

NATHALIE DUBOIS
Postdoctoral Investigator

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RESEARCH INTERESTS

- Paleooceanography
- Climate and paleoclimate (late Pleistocene and Anthropocene)
- Organic geochemistry and geochemical proxies
- Sedimentology

EDUCATION

Ph.D. – Oceanography – Dalhousie University, Halifax (30.06.2010)
Dissertation title: *On the paleoceanography of the eastern equatorial Pacific during the last 100,000 years*
(Advisor: Pr. Markus Kienast)

M.Sc. (Diplôme d'Ingénieur-Géologue) – Geology – University of Geneva (29.11.2005)
Dissertation title: *Changements climatiques et océanographiques au Pléistocène supérieur: Les données du Plateau du Marion, NE Australie* (Advisor: Pr. Pascal Kindler)

B.Sc. (Licence) – Earth Sciences – University of Geneva (2003)

WORK & FIELD EXPERIENCE

- **Postdoctoral Investigator**, Woods Hole Oceanographic Institution (03.2012-present)
- **Research Associate**, University of Manchester (09.2010-02.2012)
- Invited to sail as organic geochemist onboard **Expedition 329 of the International Ocean Drilling Program (IODP)**, in the South Pacific Gyre (Oct-Dec 2010)
- **Ocean Workshop Reporter** – Canadian Institute For Advanced Research (2008-2010)
- **Teaching Assistant** – Dalhousie University, Halifax (2008)
- **French Language Assistant** – Ecole Beaubassin, Halifax (2008-2009)
- **AMOCINT oceanographic cruise** – *R/V Marion Dufresne* – North Atlantic (4 weeks, 2008) – In charge of the spectrophotometer.
- **Research Assistant** – University of Geneva (2004)
- **Field auxiliary** – CSD Engineers SA, Geneva (2003-2004)
- **Lab technician** (internships) – Research Department, Firmenich SA, Geneva (1999-2003)

RECENT GRANTS & AWARDS

- UK-IODP Grant to attend the **8th Urbino Summer School** in Paleoclimatology (2011, 1000€)
- NERC **Post-Cruise Grant** (2011, 19500£)
- **ECORD Research Grant** (2011, 2000€)
- NERC **Grant to join IODP Exp 329** (2010, 11855£)

- **Nominated** for the Dalhousie University **Doctoral Thesis Award** (2010)
- **IMAGES Travel Grant** to attend ICP-X (2011, 1200€)
- International Association of Sedimentologists (IAS) **Travel Grant** (2010, 700€)
- Dalhousie Faculty of Graduate Studies **Conference Travel Grant** (2010, 750 CAD)
- **SNSF Fellowship for Prospective Researcher** (2009-2010, 44'225 CHF)
- **G. L. Blechschmidt Award** (Geological Society of America, GSA Specialized Award) (2008)
- **GSA Graduate Student Research Grant** (2008, 2930\$)
- **IAS Postgraduate Research Grant** (2008, 1000€)
- Dalhousie Faculty of Graduate Studies **Scholarship** (2006-2009)
- **Prix ELSTE – A. Lombard**, best Master's thesis (2005, 1000 CHF)

SERVICES TO THE COMMUNITY

- **President** of the WHOI Postdoctoral Association (2012-present)
- **Organiser of the Basin Seminar Series**, SEAES, The University of Manchester (2011-2012)
- **Session chair and convener**, AGU Fall Meeting 2010: “Advances in the use of Biomarkers”
- **Reviewer** for *GRL* (2012), *Paleoceanography* (2011) and the *Asian Journal of Earth Science* (2010)
- Dalhousie University chemical oceanography **student representative** (elected, 2008-2009)
- **Organiser of the Biogeochemistry Seminars**, Dept. of Oceanography, Dalhousie Univ. (2007-2008)

CONFERENCES AND SCHOOL PARTICIPATION

- **AGU** (American Geophysical Union) Fall Meeting, San Francisco, USA (Dec. 2012)
- IODP expedition 329 **Post-cruise meeting**, Kona, USA (Nov. 2012)
- WHOI **Postdoctoral Symposium**, Woods Hole, USA (Oct. 2012)
- **Selected for participation in the 8th USSP**: Urbino Summer School in Paleoclimatology, Urbino, Italy (Jul. – Aug. 2011)
- **Research Staff Conference**, University of Manchester, UK (Apr. 2011)
- **Introduction to MATLAB** (Training course for Research Computing), University of Manchester, UK (Mar. 2011)
- **Introduction to the News Media**, University of Manchester, UK (Mar. 2011)
- **AGU** (American Geophysical Union) Fall Meeting, San Francisco, USA (Dec. 2010)
- ICP-X (10th **International Conference on Paleoceanography**), San Diego, USA (Aug. – Sep. 2010)
- 44th **CMOS congress** (Canadian Meteorological and Oceanographic Society), Ottawa, Canada (May – Jun. 2010)
- Participation in the 1st **NICOPP Workshop on Sedimentary $\delta^{15}\text{N}$ – by invitation**, Montreal, Canada (May 2010)
- **EGU** (European Geosciences Union) General Assembly, Vienna, Austria (May 2010)
- **Selected for participation in the 8th International NCCR Climate Summer School**, Grindelwald, Switzerland (Aug. – Sep. 2009)
- 43rd **CMOS congress** (Canadian Meteorological and Oceanographic Society), Halifax, Canada (May– Jun. 2009)
- Dalhousie **Conference on University Teaching & Learning**, Halifax, Canada (Apr. 2009)
- **C-DOGS** (Conference of Dalhousie Oceanography Graduate Students), Halifax, Canada (Mar. 2009)
- Participation in the **Communicating Your Science Workshop**, AGU Fall Meeting (Dec. 2008)
- **AGU** (American Geophysical Union) Fall Meeting, San Francisco, USA (Dec. 2008)
- **AGU** (American Geophysical Union) Fall Meeting, San Francisco, USA (Dec. 2007)
- **C-DOGS** (Conference of Dalhousie Oceanography Graduate Students), Halifax, Canada (Mar. 2007)
- **SWISSED Meeting**, Fribourg, Switzerland (Jan. 2006)

SEMINARS

- « *Atmospheric Bridge and Oceanic Tunnel: A multiproxy roadmap of the Eastern Equatorial Pacific during the last 100 kyr.* », Woods Hole Oceanographic Institution Climate and Paleo Lunch Seminar, Woods Hole, MA, USA, Nov. 2012
- « *The Pacific Cold Tongue during the last 100,000 years: An important cog of Earth's climate system.* », School of Earth, Atmospheric and Environmental Sciences Seminar, Manchester, UK, Oct. 2011
- « *The eastern equatorial Pacific during the last 100,000 years: Temperature, productivity, denitrification and high-latitude linkages* », Sedimentologisches und paläoozeanographisches Seminar, ETH, Zurich, Switzerland, Feb. 2011

TEACHING/TUTORIAL ACTIVITIES

- M.Earth.Sci. Research Mentor: Lee Martin (2011) – The University of Manchester
Project: *Traces of Life in Oceanic Deserts - A study into the organic geochemistry of the South Pacific Gyre seafloor.*
- Undergraduate Research **Mentor**: Grace McIntyre (2010), Christine Carriere (2009-2010)
- **Certificate** in University-level teaching and learning (2010)
- **Tutorial** on the Program « Ocean Data View », Graduate and Undergraduate level (2010)
- **Guest lectures** in the OCEA5200 class: « *Geological Oceanography* », 6 graduates (2010)
- Enrolled in the CNLT5000 class: « *Teaching and Learning in Higher Education* » (2009)
- Participation in 20+ Dalhousie University **workshops on teaching** (2008-2010)
- **Teaching Assistant** for the class: « *Blue Planet* », including lectures, 100 undergraduates (2008)

AFFILIATIONS

- American Geophysical Union
- Geological Society of America
- International Association of Sedimentologists

LANGUAGES

- German: Mother tongue (German-speaking parents)
- French: First Language (schooling in French)
- English: Excellent (FCE 12-2002, CAE 03-2004, TOEFL 12-2005)
- Italian: Basic

PUBLIC ENGAGEMENT AND INTERESTS

- Maintained a blog for the general public and classrooms during IODP Exp. 329 (2010).
- Visiting classrooms for the **Let's Talk Science** Partnership Program, Halifax (2007-2008)
- **Tall Ship Festival** volunteer, Halifax (2007-2009)
- In charge of a group of 30 volunteers during the Paleo Music Festival, Nyon (2002-2006)
- In charge of sporting events for the swimming club "Cercle des Nageurs de Nyon" (2002-2006)
- Training-instructor, secretary and volunteer lifeguard of local lifeboat institutions, SISL Nyon & SISL Coppet (1998-present).

PUBLICATIONS

Peer-reviewed contributions:

Robinson, R. S., M. Kienast, A. L. Albuquerque, M. Altabet, S. Contreras Quintana, R. De Pol-Holz, N. **Dubois**, R. Francois, E. Galbraith, T.-C. Hsu, T. Ivanochko, S. Jaccard, S.-J. Kao, T. Kiefer, S. Kienast, M. Lehmann, P. Martinez, M. McCarthy, J. Möbius, T. F. Pedersen, T. M. Quan, E. Ryabenko, A. Schmittner, R. Schneider, A. Schneider-Mor, M. Shigemitsu, D. Sinclair, C. Somes, A. Studer, R. Thunell, J.-Y. Yang (2012), A review of nitrogen isotopic alteration in marine sediments, *Paleoceanography*, 27, PA4203, doi:10.1029/2012PA002321.

Dubois, N., N. Mitchell (2012), Large-scale sediment redistribution on the equatorial Pacific seafloor, *Deep-Sea Research I*, 69, 51-61. doi:10.1016/j.dsr.2012.07.006.

Kienast, M., G. MacIntyre, N. **Dubois**, S. Higginson, C. Normandeau, C. Chazen, T. Herbert (2012), Alkenone unsaturation in surface sediments from the eastern equatorial Pacific: Implications for SST reconstructions, *Paleoceanography*, 27, PA1210, doi:10.1029/2011PA002254.

Dubois, N., and M. Kienast (2011), Spatial reorganization in the equatorial divergence in the Eastern Tropical Pacific during the last 150 kyr, *Geophysical Research Letters*, 38, L16606, doi:10.1029/2011GL048325

This paper was highlighted in Nature Geosciences: Newton, A (2011), Upwelling displaced, Nature Geoscience, 4, 580 (2011), doi:10.1038/ngeo1257

Dubois, N., M. Kienast, S. Kienast, S. E. Calvert, T. D. Herbert, and A. C. Mix (2011), Millennial-scale hydrographic variations and biogeochemical adjustments in the Eastern Equatorial Pacific during the last 100 kyr, *Quaternary Science Reviews*, 30, 210-223, doi:10.1016/j.quascirev.2010.10.012

Dubois, N., Kienast, M., Kienast, S. S., Calvert, S. E., François, R., Anderson, R. F. (2010), Sedimentary opal records in the Eastern Equatorial Pacific: It's not all about leakage, *Global Biogeochemical Cycles*, 24, GB4020, doi:10.1029/2010GB003821

Dubois, N., M. Kienast, C. Normandeau, and T. D. Herbert (2009), Eastern equatorial Pacific cold tongue during the Last Glacial Maximum as seen from alkenone paleothermometry, *Paleoceanography*, 24, PA4207, doi:10.1029/2009PA001781.

Dubois, N., P. Kindler, S., Spezzaferri, C., Coric (2008), The initiation of the southern central Great Barrier Reef: New multiproxy data from Pleistocene distal sediments from the Marion Plateau (NE Australia), *Marine Geology*, 250, 223-233, doi:10.1016/j.margeo.2008.01.007

Non-refereed contributions, conference presentations:

Dubois, N., Mitchell, N. C, and I. R. Hall (2012), Sedimentation in an oceanic desert: the South Pacific Gyre, Abstract PP13A-2062, presented at 2012 Fall Meeting, AGU, San Francisco, 3-7 Dec.

Arbuszewski, J., Oppo, D. Huang, K.-F., **Dubois, N.**, Galy, V., Mohtadi, M., Herbert, T., Rosenthal, Y., and B. Linsley (2012), Multiproxy reconstruction of tropical Pacific (sub)surface gradients through the Holocene, Abstract PP51C-05, presented at 2012 Fall Meeting, AGU, San Francisco, 3-7 Dec.

Dubois, N., Mitchell, N. C, and I. R. Hall (2012), Sedimentation in an oceanic desert: the South Pacific Gyre, IODP Expedition 329 post-cruise meeting, Kona, HI, 12-14 Nov.

Dubois, N., (2012), Exploring the past and present hydrology of the Maritime Continent using leaf waxes, WHOI Postdoctoral Symposium, 17 Oct.

- Dubois, N.**, C. Smith-Duque and the IODP Expedition 329 Shipboard Science Party (2011), Expedition 329: South Pacific Gyre Microbiology, UK-IODP Newsletter, 36, 7-11.
- Dubois, N.**, M. Kienast, S. Kienast, and R. Francois (2011), Sedimentary opal records: A production or preservation signal? 8th Urbino Summer School in Paleoclimatology (USSP 2011), Urbino, Italy.
- Dubois, N.**, M. Kienast, S. Kienast, and S. E. Calvert (2010), Diverging Glacial-Interglacial Nutrient Regimes in the Eastern Tropical Pacific During the Last 150 kyr, Abstract PP31A-1617 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Mitchell, N. C., M. Tominaga, **N. Dubois**, and M. W. Lyle (2010), The equatorial Pacific pelagic sedimentary system, Abstract PP23A-1714 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Normandeau, C. D, G. MacIntyre, A. Hill, **N. Dubois**, and M. Kienast (2010), Alkenone paleothermometry: New insights from culture studies and eastern tropical Pacific surface sediments, Abstract PP33A-1656 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Dubois, N.**, M. Kienast, S. Kienast, C. Normandeau, S. E. Calvert, T. D. Herbert, and A. C. Mix (2010), Exploring the causes of millennial-scale changes in oceanographic conditions in the eastern tropical Pacific during the last glacial period, (International Conference on Paleoceanography, San Diego).
- Kienast, M., **N. Dubois**, P. Hill, S. Kienast, C. Normandeau, T. Bolliet, A. Holbourn, W. Kuhnt, C. Kissel and C. Laj (2010), Thermocline depth and bottom current flow in the western equatorial Pacific 0-150,000 years BP: New insights from nitrogen isotopes and grain size analysis, (International Conference on Paleoceanography – ICP-X, San Diego).
- NICOPP working group members: Kienast, M., E. Galbraith, T. Kiefer, A. Albuquerque, M. A. Altabet, S. E. Calvert, S. Contreras, R. De Pol-Holz, **N. Dubois**, R. François, T. Ganeshram, S. Kao, G. Lavik, P. Martinez, M. McCarthy, A. Mix, W. Naqvi, T. Pedersen, T. Quan, R. Robinson, E. Ryabenko, A. Schmittner, R. Schneider, A. Schneider-Mor, M. Shigemitsu, D. Sigman, D. Sinclair, R. Thunell and L. van Geen (2010), NICOPP: Nitrogen Cycle in the Ocean, Past and Present, (International Conference on Paleoceanography – ICP-X, San Diego).
- Kienast, S., **N. Dubois**, M. Kienast, R. Francois, P. S. Hill, and R. F. Anderson (2010), Detrital input to the Eastern Equatorial Pacific over the last 30 kyrs: New insights from Thorium-232 and grain size distributions, (International Conference on Paleoceanography – ICP-X, San Diego).
- Dubois, N.**, M. Kienast, S. Kienast, C. Normandeau, S. E. Calvert, and T. D. Herbert (2010), Bi-polar footprints in Eastern Equatorial Pacific sediments during the Last Glacial, (abstract #3744, 44th CMOS congress – Canadian Meteorological and Oceanographic Society).
- Kienast, M., G. MacIntyre, A. Hill, **N. Dubois**, and C. Normandeau (2010), Alkenone paleothermometry: New insights from culture studies and eastern tropical Pacific surface sediments, (abstract #3748, 44th CMOS congress – Canadian Meteorological and Oceanographic Society).
- Dubois, N.**, M. Kienast, S. Kienast, and S. E. Calvert (2010), Eastern Equatorial Pacific nitrogen isotope records (1st NICOPP workshop on sedimentary $\delta^{15}\text{N}$, Montreal, invited).
- Dubois, N.**, M. Kienast, S., Kienast, R., Francois (2010), Opal burial in the Eastern Equatorial Pacific controlled by Si leakage and eolian dust inputs, Geophysical Research Abstracts, 12, EGU2010-152.
- Dubois, N.**, M. Kienast, S., Kienast, C., Normandeau (2009), Millennial-scale variations in climate and ocean dynamics of the eastern equatorial Pacific over the last 125,000 years, 8th International NCCR Climate Summer School 2009, Grindelwald, Switzerland.
- Dubois, N.**, M. Kienast, S., Kienast, C., Normandeau, T. D., Herbert (2009), Glacial maximum to Holocene contrasts in the dynamics of the eastern equatorial Pacific, (abstract #2770, 43rd CMOS congress – Canadian Meteorological and Oceanographic Society).

- Boerner, A., **N. Dubois**, P. Smith, N., St.Amour, R., Urrutia (2009), Climate variability, forcings, feedbacks and responses: The long-term perspective, Workshop Report, PAGES News, 17 (3), 128.
- Hastings, K. A., Kienast, M., **Dubois, N.**, Normandeau, C., Bolliet, T., Holbourn, A. E., Laj, C. E. (2009), Organic biomarker records of terrigenous organic matter input to the Indonesian Archipelago, western equatorial Pacific, 0-160,000 years BP: Implications for regional climate, Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract # PP13D-1443.
- Dubois, N.**, M. Kienast, C., Normandeau (2008), A 100,000 Year History of N-S and E-W Gradients of Sea Surface Temperature Across the Equatorial Pacific From Alkenone Paleothermometry., Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract # PP22A-02.
- Dubois, N.**, P. Kindler, S., Spezzaferri, C., Coric (2007), The Initiation of the Southern Central Great Barrier Reef: Multiproxy Study on Periplatform Sediments From ODP Site 1195 on the Marion Plateau (NE Australia), Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract #PP32B-02.
- Dubois, N.**, P. Kindler, S., Spezzaferri (2007), Evidence for the initiation of the Great Barrier Reef in distal sediments from the Marion Plateau, NE Australia (oral presentation at the C-DOGS conference in Halifax).
- Meyer¹, N.**, P. Kindler, S., Spezzaferri (2006), Evidence for the initiation of the Great Barrier Reef in Pleistocene sediments from the Marion Plateau, NE Australia (poster presented at the Swiss meeting in Fribourg).

Manuscripts in preparation or submitted:

- Galbraith, E. D. and the **NICOPP working group** (revisions submitted to Nature Geosciences on July 30, 2012), Global nitrogen isotopic constraints on the acceleration of oceanic denitrification during the last deglacial warming.
- Dubois, N.**, N. Mitchell, I. Hall, Sedimentation in the South Pacific Gyre.
- Dubois, N.**, M. Kienast, S. Kienast, C. Normandeau, Intensification of Central American cold surges during North Atlantic Heinrich Stadials.
- D'Hondt, S., F. Inagaki, C. Alvarez Zarikian, H. Evans, **N. Dubois**, T. Engelhardt, T. Ferdelman, B. Gribsholt, R. N. Harris, B. W. Hoppie, J.-H. Hyun, J. Kallmeyer, J. Kim, J. E. Lynch, S. Mitsunobu, Y. Morono, R. W. Murray, T. Shimono, F. Shiraishi, D. C. Smith, C. E. Smith-Duque, A. J. Spivack, B. O. Steinsbu, Y. Suzuki, M. Szpak, L. Toffin, G. Uramoto, Y. Yamaguchi, G.-L. Zhang, X.-H. Zhang, W. Ziebis (in preparation for submission to Nature Geosciences), The Limit to Organic-Fueled Life in Oxidic Sediment of the South Pacific Gyre.
- Kienast, S. S., T. Friedrich, **N. Dubois**, P. Hill, M. Kienast (to be submitted February 2013), Near-Collapse of the meridional SST gradient in the dusty Eastern Equatorial Pacific during the Heinrich 1 Stadial.

Theses:

- Dubois, N.** (2010), On the paleoceanography of the eastern equatorial Pacific during the last 100,000 years, PhD thesis, Dalhousie University.
- Meyer¹, N.** (2005), Changements climatiques et océanographiques au Pléistocène supérieur: Les données du Plateau du Marion, NE Australie, Travail de Diplôme, Université de Genève (M.Sc. Thesis).

¹ Maiden name