

Curriculum Vitae-Basak

CHANDRANATH BASAK
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EDUCATION

- Ph. D. University of Florida, Gainesville, FL
(2006 – 2011)
- M. S. Indiana State University, Terra Haute, IN
(2004 – 2006)
- M. Sc. (Applied Geology) Jadavpur University, India.
(2002 – 2004)
- B. Sc. Presidency College, University of Calcutta, India.
(1999 – 2002)
Major: Geology (Hons), Minor: Chemistry and Mathematics

APPOINTMENTS

- Research Assistant Professor University of Delaware, Newark, DE
(Fall 2019 – present)
- Adjunct Associate Research Scientist Lamont-Doherty Earth Observatory, Columbia University,
Palisades, NY
(Summer 2017 – present)
- Assistant Professor California State University, Bakersfield, CA
(Fall 2017 – Summer 2019)
- Associate Research Scientist Lamont-Doherty Earth Observatory, Columbia University,
Palisades, NY
(Spring 2017 – Summer 2017)
- Post-doctoral Research Scientist (Summer 2014 – Spring 2017)
Lamont-Doherty Earth Observatory, Columbia University,
Palisades, NY
- Post-doctoral Fellow Max Planck Research Group - Marine Isotope Geochemistry at
(Fall 2011 – Fall 2013)
Carl von Ossietzky University-Institute for Chemistry and
Biology of the Marine Environment (ICBM), Germany

RESEARCH

- **Post-doctoral Research:** Reconstructing past and present water mass structure in the South Pacific, modeling particle reactive elemental cycling using Transport Matrix Method.

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- **Ph.D. Dissertation:** Deep ocean circulation and continental weathering regimes during climate transitions (last deglaciation and Eocene-Oligocene) using Sr, Nd, and Pb isotopes in sedimentary archives.
- **M.S. (US) Thesis:** Stable isotopic and elemental geochemistry of benthic foraminifera from multiple hydrographic regimes as environmental indicators.
- **M.Sc. (India) Thesis:** Major element mobility during metamorphism of a Barrovian sequence; test from Eastern Himalaya.

RESEARCH GRANTS

- Summer 2019 Collaborative Research: Investigating the Influences of Hydrothermal and Respired Carbon in Intermediate Waters of the Equatorial Pacific Ocean During the Last Deglaciation (**\$255,788** NSF, MG&G; **Basak, C., UD PI**)
- Summer 2018 Introducing Undergraduate Students to Ocean Science Research (**\$150,000** W.M. Keck Foundation; **Basak, C., PI**)
- Spring 2018 Behavior of Rare Earth Elements (REEs) in Oxygen Minimum Zone (**4WTUs**, Research, Scholarship and Creative Activity (RSCA), CSUB, **Basak, C., PI**)
- Spring 2017 Testing fidelity of Nd isotopes as a paleocirculation tracer in the Southeast Indian-Southern Ocean (**\$142,645** NSF, MG&G; **Basak, C., PI**)
- Spring 2017 Collaborative Research: US GEOTRACES GEOTRACES Pacific Meridional Source and Sinks of Nd Isotopes and REE (**\$443,776**, NSF, Chemical Oceanography; **Basak, C., Co-PI**)
- Spring 2015 Oxygen Minimum Zone fluctuation in the Arabian Sea during abrupt climate change events (\$10,000.00, Lamont Climate Center, **Basak, C., PI**)

PUBLICATIONS

15. Naik, S.S., **Basak, C.**, Goldstein, S.L., Naidu, P.D., Naik, S.N., 2019. A 16 kyr record of ocean circulation and monsoon intensification from the central Bay of Bengal. *Geochemistry, Geophysics, Geosystems* 20.
14. Sarkar, S., **Basak, C.**, Frank, M., Berndt, C., Huuse, M., Badhani, S., Bialas, J., 2019. Late Eocene onset of the Proto-Antarctic Circumpolar Current. *Scientific Reports* 9, 10125.
13. **Basak, C.**, Fröllje, H., Lamy, F., Gersonde, R., Benz, V., Anderson, R.F., Molina-Kescher, M., Pahnke, K., 2018. Breakup of last glacial deep stratification in the South Pacific. *Science* 359, 900-904.
12. R. Schlitzer **et al.**, 2018. The GEOTRACES Intermediate Data Product 2017. *Chemical Geology*, <https://doi.org/10.1016/j.chemgeo.2018.05.040>
11. Horikawa K., Martin E. E., **Basak C.**, Onodera J., Osamu Seki, Sakamoto T., Ikehara M., Sakai S., Kawamura K., 2015. Pliocene climate cooling enhanced by flow of low salinity Bering Sea water to the Arctic Ocean. *Nature Communications*, 6.
10. **Basak, C.**, Pahnke, K., Frank, M., Lamy, F., Gersonde, R., 2015. Neodymium isotopic characterization of Ross Sea Bottom Water and its advection through the southern South Pacific. *Earth and Planetary Science Letters* 419, 211-221.

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9. **Basak, C.**, and Martin, E. E., 2013. Antarctic weathering and carbonate compensation at the Eocene-Oligocene transition. *Nature Geoscience*, 6(2): 121-124.
8. van de Flierdt T., Pahnke K., and GEOTRACES **intercalibration participants**, 2012. GEOTRACES intercalibration of neodymium isotopes and rare earth elements in seawater and marine particulates – Part 1: international intercomparison. *Limnology and Oceanography: Methods*, 10, 234-251.
7. MacLeod, K.G., Isaza Londono, C., Martin, E.E., Jimenez Berrocoso, A., and **Basak, C.**, 2011. Changes in North Atlantic circulation at the end of the Cretaceous greenhouse interval. *Nature Geoscience*, 4(11), 779-782.
6. **Basak C.**, Martin E. E., and Kamenov, G. D., 2011. Seawater Pb isotopes extracted from Cenozoic marine sediments. *Chemical Geology*, 286, 94–108.
5. **Basak, C.**, Martin, E.E., Horikawa, K., and Marchitto, T.M., 2010. Southern Ocean source of ^{14}C -depleted carbon in the North Pacific Ocean during the last deglaciation. *Nature Geoscience*, 3(11): 770-773.
4. Jiménez Berrocoso, A., MacLeod K.G., Martin, E.E., Bourbon, E., Isaza-Londoño, and **Basak, C.**, 2010. Nutrient trapping during Late Cretaceous organic-rich shale deposition in the tropical North Atlantic. *Geology* 38, 1111-1114.
3. Martin, E.E., Blair, S.W., Kamenov, G.D., Scher, H.D., Bourbon, E., **Basak, C.** and Newkirk, D.N., 2010. Extraction of Nd isotopes from bulk deep-sea sediments for paleoceanographic studies on Cenozoic time scales. *Chemical Geology*, 269(3-4): 414-431.
2. Dekov V. M., Cuadros J., Kamenov G. D., Weiss D., Arnold T., **Basak C.**, and Rochette P., 2010. Metalliferous sediments from the H.M.S. Challenger voyage (1872-1876). *Geochimica et Cosmochimica Acta* 74(17), 5019-5038.
1. **Basak, C.**, Rathburn, A.E., Pérez, M.E., Martin, J.B., Kluesner, J.W., Levin, L.A., De Deckker, P., Gieskes, J.M. and Abriani, M., 2009. Carbon and oxygen isotope geochemistry of live (stained) benthic foraminifera from the Aleutian Margin and the Southern Australian Margin. *Marine Micropaleontology*, 70(3-4): 89-101.

Manuscripts in preparation:

1. Fröllje, H., Pahnke, K., **Basak, C.**, Ullermann, J., Lamy, F., Gersonde, R., Variable glacial-interglacial Southern Ocean deep-water mixing over the last 140 ka traced by neodymium isotopes. (*in prep.*)
2. **Basak, C.**, Plancherel, Y., Khatiwala, S., Anderson, R.F., The influence of nepheloid layers on global model simulations of ^{231}Pa and ^{230}Th . (*in prep.*)

PUBLISHED ABSTRACTS AND PRESENTATIONS (LAST 5 YEARS)

- Kim, K., Segui, M. J., Knudson, K. P., Yehudai, M., Goldstein, S. L., Pena, L. D., **Basak, C.**, Ferretti, P., 2017. Reconstruction of the North Atlantic end-member of the Atlantic Meridional Overturning Circulation over glacial–interglacial cycles, Fall meeting of American Geophysical Union, New Orleans, USA.
- Goldstein, S. L., Pena, L. D., Yehudai, M., Segui, M. J., Kim, J., Knudson, K. P., **Basak, C.**, 2017. The Atlantic Meridional Overturning Circulation over time: a Nd isotope perspective, Fall meeting of American Geophysical Union, New Orleans, USA

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- Vivancos, S. M., Anderson, R.F., Pavia, F.J., Fleisher, M.Q., Lu, Y., Zhang, P., Cheng, Y., Edwards, R.L., Muratli, J.M., Haley, B.A., **Basak, C.**, Goldstein, S.L., 2018. Oceanic Dissolved Residence Times of Bioactive and Rare Earth Elements in the Eastern Tropical Pacific Ocean Along the GEOTRACES GP16 Transect. Ocean Sciences Meeting, Portland, USA.
- **Basak, C.**, Muratli, J., Wu, Y., Haley, B., Goldstein, S. L., 2016. Dissolved Nd isotope ratios along the US GEOTRACES Eastern Pacific Zonal Transect. Fall meeting of American Geophysical Union, San Francisco, USA.
- 3. Plancherel, Y., **Basak, C.***, Khatiwala, S., Anderson, R. F., 2016. The influence of nepheloid layers on global model simulations of ^{231}Pa and ^{230}Th . Fall meeting of American Geophysical Union, San Francisco, USA. [*presenting author].
- 4. Naik, S. S., **Basak, C.**, Naidu, D., Goldstein, S. L., 2016. A 16 kyr seawater neodymium isotope record from the central Bay of Bengal. Fall meeting of American Geophysical Union, San Francisco, USA.
- 5. **Basak, C.**, Goldstein, S. L., Anderson, R. F., Romahan, S. Pätzold, J., 2016. Ocean Circulation and Past Variability in Arabian Sea Oxygen Minimum Zone. International Conference of Paleoceanography 12, Utrecht, Netherlands.
- 6. Pahnke, K., **Basak, C.**, Fröllje, H., Lamy, F., Gersonde, R., Anderson, R.F., 2016. Break up of last glacial deep stratification in the south pacific. International Conference of Paleoceanography 12, Utrecht, Netherlands.
- 7. Fröllje, H., **Basak, C.**, Lamy, F., Gersonde, R., Ullermann, J., and Pahnke, K., 2015. Changes in the South Pacific deep water Nd isotope composition over the last 140 ka. European Geophysical Union General Assembly 2015, Vienna, Austria.
- 8. **Basak, C.**, Pahnke, K., Fröllje, H., Gersonde, R., Lamy, F., Benz, V., and Anderson, R. F., 2013. South Pacific Deep Circulation Linked to Climate Variations During the Last Deglaciation. International Conference of Paleoceanography 11, Sitges, Spain.
- 9. **Basak, C.** and Pahnke, K., 2012. South Pacific Water Mass Structure From Nd Isotopes: Present And Past. Fall meeting of American Geophysical Union, San Francisco, USA.

INVITED TALKS

- Fall 2019 Dissolved Nd isotope ratios along the US GEOTRACES Eastern Pacific Zonal Transect. Japan Oceanographic Society, Annual Meeting, Toyama, Japan.
- Fall 2017 End of the Last Glacial Period: A Story of Deep Ocean Circulation Changes in the Southern Ocean. California State University, Bakersfield, CA; NSME Faculty Lecture Series.
- Spring 2017 End of the Last Glacial Period: A Story of Deep Ocean Circulation Changes in the Southern Ocean. California State University, Bakersfield, CA.
- Summer 2015 Deep Ocean Circulation and Climate: A Nd Isotope Study From The South Pacific. Arizona State University, Tempe, AZ.
- Summer 2015 South Pacific Deep Circulation and Climate: present and past. Lamont Doherty Earth Observatory, Palisades, NY.
- Spring 2015 Story of Past Ocean Circulation as told by fossil fish teeth. City College of New York, NY.

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- Fall 2012 South Pacific Water Mass Structure from Nd Isotopes: Present and Past. San Francisco, CA.
- Fall 2011 Continental Antarctic Weathering Regimes During the Eocene-Oligocene Transition: Using Nd, and Pb Isotopes in Sedimentary Archives. University of Oldenburg, Oldenburg, Germany.

INSTRUMENTAL AND LABORATORY EXPERIENCE

- Operated Nu-plasma and Neptune plus MC-ICPMS and Thermo Element II ICP-MS to measure Nd, Sr, and Pb isotopes and elemental concentrations almost on a daily basis.
- Operated TIMS (VG Sector 54 Thermal Ionization Mass Spectrometer) to measure Sr, and Nd isotope analyses.
- Heavily involved in the lab building process (Max-Planck marine isotope geochemistry group, Germany), ranging from smooth operation of the sample preparation laboratory, setting up chromatographic columns for elemental separation as part of sample preparation for isotope analyses, to writing/programming mass spectrometer methods for isotope analyses using the newly acquired Neptune plus MC-ICPMS.

WORKSHOPS AND SYMPOSIUMS

- Spring 2018 GP15-PMT Pre-cruise meeting and workshop, Norfolk, VA, USA, March 8-9 [Planning Workshop for NSF funded project, Basak is a funded PI who contributed to the overall planning].
- Spring 2018 CSU Water Resources and Policy Initiatives Conference, CSUSB Palm Desert Campus, Palm Desert, CA, USA
- Spring 2018 The Scientific Inspirations of Wolfgang H. Berger: An honorary symposium at the Scripps Institution of Oceanography, La Jolla, San Diego, CA, USA
- Fall 2017 Indian Ocean Science Workshop, La Jolla, CA, USA, September 11-13.
- Fall 2016 US GEOTRACES Alaska-Tahiti Planning Workshop, La Jolla, CA, USA, October 5-7.
- Summer 2016 Biogeochemical cycling of trace elements within the ocean: A synthesis workshop, Lamont Doherty Earth Observatory, Palisades, NY, USA, August 1-4.
- Spring 2013 Marine Geoscience Leadership Symposium, Washington DC, March 11-15.
- Summer 2012 US GEOTRACES Arctic Implementation and cruise planning meeting, National Science Foundation, June 13-15.
- Summer 2012 Are your GEOTRACES data reliable? Geel, IRMM, Belgium, May 29-31.
- Spring 2011 Engaging Early Career Scientists in Future Scientific Ocean Drilling, College Station, TX, March 31 – April 1.
- Fall 2010 US Arctic GEOTRACES planning Workshop, Washington DC, September 29 – October 1.

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RESEARCH EXPEDITIONS

- Summer 2019 International Ocean Discovery Program, Exp. 383 (9 weeks). **Sailed as Inorganic Geochemist.**
- Fall 2018 Southern Indian Ocean (48 days). **Funded PI.**
- Summer 2018 4 days long research cruise off San-Diego. **Sailed as a research scientist with active mentoring role for both undergraduate and graduate students.**
- Summer 2011 **Selected participant** in the UNOLS Early Career Investigator Oceanographic Research Cruise Training Program. Involved in water sampling, sediment coring, and plankton tows.
- Summer 2007 **Invited participant** on a week-long research cruise onboard R/V Atlantis off Monterey Bay, CA. Involved in water sample collection and preservation for stable isotope analyses.
- Fall 2005 **Invited participant** on a twenty-four hour research cruise onboard R/V Robert Gordon Sproul off San Diego, CA. Involved in water and sediment sample collection and plankton tow operation.
- Fall 2005 **Invited participant** on a six-day research cruise onboard R/V Roger Revelle. Involved in dredging submarine rock samples and mapping of the sea floor off the coast of California.

OTHER AWARDS AND HONORS

- Spring 2011 John Ridge Award: Outstanding Graduate Student in academic excellence, Dept. of Geological Sciences, University of Florida (\$200)
- Spring 2011 McLaughlin Dissertation Fellowship, University of Florida (\$5000)
- Fall 2010 Travel grant, International Conference of Paleoceanography 10 (\$1000)
Travel grant from Office of Vice President of Research, University of Florida (\$300)
- Summer 2010 Goldschmidt 2010 Travel Grant (\$1000)
- Spring 2010 Geological Society of America Student Research Grant (\$1650)
Research grant from Dept. of Geological Sciences, University of Florida (\$1000)
- Fall 2009 Student travel grant, Graduate Student Council, University of Florida (\$250)
- Fall 2008 Student travel grant, Dept. of Geological Sciences, University of Florida (\$250)
- Fall 2007
- Fall 2006 Grinter Fellowship, University of Florida, Gainesville, Florida (\$3000)
- Spring 2006 Second place speaker award, Annual Research Showcase, Indiana State University, Terre Haute, Indiana
- Fall 2005 Student Travel Grant, American Geophysical Union (\$500)

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- Fall 1997 Certificate of Merit Award under National Scholarship Scheme for the year 1997-1998 by Government of India

TEACHING

- Spring 2018 *Geological Oceanography*, California State University, Bakersfield.
Responsibilities: Lecture and Lab.
Research Methods and Strategies, California State University, Bakersfield.
Responsibilities: Lecture.
- Fall 2017 *Dangerous Earth*, California State University, Bakersfield.
Responsibilities: Lecture and Lab.
Ocean Sciences, California State University, Bakersfield.
Responsibilities: Lecture and Lab.
- Spring 2011 *The Oceans and Global Climate Change*, University of Florida, Gainesville.
Responsibilities: grading and occasional lecturing.
- Fall 2008 *Introduction to Oceanography Lab*, University of Florida, Gainesville.
Responsibilities: grading and occasional lecturing.

POSTDOCTORAL MENTEE

- Anna Cruz, California State University (2018 -)

GRADUATE ADVISEE

- Jesus Robles, California State University (MS expected fall 2019)

INFORMAL MENTEE

- Salvador Vargas, California State University
- Melanie Behrens, University of Oldenburg, Germany
- Henning Fröllje, University of Oldenburg, Germany

PROFESSIONAL MEMBERSHIP AND SERVICE

- Proposal panelist for *National Science Foundation* (2018)
- Proposal reviewer for *National Science Foundation*, and *United States-Israel Binational Science Foundation*.
- Conference session organizer for American Geophysical Union (AGU) (2012)
- Judge for AGU's Outstanding Student Presentation Award (2017)
- Journal reviewer for *Geology*, *Earth and Planetary Science Letters*, *Geochimica Cosmochimica Acta*, *Marine Geology*, *Chemical Geology*, *G³: Geochemistry*, *Geophysics*, *Geosystems*, *Nature*, *Nature Geoscience*, *Nature Communications*, *Geophysical Research Letters*, *Paleoceanography*.
- Professional member: American Geophysical Union (AGU) (since 2005), Geochemical Society (since 2010)