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EDUCATION

University of Concepcion, Concepcion, Chile, 2000-2006

Ph.D. in Oceanography, 2006, Area of specialization: Biogeochemistry, Paleoclimate and Paleoceanography.

Thesis Title: *“Nitrogen isotope dynamics in the modern eastern South Pacific oxygen minimum zone and its variability during the Late Quaternary”*

- Dr. Wolfgang Schneider, Universidad de Concepcion (Chair)
- Dr. Osvaldo Ulloa, Universidad de Concepcion (Thesis Adviser)
- Dr. Laura Farias, Universidad de Concepcion (Committee)
- Dr. Carina Lange, Universidad de Concepcion (Committee)
- Dr. Gino Casassa, Center for Scientific Studies, Valdivia (External examiner)

B.S. Marine Biology, 1999, with honors (Faculty award for best graduating student).

AWARDS and HONORS

- Paleoclimate position within the Cluster of Excellence “The Ocean in the Earth System”, 2008. Alfred Wegener Institut, Bremerhaven, Germany. (declined)
- Chilean Academy of Sciences Honorary Mention, Ph.D. Thesis awards, 2007.
- Woods Hole Oceanographic Institution Postdoctoral Fellowship, 2006-2008.
- Chilean Ministry of Education Doctoral Fellowship, 2004-2005.
- Chilean Science Council Doctoral Fellowship, 2002-2004.
- Andes Foundation Doctoral Fellowship, 2000-2002 (two awardees nationwide).
- University of Concepcion Award, 2000 (best Marine Biology student with honors).

RESEARCH EXPERIENCE

- Postdoctoral Research:

Postdoctoral Fellowship, University of California, Irvine. 2009-present. (research advisers: Prof. Ellen Druffel and Dr. John Southon).

NSF-funded Postdoctoral Investigator, Woods Hole Oceanographic Institution. 2008-2009. PI: Dr. Lloyd Keigwin

- The ventilation of Antarctic Intermediate Water through the last deglaciation off Chile

Cooperative Institute for Climate and Ocean Research Postdoctoral fellowship, Woods Hole Oceanographic Institution, 2006-2008, (research adviser: Dr. Lloyd Keigwin)

- Late Quaternary paleoceanography in the eastern South Pacific. Main tools: Radiocarbon and stable isotopes.
- Water mass ventilation changes in the eastern South Pacific during the last glacial-interglacial transition.
- Radiocarbon dynamics of intermediate-depth benthic foraminifera. Antarctic Intermediate Water changes during the last glacial termination.

Data processing and analysis in the Agouon Institute (Pasadena, Ca) funded research initiative: *The eastern South Pacific Oxygen Minimum zone*. 2006, Universidad de Concepcion, Chile. Argo floats data collection and visualization.

- Doctoral Research:

Department of Oceanography, University of Concepcion, 2000-2006, (research adviser, Dr. Osvaldo Ulloa)

- Nitrogen Isotope biogeochemistry in the water column of the eastern South Pacific and its relation with oxygen deficient conditions.
- Assessing the causes and consequences of glacial-interglacial and millennial scale variability of the oxygen minimum zone in the eastern South Pacific inferred by sedimentary nitrogen isotopes as a proxy for marine denitrification.
- Set up of the first Chilean stable isotope facility at the University of Concepcion.

- Undergraduate Research (with Honors):

Faculty of Natural Sciences and Oceanography, University of Concepcion, 1995-1999 (research adviser Dr. Osvaldo Ulloa)

- Oceanography of the upwelling region off Chile.
- Physical-Biological numerical modeling of the upwelling system off Central Chile.

RESEARCH PROJECTS

“*The ventilation of Antarctic Intermediate Water through the Last Deglaciation off Chile*”, Submitted to the National Science Foundation, August, 15th 2007. Status: Funded, December 2007. Amount: \$309,055. Start date: 05/01/2008, End Date: 04/30/2010. Postdoctoral Investigator in the proposal authored in collaboration with nominal PI Dr. Lloyd Keigwin.

RESEARCH INTERESTS

- Ocean biogeochemical processes and cycles and their interaction with climate.
- Stable Isotope geochemistry.
- Radiocarbon cycling in the Earth System.
- Paleoceanography and Paleoclimatology.

TEACHING EXPERIENCE

Teaching Assistant: Oceanography Seminar series, University of Concepcion, 2004-2006.

- One or two lectures per semester in selected topics for first year graduate students.

Instructor: Physics for undergraduates, University of Concepcion, 1996-1999.

- Teaching assistant and laboratory sections for Physics I (Mechanics and Heat) and Physics II (Waves and Electromagnetism) courses to undergraduates.

PUBLICATIONS

R. De Pol-Holz, R. Robinson, D. Hebbeln, D. M. Sigman and O. Ulloa. Controls on sedimentary N isotopes along the Chile margin. 2008. *Deep-Sea Res II*, doi:10.1016/j.dsr2.2008.09.014.

R. De Pol-Holz, O. Ulloa, F. Lamy, L. Dezileau, P. Sabatierr, D. Hebbeln. Late Quaternary variability of sedimentary nitrogen isotopes in the eastern South Pacific Ocean. 2007. *Paleoceanography*, 22, PA2207, doi:10.1029/2006PA001308.

R. De Pol-Holz, O. Ulloa, L. Dezileau, J. Kaiser, F. Lamy and D. Hebbeln. Melting of the Patagonian Ice Sheet and deglacial perturbations of the nitrogen cycle in the eastern South Pacific. 2006. *Geophysical Research Letters*, 33(4), L04704, doi:10.1029/2005GL024477.

Ulloa, O. and **R. De Pol-Holz**. Zonas de Mínimo de Oxígeno. In Werlinger, C. (Ed) 2004. *Biología Marina y Oceanografía: Conceptos y Procesos*. Consejo Nacional del Libro y la Lectura - Universidad de Concepción. Trama Impresores S. A., Chile. 700 pp.

Atkinson, L., A. Valle-Levinson, D. Figueroa, **R. De Pol-Holz**, V.A. Gallardo, W. Schneider, J. L. Blanco and M. Schmidt. Oceanographic observations in Chilean coastal waters between Valdivia and Concepcion. 2002. *Journal of Geophysical Research* (Oceans) 107(7) 110.1029/2001JC000991.

In preparation:

De Pol-Holz et al. The Last Deglacial Radiocarbon ventilation history of Antarctic Intermediate Water. In preparation.

De Pol-Holz et al., Interhemispheric links in Oxygen Minimum Zones dynamics during the last glacial-interglacial transition. In preparation.

De Pol-Holz, R. et al., Calibration studies of benthic foraminiferal isotopic composition: Results from the Southeast Pacific. In preparation.

Taylor, K. et al., Rapid break up of portions of the West Antarctic Ice Sheet during a period of gradual warming. In preparation.

CONFERENCE ABSTRACTS

R. De Pol-Holz, L. Keigwin, D. Hebbeln, M. Mohtadi. Antarctic Intermediate Water ventilation through the last deglaciation off Chile. June 2009. Chapman Conference on Abrupt Climate Change. Ohio State University, Columbus, Ohio, USA.

R. De Pol-Holz, L. Keigwin, D. Hebbeln, M. Mohtadi. Antarctic Intermediate Water ventilation through the last deglaciation off Chile. December 2008. AGU Fall meeting, San Francisco, USA.

R. De Pol-Holz, O. Ulloa, F. Lamy, D. Hebbeln, L. Dezileau, J. Kaiser, R. Robinson, D. Sigman, P. Sabatier. Late quaternary variability of sedimentary nitrogen isotopes in the eastern South Pacific Ocean. Diciembre 2006. AGU Fall Meeting, San Francisco, USA.

Kaiser, J.; Lamy, F.; **De Pol-Holz, R.**; Ninnemann, U.; Hebbeln, D. (2006): Patagonian Ice Sheet melting over the last deglaciation and possible impact on the oceanic circulation off Chile, 3rd General Assembly European Geosciences Union. Viena, Austria 2006.

R. De Pol-Holz, O. Ulloa, D. Hebbeln. High-Resolution variability of Marine Denitrification in the eastern South Pacific during the last 65 kyr. XXV Congreso Chileno de Ciencias del Mar. Mayo 2005. Valparaíso, Chile.

R. De Pol-Holz, O. Ulloa, D. Hebbeln. High-Resolution variability of Marine Denitrification in the eastern South Pacific during the last 65 kyr. 8th International Conference on Paleoceanography. Septiembre 2004. Biarritz, France.

R. De Pol-Holz, O. Ulloa, D. Hebbeln. High-Resolution variability of Marine Denitrification in the eastern South Pacific during the last 65 kyr. Bjerknes Centenary 2004. Climate Change in High Latitudes. Septiembre 2004. Bergen, Norway.

Karstensen, J., Schneider, B.; **De Pol-Holz, R.**; Oeschies, A.; Schlitzer, R.; Sabine, C. Comparison of two methods to determine the oceans uptake of anthropogenic carbon *EGU-1st General Assembly*, Geophysical Research Abstracts, Vol. 6, 2004.

R. De Pol-Holz, R. Robinson, D. Sigman, A. Montecinos, G. Lavik and O. Ulloa. Influence of the Peru-Chile undercurrent in the nitrogen isotope biogeochemistry in the Chilean continental boundary, XXIV Congreso Chileno de Ciencias del Mar. Mayo 2004. Coquimbo, Chile.

R. De Pol-Holz, L. P. Atkinson, A. Valle-Levinson, D. Figueroa, V.A. Gallardo, W. Schneider, J. L. Blanco and M. Schmidt. Oceanographic observations in Chilean Coastal waters, XXII Congreso Chileno de Ciencias del Mar. Mayo 2002. Valdivia, Chile.

De Pol-Holz, R., G. Shaffer, H. Hundahl, M-B. Kronborg and O. Ulloa, TRAMP: un Nuevo perfilador autónomo y su contribución a la expedición MINOX frente al Norte de Chile, XXI Congreso Chileno de Ciencias del Mar. Mayo 2001. Viña del Mar, Chile.

Navarro, E., D. Figueroa, **R. De Pol-Holz**, L. Atkinson and A. Valle-Levinson. Circulación en la Bahía de Concepción inferida por datos de ADCP: Giro superficial e influencia topográfica. XX Congreso Chileno de Ciencias del Mar. Mayo 2000. Concepción, Chile .

De Pol-Holz, R. and J. Ribbe. Distribución de las Masas de Agua en el Pacífico Sudoriental, XX Congreso Chileno de Ciencias del Mar. Mayo 2000. Concepción, Chile

Atkinson, L. P., A. Valle-Levinson, D. Figueroa, **R. De Pol-Holz**, V.A. Gallardo, W. Schneider. Oceanographic observations in Chilean coastal waters between Valdivia and Concepcion, presented at the 6th International Conference on Southern Hemisphere Meteorology and Oceanography. Abril 2000. Organizado por la American Meteorological Society., Santiago, Chile.

INVITED PRESENTATIONS

April 2009 (Scheduled), Lamont Doherty Earth Observatory, Columbia University: “Intermediate water ventilation in the eastern South Pacific through the last deglaciation”.

January 2009, Universidad de Concepcion, Chile: “Intermediate water ventilation in the eastern South Pacific through the last deglaciation”.

November 2008, Scripps Institution of Oceanography, University of California San Diego: “Antarctic Intermediate Water ventilation through the last deglaciation off Chile”.

October 2008, University of California at Irvine: “Antarctic Intermediate Water ventilation through the last deglaciation off Chile”.

September 2008, Woods Hole Oceanographic Institution, Geology and Geophysics Department: “Antarctic Intermediate Water ventilation through the last deglaciation off Chile”.

June 2007, Department of Geosciences, University of Bremen, Germany: “The Late Quaternary history of nitrogen removal from the eastern South Pacific: Causes and consequences”.

June 2007, IFM-Geomar, University of Kiel, Germany: “The Late Quaternary history of nitrogen removal from the eastern South Pacific: Causes and consequences”.

June 2007, Alfred Wegener Institute, Bremerhaven, Germany: “The Late Quaternary history of nitrogen removal from the eastern South Pacific: Causes and consequences”.

TRAINING COURSES

Eighths Austral Summer Institute. Department of Oceanography, Universidad de Concepción, 2004. Dichato, Chile.

- Oceanography and climate change: Past, present and future scenarios

Radiocarbon in Ecology and Earth System Science, Department of Earth System Science, University of California, Irvine, 2007.

Fourth Austral Summer Institute. Department of Oceanography, Universidad de Concepción, 2004. Dichato, Chile.

- Organic Compounds as Tracers for Paleoclimate.
- Marine Productivity and Seasonality: Responses of Microbenthos in Oxygen-poor Environments, Past and Present.
- Topics in Quaternary Ocean and Climate Change.
- Isotope Biogeochemistry.
- Molecular Organic Geochemistry.
- Quaternary Ocean and Climate History from Laminated Marine Sediments.
- Air-sea Interactions and the Global C Cycle: A Paleoclimate Perspective from the Tropics to the Poles.

Third Austral Summer Institute. Department of Oceanography, Universidad de Concepción, 2003. Dichato, Chile.

- Observing the Large-Scale Ocean.
- Introduction to Ocean Modelling and Data assimilation.

Isotope Ratio Mass Spectrometry service training course, Isomass Scientific INC., University of Ottawa, Canada. 2002.

- IRMS system service
- Elemental Analyzer Continuous-Flow system service.
- Gas Chromatography Continuous-Flow system service, including Precon.

Second Austral Summer Institute, Department of Oceanography, Universidad de Concepcion, 2002, Dichato, Chile.

- Physical oceanographic data analysis with emphasis in the South Pacific Ocean
- Numerical Techniques for oceanography

Physics of Climate, Hillerød, Denmark. Nordita Institute, Niels Bohr Institute of Physics, Astrophysics and Geophysics of the University of Copenhagen, 2001. Denmark.

Fisrt Latin American School in Climate and Ocean Modelling. Universidad de Concepcion, 2000. Dichato, Chile.

Experience at Sea

R/V Oceanus cruise OCE447, June 2008, Woods Hole to Woods Hole. Sampling box cores along a depth transect in the western North Atlantic. Chief scientist: Daniel McCorkle, WHOI.

R/V Carlos Proter, Iquique to Iquique (Chile). April 2002, Gravity coring and water sampling for natural abundance stable isotope studies in the hypoxic waters off northern Chile. Chief scientist: Oscar Pizarro, COPAS, University of Concepcion, Chile.

R/V Kay-Kay, Valdivia-Talcahuano (Chile). December 1998, ADCP data collection and analysis in a transect along the Chile margin. Chief Scientist: Larry P. Atkinson, University of Virginia, Norfolk.