidorenko, D., Rollenhagen, K.(2009). Ocean circulation and sea ice distribution in a finite element global sea ice -- ocean model, *Ocean Modelling*, doi:10.1016/j.ocemod.2008.10.009., doi:10.1016/j.ocemod.2008.10.009

2008

Böning, C., Timmermann, R., Macrander, A., Schröter, J.(2008). A pattern-filtering method for the determination of ocean bottom pressure anomalies from GRACE solutions, *Geophysical Research Letters*, 35, L18611, doi:10.1029/2008GL034974 .

Conference Presentations

(speaker underlined)

2017

Demory and Boening, The use of GRACE satellite data to validate the global hydrological cycle as simulated by a global climate model, *IAG Workshop: Satellite Geodesy for Climate Studies*, Sep. 19-21, 2017

Boening, C., Limonadi, D., Schlegel, N., Seroussi, H., Schodlok, M., Larour, E., Watkins, M., On the application of science systems engineering and uncertainty quantification for ice sheet science and sea level projections, *WCRP/IOC, Regional Sea Level Changes and Coastal Impacts*, 10-14 July 2017, Columbia University, New-York (NY) - USA

2016

Demory and Boening, The use of GRACE satellite data to validate the global hydrological cycle as simulated by a global climate model, *1st Joint Commission 2 and IGFS Meeting International Symposium on Gravity, Geoid and Height Systems 2016*, Thessaloniki, Greece, September 19-23, 2016

Boening et al., A NASA Web Portal for Sea Level Change, *NASA Sea Level Change Team Meeting*, Norfolk, September

Boening, GRACE Science Overview, *GRACE Annual Operations Review*, Oberpfaffenhofen, Germany, May 9-10, 2016

Boening et al., A NASA Web Portal for Sea Level Change, *EGU*, Vienna, Austria, April 17-22, 2016

Boening and Watkins, Variability in Deep Ocean Currents from GRACE, *EGU*, Vienna, Austria, April 17-22, 2016

Boening and Watkins, Variability in Deep Ocean Currents from GRACE, *Ocean Sciences*, New Orleans, February 21-26, 2016

2015

Carmen Boening, Nicole Schlegel, Michael Schodlok, Daniel Limonadi, Eric Larour, Michael M. Watkins, Worst-case scenarios for sea level rise from ice sheet melt. *Workshop on Global and Regional Sea Level Variability and Change*, Palma de Mallorca, Spain, June 10-12, 2015

2014

Carmen Boening, Marie-Estelle Demory, David Wiese, Pier Luigi Vidale, Malcolm Roberts, Reinhard Schiemann, Matthew Mizielinski, Michael M. Watkins, (*Invited*), The use of GRACE satellite data to validate the global hydrological cycle as simulated by a global climate model, *AGU Fall Meeting 2014, San Francisco, Dec. 15-19, 2014*

Carmen Boening, Overview of the N-SLCT Web Portal, *N-SLCT PI Meeting: Scripps, October 14-16, 2014*

Felix Landerer and Carmen Boening, Time-variable gravity signals over the ocean and connection to ocean dynamics, *NASA Workshop, From space to the deep seafloor: Using "Green" submarine cable systems in the ocean observing system, 9 – 10 October 2014 Keck Center, California Institute of Technology (CalTech) Pasadena, California USA*

Yvonne Firing, **Carmen Boening**, David Wiese, Michael Watkins, Nicole Schlegel, Eric Larour, Antarctic Ice Mass Balance from GRACE, *GRACE Science Team Meeting, Potsdam, Germany, Sep. 29 – Oct. 1, 2014*

Carmen Boening, Marie-Estelle Demory, David Wiese, Pier Luigi Vidale, Malcolm Roberts, Reinhard Schiemann, Matthew Mizielinski, Michael M. Watkins, The use of GRACE satellite data to validate the global hydrological cycle as simulated by a global climate model, *GRACE Science Team Meeting, Potsdam, Germany, Sep. 29 – Oct. 1, 2014*

Carmen Boening; Michael M. Watkins; David N. Wiese; Dimitris Menemenlis; Hong Zhang, (2013), Assimilation of GRACE data in a global, eddying, ocean and sea ice model, *ECCO Meeting, Boston, Jan. 22-24, 2014*

2013

Carmen Boening; Michael M. Watkins; David N. Wiese; Dimitris Menemenlis; Hong Zhang, (2013), Applications of Static and Time-Variable Gravity in Oceanography (*Invited*) *AGU Fall Meeting, San Francisco, Dec. 9-13, 2013*

John Fasullo; **Carmen Boening**; Felix W. Landerer; R Steven Nerem, (2013), Australia: The Little Continent that Can Influence Global Sea Level (*Invited*), *AGU Fall Meeting, San Francisco, Dec. 9-13, 2013*

Erik R. Ivins; David N. Wiese; Michael M. Watkins; Felix W. Landerer; Alexander Simms; Dah-Ning Yuan; **Carmen Boening**, (2013), Antarctic Peninsula mass balance at present-day and over the past 150 years employing constraints from GRACE, GPS and other data, *AGU Fall Meeting, San Francisco, Dec. 9-13, 2013*

Carmen Boening; Michael M. Watkins; David N. Wiese; Dimitris Menemenlis; Hong Zhang, (2013), Assimilation of GRACE data in a global, eddying, ocean and sea ice model, *GRACE Science Team Meeting, Austin, Oct 22-25, 2013*

Boening, C., M.D. Lebrock, F.W. Landerer & G.L. Stephens (2012), Snowfall-driven Mass Change in the East Antarctic Ice Sheet, IWSSM workshop in Mammoth, May 6-8, 2013

Boening, C., M.D. Lebrock, F.W. Landerer & G.L. Stephens (2012), Snowfall-driven Mass Change in the East Antarctic Ice Sheet, WGOMD/SOP Workshop on Sea Level Rise, Ocean/Ice Shelf Interactions and Ice Sheets, Feb. 18-20, 2013

2012

Boening, C., M.D. Lebrock, F.W. Landerer & G.L. Stephens (2012), Snowfall-driven Mass Change in the East Antarctic Ice Sheet, *AGU Fall Meeting, San Francisco, Dec. 3-7, 2012 (invited)*

Boening, C., J.K. Willis, F.W. Landerer, R.S. Nerem & J. Fasullo (2012), Recovery of Global Mean Sea Level after the 2011 La Niña, *AGU Fall Meeting, San Francisco, Dec. 3-7, 2012*

Boening, C., Watkins, M. M., (2012), GRACE – Measuring Climate Change with Gravity, *UC Irvine, Nov. 10, 2012*

Boening, C., Landerer, F. W., Nerem, S. R., Willis, J. K., Fasullo, J (2012), The 2011 La Nina – So Strong, the Oceans fell, *20 years of Altimetry, Venice Italy, Sep. 22-27, 2012*

Boening, C., M.D. Lebrock, F.W. Landerer & G.L. Stephens (2012), Snowfall-driven Mass Change in the East Antarctic Ice Sheet, *GRACE Science Team Meeting, Potsdam, Germany, Sep. 17-20, 2012*

Boening, C. and Lee, T. (2012), Extreme Oceanic & Atmospheric Anomalies in the South Pacific and West Antarctica Associated With the 2009-10 El Nino, *ICSHMO 2012, Noumea, New Caledonia, April. 23-27, 2012*

Boening, C. and Lee, T. (2012), IMPACTS OF CENTRAL- AND EASTERN-PACIFIC EL NINO ON THE SOUTHERN OCEAN, *Ocean Sciences, Salt Lake City, Feb. 20-25, 2012*

Watkins, M. M., **Boening, C.** (2012), GRACE – Measuring Climate Change with Gravity, *GFDL, Feb. 13-14, 2012*

Boening, C., Landerer, F. W., Nerem, S. R., Willis, J. K., Fasullo, J (2012), The 2011 La Nina – So Strong, the Oceans fell, *UT Austin, Jan. 30 – Feb. 1, 2012*

2011

Boening, C., Landerer, F. W., Nerem, S. R., Willis, J. K., Fasullo, J (2011), The 2010 decline in global mean sea level and its relation to ENSO, *AGU Fall Meeting, San Francisco, Dec. 5-9, 2011*

Boening, C., Lee, T. (2011), The ECCO Consortium: The impacts of Central- and Eastern-Pacific El Nino events on the Southern Ocean, *WCRP, Denver, CO, 24-28 October 2011*

Boening, C., Landerer, F. W., Nerem, S. R., Willis, J. K. (2011), The 2010 decline in global mean sea level and its relation to ENSO, *GRACE Science Team Meeting, Austin, TX, August, 8-9, 2011*

Boening, C., Lee, T., Zlotnicki, V. (2011), A record-high ocean bottom pressure signal in the South Pacific observed by GRACE, *ECCO2 Meeting, Massachusetts Institute of Technology, Cambridge, 5-6 May 2011.*

Boening, C., Lee, T., Zlotnicki, V. (2011), A record-high ocean bottom pressure signal in the South Pacific observed by GRACE, *11th Conference on Polar Meteorology and Oceanography, Boston, MA, 2-5 May, 2011*

Lee, T., **Boening, C.**, William R. Hobbs, W. R., Willis, J. K., Halkides, D., Fukumori, I., Armstrong, E. M., Hayashi, A. K., Liu, W. T., Patzert, W., Wang, O. (2011), An extreme oceanic and

atmospheric event in the South Pacific and western Antarctica associated with the 2009-10 El Nino, *International Ocean Vector Wind Science Team meeting in Annapolis, Maryland, May 9-11, 2011*:

Boening, C., Lee, T., Zlotnicki, V. (2011), Variability and Changes in Southern Ocean circulation from GRACE, *Invited talk at the University of South Florida, St. Petersburg, Florida, March, 2011*

2010

Boening, C., Lee, T., Zlotnicki, V. (2010), A record-high ocean bottom pressure signal in the South Pacific observed by GRACE, Abstract OS41E-03 presented at *2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.*

Boening, C., Lee, T., Zlotnicki, V. (2010), A record-high ocean bottom pressure signal in the South Pacific observed by GRACE, *GRACE Science Team Meeting, Nov. 11-12, Potsdam, Germany*

Boening, C., Lee, T., Zlotnicki, V. (2010), A record-high ocean bottom pressure signal in the South Pacific observed by GRACE, *Australia - New Zealand Climate Forum 2010, Oct. 13-15, Hobart, Australia*

Boening, C., Lee, T., Zlotnicki, V. (2010), Record-high ocean bottom pressure in the South Pacific observed by GRACE, *JPL Postdoc Research Day 2010*

Boening, C., Zlotnicki, V. (2010), Antarctic Circumpolar Current Transport Variability for GRACE data and ECCO2 numerical model. *IPY Oslo Science Conference 2010*

Boening, C., V Zlotnicki, Fetter, A. (2010). Influences on Southern Ocean mass variability derived from GRACE gravity field anomalies, *Eos Trans. AGU, 91(26), Ocean Sci. Meet. Suppl.*, Abstract IT45K-09

2009

Boening, C., Danilov, S., Macrander, A., Schroeter, J., Timmermann, R., Zlotnicki, V., Fetter, A. (2009). On the representation of Southern Ocean mass variability in GRACE-derived ocean bottom pressure anomalies, *Eos Trans. AGU, 90(52), Fall Meet. Suppl.*, Abstract G43A-0712

Boening, C., Zlotnicki, V., Fetter A. (2009), Variability in Southern Ocean circulation derived from ocean bottom pressure anomalies. *ECCO2 Meeting, California Institute of Technology, Pasadena, 8-10 November 2009.*

Böning, C., Timmermann, R., Macrander, A., Schröter, J., Boebel, O. (2009), Southern Ocean variability derived from GRACE retrievals, model simulations and in-situ measurements, *General assembly of the European Geophysical Union, EGU2009-10129*

Brunnabend, S.-E., **Boening, C.**, Rietbroek, R., Dahle, C., Kusche, J., Flechter, F., Savchenko, R., Bosch, W., Timmermann, R., Schroeter, J. (2009). On ocean density variations as observed by altimetry and GRACE, *General Assembly of the European Geophysical Union, EGU2009-9930*

Brunnabend, S.-E., Schröter, J., Rietbroek, R., Kusche, J., Dahle, Ch., Flechtner, F., **Böning, C.**, Timmermann, R. (2009). Abschätzung des Fehlers modellierter Veränderungen im Ozeanbodendruck und Vergleich mit in-situ Bodendruckdaten, *Geodätische Woche, Karlsruhe, Germany, 22.-24. September 2008.*

Brunnabend, S.-E., Schroeter, J., Timmermann, R., **Boening, C.**, Rietbroek, R., Kusche, J., Dahle, Ch., Flechtner, F. (2009). Variations of ocean mass from a Finite Element Sea-Ice Ocean Model (FESOM), *General assembly of the European Geophysical Union, EGU2009-1296*

Macrander, A., **Böning, C.**, Boebel, O., Schröter, J. (2009). Antarctic Circumpolar Current variability - a combined analysis of in-situ Bottom Pressure, Altimetry, and GRACE gravity, *General assembly of the European Geophysical Union, EGU2009-11172*

Macrander, A., **Böning, C.**, Schröter, J., Boebel, O. (2009). GRACE gravity solutions validated by in-situ ocean bottom pressure in different regions of the global ocean, *General assembly of the European Geophysical Union, EGU2009-11188*

2008

Böning, C., Timmermann, R., Macrander, A., Schröter, J., Boebel, O. (2008). Variability of the Antarctic Circumpolar Current derived from GRACE retrievals, model simulations and in-situ measurements, *AGU Fall Meeting 2008, San Francisco, USA, 15.-19. December 2008*

Böning, C., Timmermann, R., Macrander, A., Schröter, J. (2008). Evaluation of ocean mass variability derived from different GRACE solutions, *GEODÄTISCHE WOCHE, Bremen, 30.9.-2.10.2008.*

Böning, C., Timmermann, R., Macrander, A., Schröter, J. (2008). Ocean bottom pressure variability derived from different GRACE solutions, *GRACE Science Team Meeting 2008, San Francisco, USA, 12.-13. December 2008*

Brunnabend, S. -E., Schröter, J., Rietbroek, R., Kusche, J., Dahle, Ch., Flechtner, F., Jansen, M. J. F., Gunter, C., **Böning, C.**, Timmermann, R. (2008). Surface mass transport by joint inversion of modeled ocean bottom pressure, GRACE gravity models and GPS site displacements, *Geodetic Week, Bremen, Germany, 30. September - 02. October 2008.*

Macrander, A., **Böning, C.**, Boebel, O., Schröter, J. (2008). Global comparison of in-situ Ocean Bottom Pressure observations with GRACE, *Geodätische Woche 2008 Bremen.*

Schröter, J., Danilov, S., Sidorenko, D., Wang, Q., Timmermann, R., Nerger, L., Huerta-Casas, A., Maßmann, S., **Böning, C.**, Janjic, T., Behrens, J., Androssov, A., Richter, F., Hiller, W., Harig, S., Brunnabend, S. (2008). FEOM, status and plans, *Seventh International Workshop on Unstructured Grid Numerical Modelling of Coastal, Shelf and Ocean Flows, September 17-19 2008, Halifax, Canada.*

Macrander, A., **Böning, C.**, Boebel, O., Schröter, J. (2008). A global Performance Estimate of GRACE Gravity Solutions validated by in-situ Ocean Bottom Pressure, *General assembly of the European Geophysical Union, EGU2008-A-03528*

Rietbroek, R., Kusche, J., Dahle, Ch., Schmidt, R., Flechtner, F., Schröter, J., Jansen, M. J. F., Gunter, B., **Böning, C.**, Brunnabend, S. -E. (2008). Surface mass estimation from GPS site displacements, modeled Ocean bottom pressure and GRACE, *General assembly of the European Geophysical Union, EGU2008-A-07928.*

Schröter, J., Timmermann, R., Androssov, A., **Boening, C.**, Danilov, S., Huerta-Casas, A., Massmann, S., Sidorenko, D., Rollenhagen, K., Wang, Q. (2008). EGU2008-A-09296; A global finite-element sea ice and ocean model, *General assembly of the European Geophysical Union, EGU2008-A-09296*

2007

Böning, C., Macrander, A., Timmermann, R., Boebel, O., Schröter, J. (2007). Global Validation of GRACE Gravity Measurements by in-situ and modeled Ocean Bottom Pressure, *GRACE Science Team Meeting, 15--17 October 2007, Potsdam, Germany.*

Böning, C., Timmermann, R., Macrander, A., Schröter, J.(2007).GRACE mass variations and ocean bottom pressure fluctuations in the South Atlantic, *XXIV IUGG General Assembly, 02--13 July 2007, Perugia, Italy.*

Böning, C., Timmermann, R., Schröter, J., Macrander, A.(2007).Ocean bottom pressure and circulation in the South Atlantic, *European Geosciences Union General Assembly, 15–20 April 2007, Vienna, Austria., SRef-ID:EGU2007-A-07800 .*

Schröter, J., Sidorenko, D., Harig, S., Wang, Q., Timmermann, R., Rollenhagen, K, **Boening, C.**, Janjic-Pfander, T., Huerta-Casas, A.(2007).FEOM, an unstructured mesh Finite Element Ocean Model, *European Geosciences Union General Assembly, Vienna, 15 - 20 April.*

Timmermann, R., **Böning, C.**, Wang, Q., Schröter, J.(2007).Southern Ocean water mass formation in a finite-element coupled sea ice--ocean model, *IUGG XXIV General Assembly, Perugia, Italy, July 1-13, 2007.*

Timmermann, R., **Böning, C.**, Schröter, J., Danilov, S.(2007).On the representation of the Southern Ocean in a finite-element coupled sea ice-ocean model, *Geophysical Research Abstracts 9, EGU2007-A-07368.*

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