Itzel Ruvalcaba Baroni

Curriculum Vitae

SMHI
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Area of expertise:
Oceanography, paleoceanography and aquatic biogeochemistry with focus on the carbon cycle

Current position

From 04/2019 up to to now

Researcher in physical oceanography and marine biogeochemistry,

Research department - oceanography group, SMHI, Sweden.

Project: Validating, optimizing and improving the biochemistry in ocean models for climate projections at regional and global scales

Project Leader: prof. dr. Lars Arneborg

Education

From 04/2018 up to 03/2019

Postdoc in aquatic biogeochemistry modelling, Department of Environ- mental Science and Analytical Chemistry (ACES) and Bolin Centre for Climate Research, Stockholm University, Sweden.

Project: Potential hot-spots for release of greenhouse gases in Arctic catchment systems

Advisor: Associate prof. dr. Christian Beer

From 01/2015 up to 03/2018

Postdoc in marine biogeochemistry and paleoceanogprahy as part of the Netherlands Earth Science System Center (NESSC), Department of Earth Sciences, Utrecht University, Netherlands.

Project: Nutrient cycling and ocean circulation during greenhouse periods

Advisor: prof. dr. Caroline Slomp

From 08/2016 to 02/2017

Maternity leave.

From 11/2009 to 02/2015

Ph.D in marine biogeochemistry and paleoceanogprahy, Department of Earth Sciences, Utrecht University, Netherlands.

Thesis title: Biogeochemical response to widespread anoxia in the past ocean

Advisors: prof. dr. Caroline Slomp and prof. dr. Jack Middelburg

From 08/2007 to 06/2009

Master in physical oceanography, Geophysical Institute, University of Bergen, Norway.

Thesis title: Internal waves and mixing in Sognefjorden

Advisor: prof. dr. Ilker Fer

From 02/2000
to 06/2005
Bachelor in oceanology-geological oceanography, Faculty of Marine Sciences, University of Baja California, Mexico.

Thesis title: Paleoecology of benthic foraminifera from the Pleistocene in The Faro, Baja California, Mexic

Supervisor: prof. dr. Miguel A. Téllez Duarte

Dissertation with honors

Experience

General achievements:

- Vast experience in ocean and biogeochemical modeling, model development and model validation from global to regional scales (FOAM, MITgcm, HAMOCC2.1, box models)
- Experience in biogeochemical and hydrological modeling in Arctic lakes (VIC5)
- Detailed knowledge of the phosphorus, nitrogen, oxygen and carbon cycles in marine and fresh water systems
- Experience in managing large data sets and statistical tools (NetCDF, R, Matlab)
- Extensive experience in working abroad
- Experience in laboratory and field work (collection and preparation of water and sediment samples for diverse measurements)
- Effective in working independently and in collaboration
- Active in teaching at bachelor, master and PhD level as assistant and lecturer (Paleoceanography and Biogeochemistry)
- Lectured at R and L^{A}T$_E$X workshops
- Co-organized workshops for PhD students
- Involved as staff-support at symposiums and workshops

Selected specific achievements:

2018-2019   Biogeochemical module developement for the Variable Infiltration Capacity (VIC) Macroscale Hydrological Model

10/2018   Invited Lecturer, Experimental Studies in Environmental Science, Stockholm University, Sweden.

2015–2018   Member of the NESSC work board, Department of Earth Sciences, Utrecht University, The Netherlands.

10/2017   Research supervisor of master thesis, Utrecht University, The Netherlands.

04/2016   Research visit, Centre Européen de Recherche et d'Enseignement de Géosciences de l'Environnement (CEREGE), France.

02/2016	Research visit, Swedish Meteorological and Hydrological Institute (SMHI), Göteborg, Sweden.
02/2015	Invited lecturer on R computing language, University of Leiden, The Netherlands.
04/2015	Co-organizer and lecturer at the NESSC R-workshop, University of Utrecht, The Netherlands.
10/2012	Samplig at IODP Core Repository, University of Bremen, Germany.
02/2008	Oceanographic cruise, Geophysical Institute, University of Bergen, Norway.

Awards and selected presentations

2020   Poster presentation at Ocean Sciences Meeting, San Diego, U. S. A.: **I. Ruvalcaba Baroni,** E. Almroth Rosell, L. Axell, C. Dieterich, M. Gröger, J. Hieronymus, I. Wåhlström, S. Fredriksson and L. Arneborg, *Near-term ocean dynamics and biogeochemical interactions in the North-Baltic Sea system: A model validation*

2019   Poster presenation at the European Geosciences Union, Vienna, Austria: **I. Ruvalcaba Baroni,** T. Bayer, E. Gustafsson, A. Frampton and C. Beer, *Methane and carbon dioxide evasion from Arctic lakes*

2019   Attendence to *The Expansion of Low Oxygen Zones in the Global Ocean and Coastal Waters* symposium at The Royal Swedish Academy of Sciences, Stockholm, Sweden

2017   Oral presentation at the Goldschmidt, Paris, France **I. Ruvalcaba Baroni**, Alexander Phol, Niels A.G.M. van Helmond, A.L. Coe, A.S. Cohen, Y.Donnadieu and C.P. Slomp, *Ocean dynamics and biogeochemistry during the Toarcian Oceanic Anoxic Event*

2017   Poster presentation at the Hyperthermals: rapid and extreme global warming in our geological past **I. Ruvalcaba Baroni**, V. Palastanga, Christoph Heinze and C. P. Slomp, *Ocean deoxygenation and its impact on marine organic carbon burial.*

2016   **Invited speaker** at the marine sciences symposium, Utrecht, The Netherlands: **I. Ruvalcaba Baroni**, N. A. G. M. van Helmond, I. Tsandev, J. B. M. Middelburg and C. P. Slomp, *The impact of ocean anoxia on marine nitrogen cycling.*

2014   **Best poster award** at the Darwin/NESSC meeting, Noordwijkerhout, the Netherlands:

     I. Ruvalcaba Baroni, N. A. G. M. van Helmond, I. Tsandev, J. B. M. Middelburg and C. P. Slomp, *Reassessing the nitrogen isotope composition of sediments from the proto-North Atlantic during Oceanic Anoxic Event 2.*

2013   Poster Presentation at the American Geophysical Union (AGU), San Francisco, USA: **I. Ruvalcaba Baroni**, I. Tsandev and C. P. Slomp, *Nitrogen dynamics during the Cenomanian-Turonian Oceanic Anoxic Event 2: A model study for the proto-North Atlantic.*

2012   **Invited speaker** at the Integrated Ocean Drilling Program Symposium, Utrecht, Netherlands: **I. Ruvalcaba Baroni**, N. A. G. M. Van Helmond, R. P. M. Topper, H. Brinkhuis and C. P. Slomp, *Was the North Atlantic Ocean well-ventilated during Oceanic Anoxic Event 2 in the mid-Cretaceous?*

2011   Poster presentation and staff-support at the Climate and Ocean Dynamics of the Cretaceous Greenhouse World Symposium, Utrecht, Netherlands: **I. Ruvalcaba Baroni** and C. P. Slomp, *Modeling Marine Phosphorus and Nitrogen cycles in the Cretaceous: What triggered ocean anoxia?*

2007   **CONACYT award**, scholarship for Mexican professionals who wish to undertake postgraduate studies abroad in a highly recognized institution.

2005   **Best oral presentation award** at the XIII Oceanographic Student Congress, University of Baja California (UABC), Ensenada, Mexico: **I. Ruvalcaba Baroni**, *Paleoecology of benthic foraminifera from the Pleistocene in El Faro, Baja California, Mexico.*

Additional selected courses

2015 Mathematical approaches to (palaeo-) climate sensitivity, Utrecht University, The Netherlands: A 2 days workshop on (palaeo-) climate sensitivity focusing on new mathematical approaches as part of the NESSC.

2011 Darwin summer school on Biogeosciences, Utrecht University and NIOZ, The Netherlands: A 2 week course that focused on global carbon perturbations in the past, present and future. Our group obtained the best oral presentation award.

2010 Urbino summer school in paleoclimatology, Urbino University, Italy: A 3 week course that focused on Past Global Change Reconstruction and Modeling Techniques.

Computer skills

Basic	Microsoft Windows, OpenOffice, Adobe Illustrator
Intermediate	LaTeX, Linux
Advance	Matlab, R, Python (basics), Ferret, C, Fortran 77, Fortran 95, read/write NetCDF, Climate Data Operator (CDO) software, GitHUB (collaboration platform to review code, manage projects and build software), super computer applications, parallel programming with MPI and OpenMP

Key Interests

Carbon turnovers, Climate change, Nutrient cycles, Ocean and lake dynamics, Arctic changes, Extreme climate events

Languages

Mother-tongue	Spanish and French	
Intermediate	English	*Professional working proficiency*
Basic	Dutch	*Basic understanding and conversation*
Basic	Norwegian	*Basic words and phrases*
Learning	Swedish	*Basics*

Hobbies

Family, Cooking, Photography, Diving, Playing violin, Reading, Hiking, Listening to music and more ...