

# Megumi O. Chikamoto

Institute for Geophysics, Jackson School of Geosciences, the University of Texas at Austin

Office address: PSC Department, 4820 Old Main Hill, Logan UT 84322

Phone: 435-797-2233 (Department Office) / Fax: 435-797-3376

Email: [megumi@ig.utexas.edu](mailto:megumi@ig.utexas.edu) / Web: <http://iprc.soest.hawaii.edu/users/megumich/index.html>

## Education

- Ph.D. Ocean and Atmospheric Science, December 2005, Hokkaido University, Hokkaido Japan  
*“Roles of sedimentation Processes in the Oceanic Carbon Cycle on the Glacial-Interglacial Timescales”*, Yasuhiro Yamanaka (chair), Katsumi Matsumoto, Motoyoshi Ikeda, Atsushi Kubokawa, and Hisayuki Yoshikawa
- M. S. Ocean and Atmospheric Science, March 2001, Hokkaido University, Hokkaido Japan  
*“Modeling of Sedimentation Processes Considering Calcite Dissolution”*, Yasuhiro Yamanaka
- B. S. Physical Oceanography, March 1999, Tokyo University of Fisheries<sup>1</sup>, Tokyo Japan  
(currently named <sup>1</sup> Tokyo University of Marine Science and Technology)

## Experience

- 2019-current Research Fellow  
Institute for Geophysics, Jackson School of Geosciences, the University of Texas at Austin
- 2013-current Research Affiliate  
School of Ocean Earth Science and Technology, the University of Hawaii at Manoa
- 2012-2019 Postdoctoral Fellow  
International Pacific Research Center, the University of Hawaii at Manoa
- 2011-2012 Scientist  
Japan Agency for Marine-Earth Science and Technology, Japan
- 2010-2011 Visiting Researcher  
International Pacific Research Center, the University of Hawaii at Manoa
- 2008-2011 Postdoctoral Researcher  
Japan Agency for Marine-Earth Science and Technology, Japan
- 2007-2008 Postdoctoral Associate  
Center for Climate System Research<sup>2</sup>, the University of Tokyo, Japan
- 2006-2007 Postdoctoral Associate  
Department of Geology and Geophysics<sup>3</sup>, the University of Minnesota
- 2001-2002 Research Staff  
Japan Agency for Marine-Earth Science and Technology, Japan  
(currently named <sup>2</sup>Atmosphere and Ocean Research Institute and <sup>3</sup>Department of Earth Sciences)

## Field of interests

Global Biogeochemical Cycles, Paleoclimatology and Paleoceanography, Earth System Modeling

## Scientific publications

### Peer-reviewed Journal Articles

18. Chikamoto, M. O., A. Timmermann, M. Yoshimori, F. Lehner, A. Laurian, A. Abe-Ouchi, A. Mouchet, F. Joos, C. Raible, and K. M. Cobb (2016): Intensification of tropical Pacific biological productivity due to volcanic eruptions, *Geophysical Research Letters*, 43, 3, 1184-1192, doi:10.1002/2015GL067359.
17. Chikamoto, M. O., A. Timmermann, Y. Chikamoto, H. Tokinaga, and N. Harada (2015): Mechanisms and predictability of multiyear ecosystem variability in the North Pacific, *Global Biogeochemical Cycles*, 29, 2001-2019, doi:10.1002/2015GB005096.
16. Weber, M. E., P. U. Clark, G. Kuhn, A. Timmermann, D. Sprenk, R. Gladstone, X. Zhang, G. Lohmann, L. Menviel, M. O. Chikamoto, T. Friedrich, and C. Ohlwein (2014): Millennial-scale variability in Antarctic ice-sheet discharge during the last deglaciation, *Nature*, 510(7503), 134-138.
15. Timmermann, A., T. Friedrich, O. E. Timm, M. O. Chikamoto, A. Abe-Ouchi, and A. Ganopolski (2014): Modeling Obliquity and CO<sub>2</sub> Effects on Southern Hemisphere Climate during the Past 408 ka, *Journal of Climate*, 27(5), 1863-1875.
14. Sueyoshi, T., R. Ohgaito, A. Yamamoto, M. O. Chikamoto, T. Hajima, H. Okajima, M. Yoshimori, M. Abe, R. O'ishi, F. Saito, S. Watanabe, M. Kawamiya, and A. Abe-Ouchi (2013): Setup of the PMIP3 paleoclimate experiments conducted using an Earth System Model, MIROC-ESM, *Geoscientific Model Development*, 6(3), 819-836, doi:10.5194/gmd-6-819-2013.
13. Chikamoto, M. O., A. Abe-Ouchi, A. Oka, R. Ohgaito, and A. Timmermann (2012a): Quantifying the ocean's role in glacial CO<sub>2</sub> reductions, *Climate of the Past*, 8(2), 545-563.
12. Chikamoto, M. O., L. Menviel, A. Abe-Ouchi, R. Ohgaito, A. Timmermann, Y. Okazaki, N. Harada, A. Oka, and A. Mouchet, (2012b): Variability in North Pacific Intermediate and deep water ventilation during Heinrich events in two coupled climate models, *Deep Sea Research II: Tropical Studies in Oceanography*, 61, 114-126.
11. Chikamoto, M. O., A. Abe-Ouchi, A. Oka, and S. L. Smith (2012c): Temperature-induced marine export production during glacial period, *Geophysical Research Letters*, 39(21), L2160, doi:10.1029/2012GL053828.
10. Harada, N., M. Sato, O. Seki, A. Timmermann, H. Moossen, J. Bendle, Y. Nakamura, K. Kimoto, Y. Okazaki, K. Nagashima, S. A. Garbarenko, A. Ijiri, T. Nakatsuka, L. Menviel, M. O. Chikamoto, A. Abe-Ouchi, and S. Schouten (2012): Sea surface temperature changes in the Okhotsk Sea and adjacent North Pacific during the last glacial maximum and deglaciation, *Deep Sea Research II: Tropical Studies in Oceanography*, 61, 93-105.
9. Menviel, L., A. Timmermann, O. Timm, A. Mouchet, A. Abe-Ouchi, M. O. Chikamoto, N. Harada, R. Ohgaito, and Y. Okazaki (2012): Removing the North Pacific halocline: effects on global climate, ocean circulation and the carbon cycle, *Deep Sea Research II: Tropical Studies in Oceanography*, 61, 106-113.
8. Hu, A., G. A. Meehl, W. Han, A. Abe-Ouchi, C. Morrill, Y. Okazaki, and M. O. Chikamoto (2012): The

Pacific-Atlantic seesaw and the Bering Strait, *Geophysical Research Letters*, 39, L03702, doi:10.1029/2011GL050567.

7. Friedrich, T., A. Timmermann, A. Abe-Ouchi, N. R. Bates, M. O. Chikamoto, M. J. Church, J. E. Dore, D. K. Gledhill, M. Gonzalez-Davila, M. Heinemann, M., T. Ilyina, H. Jungclaus, E. McLeod, A. Mouchet, and J. M. Santana-Casiano (2012): Detecting regional anthropogenic trends in ocean acidification against natural variability, *Nature Climate Change*, 2(3), 167-171.
6. Oka, A., A. Abe-Ouchi, M. O. Chikamoto, and T. Ide (2011): Mechanisms controlling export production at the LGM: effects of changes in oceanic physical field and atmospheric dust deposition, *Global Biogeochemical Cycles*, 25(2), GB2009, doi:10.1029/2009GB003628.
5. Matsumoto, K., K. S. Tokos, M. O. Chikamoto, and A. Ridgwell (2010): Characterizing post-industrial changes in the ocean carbon cycle in an Earth System model, *Tellus B*, 62(4), 296-313.
4. Okazaki, Y., A. Timmermann, L. Menviel, N. Harada, A. Abe-Ouchi, M. O. Chikamoto, A. Mouchet, and H. Asahi (2010): Deep water formation in the North Pacific during the last glacial termination, *Science*, 329(5988), 200-204.
3. Chikamoto, M. O., K. Matsumoto, and Y. Yamanaka (2009): Influence of export rain ratio changes on atmospheric CO<sub>2</sub> and sedimentary calcite preservation, *Journal of Oceanography*, 65(2), 209-221.
2. Chikamoto, M. O., K. Matsumoto, and A. Ridgwell (2008): Response of deep-sea CaCO<sub>3</sub> sedimentation to Atlantic meridional overturning circulation shutdown, *Journal of Geophysical Research Biogeosciences* (2005-2012), 113(G3), G03017, doi:10.1029/2007JG000669.
1. Chikamoto, M. O. and Y. Yamanaka (2005): Sedimentary responses to an abrupt change of biogenic silica flux by a sediment model for long timescale simulations, *Journal of Oceanography*, 61(4), 733-746.

#### Chapter in an Edited Book

1. "Paleoclimate and Paleoceanography Changes." *In Ocean Warming by The Oceanographic Society of Japan* (written in Japanese), Tokyo: Asakura Publishing Co. Ltd., 2017.

#### Conference Talks and Poster Presentations

##### Invited Oral Presentations Scientific Meeting

- 2015 Chikamoto, M. O., A. Timmermann, N. Harada, and Y. Okazaki, Deglacial millennial-scale calcium carbonate spikes in the North Pacific Ocean, AGU Fall Meeting, December 2015
- 2011 Chikamoto, M. O., A. Abe-Ouchi, A. Oka, R. Ohgaito, and A. Timmermann, Marine carbon cycle sensitivities to glacial North Atlantic Deep Water formation by coupled climate model simulations, XVIII INQUA Congress 2011, Bern, Switzerland, July, 2011.

##### Oral Presentations Scientific Meeting

- 2019 Chikamoto, M. O., Oka, A. Chikamoto Y. Timmermann, A.: Controlling calcium carbonate preservation during the Paleocene-Eocene Thermal Maximum, CESM Paleoclimate workshop, Boulder, Colorado USA, February 4-5, 2019
- 2015 Chikamoto, M. O., A. Timmermann, N. Harada, and Y. Okazaki, Understanding North Pacific

CaCO<sub>3</sub> peaks, ESSAS Annual Science Meeting, The Role of Ice in the Sea, Seattle, WA, USA, June 2015.

2013 Chikamoto, M. O., A. Timmermann, Y. Chikamoto, H. Tokinaga, and N. Harada, Decadal marine ecosystem response to Aleutian Low variability in CESM, 18<sup>th</sup> Annual CESM Workshop, Breckenridge, CO, USA, June 2013.

2009 Chikamoto, M. O., A. Abe-Ouchi, A. Oka, and R. Ohgaito, Simulations of ocean carbon cycle based on the glacial climate fields of a full coupled atmosphere-ocean GCM, Japan Geoscience Union Meeting 2009, Chiba, Japan, May 2009.

#### Poster Presentations Scientific Meeting

2018 Chikamoto, M. O., Y. Chikamoto, S. Yasunaka, N. Harada, O. Seki, and A. Timmermann, Decadal biogeochemical variability in ocean temperature-salinity assimilation, Ocean Science Meeting 2018, Portland, Oregon, February 11-16, 2018.

2017 Chikamoto, M. O., Y. Chikamoto, A. Timmermann, S. Minobe, and N. Harada, Marine ecosystem variability under the ocean dynamical constrain, International Symposium “Ocean Mixing Processes: Impact on Biogeochemistry, Climate and Ecosystem”, Tokyo, Japan, March 2017.

2014 Chikamoto, M. O., A. Timmermann, Y. Chikamoto, H. Tokinaga, and N. Harada, Decadal variability and predictability of biogeochemical changes in the North Pacific, Ocean Science Meeting 2014, Honolulu, HI, USA, February 2014.

2012 Chikamoto, M. O., Smith, S. L., Abe-Ouchi, A., and A. Oka. Modeling the carbon cycle as affected by temperature sensitivities of autotrophic production vs. heterotrophic degradation in the ocean, SOLAS Open Science Conference, Seattle, WA, USA, May 2012.

2010 Chikamoto, M. O., Abe-Ouchi, A., Oka, A., and R. Ohgaito. Atmospheric CO<sub>2</sub> response to strong and weak glacial North Atlantic Deep Water formations by coupled climate model simulations, Paleoclimate Modelling Intercomparison Project, Phase 3, Workshop, Kyoto, Japan, December 2010.

2010 Chikamoto, M. O., Abe-Ouchi A., Ohgaito, R., and A. Oka. Interaction between ocean circulation and sea-ice coverage controlling marine carbon cycle, 2010 PAGES Regional Workshop, Nagoya, Japan, June 2010

2009 Chikamoto, M. O., Abe-Ouchi, A., Ohgaito, R., and A. Oka, Marine carbon cycle sensitivity to background glacial climate states, AGU Fall Meeting, San Francisco, CA, USA, December 2009

2006 Chikamoto, M. O., Matsumoto, K. and A. Ridgwell, The Response of Calcite Lysocline to Thermohaline Circulation Changes, AGU Fall Meeting, San Francisco, CA, USA, December 2006

2004 Chikamoto, M. O. and Y. Yamanaka, Sedimentary responses to an abrupt change of biogenic silica flux using a long-term sediment diagenesis model, 8<sup>th</sup> International Conference on Paleoceanography, Biarritz, France, September 2004

2001 Ohata, M. and Y. Yamanaka, A study of marine sediment, 7<sup>th</sup> International Conference on Paleoceanography, Sapporo, Japan, September 2001

## Professional activities

- Session Chair of 2018 Ocean Science Meeting by American Geophysical Union
- Peer reviewer for journal: *Nature Geosciences*, *Nature Communications*, *Global Biogeochemical Cycles*, *Journal of Climate*, *Earth and Planetary Science Letter*, *Scientific Reports*, *Geophysical Research Letters*, *Climate Dynamics*, *Climate of the Past*, *the Journal of Oceanography*, *MDPI Atmosphere*, *MDPI Sustainability*, and *Geochemical Journal*
- Participant in the PaleoCarbon Modelling Intercomparison Project (PCMIP) & the Paleoclimate Modelling Intercomparison Project Phase 3 (PMIP3)
- Membership in the American Geophysical Union, the European Geophysical Union, and the Oceanographic Society of Japan

## Awards/Fellowships/Grants

- NCAR/CISL Allocation and Graduate student/Post-Doc/New Faculty Allocation, Project title: “Role of marine ecosystems in climate variability using the Community Earth System Model”, Project Lead: Megumi Chikamoto.
  - HPC Core-hours: 50,000 (2014-2015)
  - Yellowstone Core-hours (IBM iDataPlex Cluster): 80,000 (2016-2019)
- Grant-in-Aid for Scientific Research in Innovative Areas (MEXT) (Japan) No.4702 (2015-2019): Ocean Mixing Processes: Impact on Biogeochemistry, Climate and Ecosystem (Joint Collaborator)
- Grant-in-Aid for Scientific Research (A) (Japan) No. 16H02236 (2016-2019): Nutrient cycles of Paleooceanography (Joint Collaborator)
- International Travel Award by The Oceanographic Society of Japan (2003)
- The Commemorative Award of Taro Matsuno for Master's Thesis in Graduate School of Environmental Earth Science at Hokkaido University, Japan (2001)

## Teaching Experiences

- Guest Lectures: Utah State University, 2017-2018  
Climate Modeling and Simulation, Department of Plants, Soils and Climate, 2017  
Earth System Modeling, Department of Plants, Soils and Climate, 2017-2018
- Teaching Assistants: Hokkaido University, Graduate School of Environmental Earth Science, 2000-2005  
Numerical Modeling and Computer Programming, Introduction to Atmosphere and Ocean Circulation, Field Observations and Data Analysis

## Academic Outreach Activity and Media Supports

- Media supports: Hawaii News Broadcasting KHON2 (June 8, 2018) “The Impact the lava flowing into the ocean on Hawaii islands has on coastal waters and marine life.”
- Press release: “Hawaii's Epic Lava Leak Could Bring New Life to the Big Island's Waters”, in Magazine *The Atlantic* (14 March 2017).
- Officer and Event coordinator, the Science Communicators ‘Ohana at the University of Hawaii at Manoa (2015-2016)