

# Takashi OBASE, PhD

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(updated: September 20, 2023)

## Personal data

Born: August 1989 in Kaya Town (present: Yosano town after municipal mergers), Kyoto, Japan  
Residents of Kashiwa City, Chiba, Japan.

## Education:

- Ph.D., Earth and Planetary Science, The University of Tokyo, Japan, Mar. 2018.  
Title: “A climate modeling study on the mechanism of Antarctic ice sheet changes in the past and future” (Advisor: Ayako Abe-Ouchi)  
URL for the thesis (on the University of Tokyo repository, only summary available online):  
<https://repository.dl.itc.u-tokyo.ac.jp/records/52819#.Y1DsMEzP238>
- M. Sc., Earth and Planetary Science, The University of Tokyo, Japan, Mar. 2014.  
Title: (official title is in Japanese) “The roles of climate and ice sheet geometry on the melting of Antarctic ice shelves” (Advisor: Ayako Abe-Ouchi)
- B. Sc., Department of Earth and Planetary Physics, The University of Tokyo, Japan, Mar. 2012.
- Graduate from Miyazu High School (General course), Kyoto, Japan, Mar. 2008.

## Professional Expertise:

- Apr. 2023–present: Project Academic Specialist  
Affiliation: Atmosphere and Ocean Research Institute, The University of Tokyo  
Main subject: developments of climate model
- Apr. 2018–Mar. 2023: Postdoctoral Research Associate.  
Affiliation: Climate system research division, Atmosphere and Ocean Research Institute, The University of Tokyo  
Main subject: Climate and ice sheet modeling for the paleoclimate and future

## List of Publications at Referred Scientific Journals:

1. Greve, R., Chambers, C. R. S., **Obase, T.**, Saito, F., C. Wing-Le., and Abe-Ouchi, A. (2023)  
Future projections for the Antarctic ice sheet until the year 2300 with a climate-index method,  
Journal of Glaciology. URL: <https://doi.org/10.1017/jog.2023.41>
2. **Obase, T.**, A. Abe-Ouchi, Saito, F., S. Tsutaki, S. Fujita, K. Kawamura and H. Motoyama (2023)

A one-dimensional temperature and age modeling study for selecting the drill site of the oldest ice core near Dome Fuji, Antarctica, *The Cryosphere*, 17, 2543–2562. URL: <https://doi.org/10.5194/tc-17-2543-2023>

3. Cauquoin, A., A. Abe-Ouchi, **T. Obase**, W.-L. Chan, A. Paul, and M. Werner (2023): Effects of Last Glacial Maximum (LGM) sea surface temperature and sea ice extent on the isotope-temperature slope at polar ice core sites *Climate of the Past*, 19, 1275 - 1294. URL: <https://doi.org/10.5194/cp-19-1275-2023>
4. Suganuma, Y., H. Kaneda, M. M. Braga, T. Ishiwa, T. Koyama, J. Newall, J. Okuno, **T. Obase**, F. Saito, I. Rogozhina, J. Andersen, M. Kawamata, M. Hirabayashi, N. Lifton, O. Fredin, J. Harbor, A. Stroeven, and A. Abe-Ouchi. Regional sea-level highstand triggered Holocene ice sheet thinning across coastal Dronning Maud Land, East Antarctica. *Communications Earth and Environment* 3, 273 (2022). doi: 10.17592/001.2022101701.
5. Tsutaki, S., Fujita, S., Kawamura, K., Abe-Ouchi, A., Fukui, K., Motoyama, H., Hoshina, Y., Nakazawa, F., **Obase, T.**, Ohno, H., Oyabu, I., Saito, F., Sugiura, K., and Suzuki, T. (2022): High-resolution subglacial topography around Dome Fuji, Antarctica, based on ground-based radar surveys conducted over 30 years, *The Cryosphere*, doi: 10.5194/tc-16-2967-2022
6. Vadsaria, T., S. Zaragosi, G. Ramstein, J-C. Dutay, L. Li, G. Siani, M. Revel, **T. Obase** and A. Abe-Ouchi (2022), Freshwater influx to the Eastern Mediterranean Sea from the melting of the Fennoscandian ice sheet during the last deglaciation, *Scientific Reports*, 12 doi: 10.1038/s41598-022-12055-1
7. **Obase, T.**, A. Abe-Ouchi and F. Saito (2021), Abrupt climate changes in the last two deglaciations simulated with different Northern ice sheet discharge and insolation, *Scientific Reports*, doi: 10.1038/s41598-021-01651-2
8. Chambers, C. R. S., R. Greve, **T. Obase**, F. Saito, A. Abe-Ouchi (2021), Mass loss of the Antarctic ice sheet until the year 3000 under a sustained late-21st-century climate, *Journal of Glaciology*, 1-13, doi: 10.1017/jog.2021.124
9. Buizert, C. T. J. Fudge, W. H. G. Roberts, E. J. Steig, S. Sherriff-Tadano, C. Ritz, E. Lefebvre, J. Edwards, K. Kawamura, I. Oyabu, H. Motoyama, E. C. Kahle, T. R. Jones, A. Abe-Ouchi, **T. Obase**, C. Martin, H. Corr, J. P. Severinghaus, R. Beaudette, J. A. Epifanio, E. J. Brook, K. Martin, J. Chappellaz, S. Aoki, T. Nakazawa, T. A. Sowers, R. B. Alley, J. Ahn, M. Sigl, M. Severi, N. W. Dunbar, A. Svensson, J. M. Fegyveresi, C. He, Z. Liu, J. Zhu, B. L. Otto-Bliesner, V. Y. Lipenkoy, M. Kageyama, J. Schwander (2021), Antarctic surface temperature and elevation during the Last Glacial Maximum, *Science* 372(6546), 1097-1101. doi: 10.1126/science.abd2897
10. Saito, F., **T. Obase** and A. Abe-Ouchi (2020), Implementation of RCIP scheme and its performance for 1D age computations in ice-sheet models, *Geoscientific Model Development*, 13, 5875-5896. doi: 10.5194/gmd-2020-53.
11. **Obase, T.** A. Abe-Ouchi (2019): Abrupt Bolling-Allerod warming simulated under gradual forcing of the last deglaciation, *Geophysical Research Letters*. doi:10.1029/2019GL084675.
12. **Obase, T.**, A. Abe-Ouchi, K. Kushara, H. Hasumi, R. Ohgaito (2017), Responses of basal melting of Antarctic ice shelves to the climatic forcing of the Last Glacial Maximum and CO<sub>2</sub> doubling, *Journal of Climate*, 30(10), 3473-3497. doi:10.1175/JCLI-D-15-0908.1.

13. Kushahara, K., T. Sato, A. Oka, **T. Obase**, R. Greve, A. Abe-Ouchi, and H. Hasumi (2015), Modelling the Antarctic Marine Cryosphere at the Last Glacial Maximum, *Annals of Glaciology*, 56(69), 425-435. doi:10.3189/2015AoG69A792.

### **Publications Under review (only showing manuscript open to public):**

1. Snoll, B., R. Ivanovic, L. Gregoire, S. Sherriff-Tadano, L. Menviel, **T. Obase**, A. Abe-Ouchi, N. Bouttes, C. He, F. He, M-L. Kapsch, U. Mikolajewicz, J. Muglia, and P. Valdes: A multi-model assessment of the early last deglaciation (PMIP4 LDv1): The meltwater paradox reigns supreme, <https://egusphere.copernicus.org/preprints/2023/egusphere-2023-1802>

### **List of Articles (non-peer reviewed)**

1. Masa Kageyama, A. Abe-Ouchi, **T. Obase**, G. Ramstein and P. J. Valdes: Modeling the climate of the Last Glacial Maximum from PMIP1 to PMIP4. *Past Global Changes Magazine*, 2021, 29(2), Paleoclimate Modelling Intercomparison Project (PMIP): 30th anniversary (Eds: Valdes PJ, Braconnot P, Meissner KJ & Eggleston S) doi: 10.22498/pages.29.2
2. Greve, R., R. Calov, **T. Obase**, F. Saito, S. Tsutaki, A. Abe-Ouchi. (2020, September 17). ISMIP6 future projections for the Antarctic ice sheet with the model SICOPOLIS (Version 1.0.1). Zenodo. doi: 10.5281/zenodo.4035932

### **Presentations at international workshop or conferences**

- **Obase, T.**, L. Menviel, T. Vadsaria, A. Abe-Ouchi, R. Ivanovic and others: Multi-model assessment of the climatic evolution of the last deglaciation at high southern latitudes, INQUA T5-0/PMIP workshop (June 2022, Gif-Sur-Yvette, France)
- **Obase, T.**, A. Abe-Ouchi and F. Saito: Northern ice sheet melting and ocean circulation changes on Antarctic warming in the last two deglaciations, EGU 2021 Assembly (April 2021, online)
- **Obase, T.**, A. Abe-Ouchi and F. Saito: Antarctic warmth in the last interglacial driven by Northern insolation and deglaciation, QUIGS workshop (November 2020, online)
- **Obase, T.**, A. Abe-Ouchi, T. Vadsaria and S. Sherriff-Tadano: Transient simulations of the last deglaciation using MIROC AOGCM at PMIP meeting (October 2020, online)
- **Obase T.**, A. Abe-Ouchi, F. Saito, K. Harada, R. Greve, Incorporation of grounding line parameterizations in the three-dimensional ice sheet model SICOPOLIS, JpGU - AGU Joint Meeting 2020
- **Obase, T.** and A. Abe-Ouchi: Abrupt Bolling-Allerod warming simulated under gradual forcing of the last deglaciation, EGU 2020 Assembly (May 2020, online meeting)
- **Obase, T.** and A. Abe-Ouchi: Transient simulations of the last and penultimate deglaciations using MIROC AOGCM, 20<sup>th</sup> INQUA Congress, Dublin (July 2019) Poster
- **Obase, T.** and A. Abe-Ouchi: Simulated abrupt climate changes during Bølling-Allerød under continuous glacial meltwater discharge, PalMod International Open Science Conference, Vienna, Austria (April 2018). Poster
- **Obase, T.** and A. Abe-Ouchi: Simulated abrupt climate changes during Bølling-Allerød under continuous glacial meltwater discharge, 1st PMIP4 conference, Stockholm, Sweden (September

2017). Poster

- **Obase, T.**, A. Abe-Ouchi, K. Kusahara, H. Hasumi, R. Ohgaito, Response of basal melting in Antarctic ice shelves to climatic forcing under the Last Glacial Maximum and CO<sub>2</sub> doubling climates, Goldschmidt Conference, Yokohama (June 2016) Poster
- **Obase, T.**, A. Abe-Ouchi, K. Kusahara, H. Hasumi, The responses of Antarctic ice shelves' basal melting to climatic forcing under LGM and CO<sub>2</sub> doubling climate, 19<sup>th</sup> INQUA Congress, Nagoya (August 2015). Poster
- **Obase, T.**, A. Abe-Ouchi, K. Kusahara, H. Hasumi, Modelling Antarctic ice shelf melting under LGM and doubled CO<sub>2</sub> climate using ice shelf-ocean model and climate model, AGU fall meeting, San Francisco (December 2014). Poster

### Invited talks

- **Obase, T.**, A. Abe-Ouchi, F. Saito: Climate system changes during the last two deglaciations: abrupt climate changes by the ice sheets and ocean circulations (official title is in Japanese). Paleoscience society meeting (November 2022).
- **Obase T.**, S. Sherriff-Tadano, A. Abe-Ouchi, T. Vadsaria, C. Buizert, The role of Southern warming on global ocean states and abrupt warming events during the last deglaciation, JPGU meeting (June 2021)
- **Obase, T.**, A. Abe-Ouchi, F. Saito, S. Tsutaki, S. Fujita, K. Matsuoka, K. Kawamura, R. Greve, An ice-flow modeling study for evaluation of sites for an oldest ice core around Dome Fuji, Antarctica, JPGU meeting (May 2019)
- **Obase, T.**, A. Abe-Ouchi, A climate modeling study on the mechanism of Antarctic ice sheet changes in the past and future, JPGU meeting (May 2018)

### Awards and Fellowships

- 2022 June: Paper Award by Central and Western Division, The Japanese Society of Snow and ice. <https://www.seppyo.org/society/org/branch/kcn/kcn-honor/>
- 2016 May: Student Outstanding Presentation Award in the Atmospheric and Hydrospheric Sciences Section, Japan Geoscience Union meeting, 2016 Title: (official title is in Japanese) "Roles of northern and southern hemispheric glacial meltwater on deglacial climate change in the Southern Ocean" <https://www.jpгу.org/ospa/2016meeting/>

### Grants for research/travel expenses

- JSPS Grant-in-Aid (research member, 2023 September – 2024. PI: Masakazu Fujii) project member. A challenge to elucidate the transition conditions of snowball earth events based on hierarchical climate modeling. Grant number: 23K17709. Total: 650k yen
- JSPS Grant-in-Aid for Japan-France Integrated Action Program (SAKURA Program). 2021-2023. Grant Number: JPJSBP120213203. PI of Japan. (PI of France: Prof. Gilles Ramstein). Total: 135k yen
- Travel expenses (JSPS Grant-in-Aid 17H06316): PMIP meeting (Stockholm, September 2017); 20<sup>th</sup> INQUA congress (Dublin, July 2019).

- Usage of Earth Simulator 4 supercomputer as a “challenge theme“ (PI, fiscal year 2023)  
[https://www.jamstec.go.jp/es/jp/project/list\\_jamstec\\_prj\\_challenge2023.html](https://www.jamstec.go.jp/es/jp/project/list_jamstec_prj_challenge2023.html)

### **Scientific Activities:**

- Short lecture and modeling practice at CCSR/AORI laboratory internship for undergraduate students (2023/7, 2023/3, 2022/3, 2019/8, 2019/3, 2018/4, 2016/4). Topic: ice sheet modeling, paleoclimate modeling, model result analysis, short numerical experiments.
- March 28, 2022: 4-hour lecture using GIS software and climate model outputs. (~20 Participants, undergraduate students at The University of Tokyo, Earth and Planetary Science Division) Topic: climate, sea-level and geomorphology during the Quaternary associated with glacial-interglacial cycles..
- November 2021: press-release at the AORI website.  
URL: <https://www.aori.u-tokyo.ac.jp/research/topics/2021/20211125.html>
- 3 August – 7 November 2021: Cooperation for Special exhibition “Antarctica, past, present and future” at Geological Museum, GSJ, AIST, Tsukuba, Japan.  
[https://www.gsj.jp/Muse/exhibition/archives/2021/2021\\_antarctic.html](https://www.gsj.jp/Muse/exhibition/archives/2021/2021_antarctic.html)
- 27 March 2020: A seminar entitled “Ice Sheet Modeling”, at a workshop for young scientists on Antarctic Science. (title and talk are in Japanese). Online Meeting, Japan.
- 18 January to 16 February 2020: Research Cruise in the Southern Ocean and Antarctic Ocean on Hakuho-Maru (Leg KH20-1), Atmosphere and Ocean Research Institute, The University of Tokyo. Cruise Report: <http://ccrp.aori.u-tokyo.ac.jp/kikaku/reports/KH-20-1.pdf>
- November 2019: Coverage cooperation for UTokyo Ocean Alliance, on the glacial abrupt climate changes from a view of oceanography (Writer: Dr. Naoki Hosaka). URL: <https://www.oa.u-tokyo.ac.jp/enjoy-story/019.html>
- November 2019: introduction of a published article at the AORI website. URL: <https://www.aori.u-tokyo.ac.jp/research/topics/2019/20191101.html>
- 26 May 2019: A seminar entitled “What is climate modeling study?” (title and talk are in Japanese), mini-seminar at a project booth. (during Japan Geoscience Union Meeting 2019)
- 13 March 2018: A seminar entitled “An introduction to ice sheet modeling”, at a workshop for young scientists on Antarctica (title and talk are in Japanese). Tachikawa, Japan.
- 22 to 24 July 2017: Geoscientific Excursion in Akita, Japan.
- 22 to 24 August 2015: Geoscientific Excursion in Iwate, Japan.
- 31 August to 14 September 2013: Field course in Switzerland as International Antarctic Institute Curriculum, Hokkaido University. Visiting sites: ETH Zurich, Unter Grindelwaldgletscher, Jungfrauoch meteorological observatory, Rhonegletscher, Gornergletscher.  
Reports: <https://www.ees.hokudai.ac.jp/IAI/swiss13/diary.html>

### **Affiliated academic societies (in Japan)**

- Japan Geoscience Union (JPGU). <https://www.jpгу.org/>  
Co-convener (Paleoclimate-paleoceanography session, 2023-present)
- PALEO10: Paleosciences Society. <http://www.paleo10.org/>

- The Japanese Society of Snow and ice. <https://www.seppy.org>
- The Meteorological Society of Japan. <https://www.metsoc.jp/>
- The Oceanographic Society of Japan. <https://kaiyo-gakkai.jp/jos/>

## **Programming Skills**

- Programming: Fortran, Unix Shell Programming, Python
- Analysis Tools: GMT, QGIS, Python, GrADS, CDO, NCO, to handle/analyze climate model outputs, observational datasets and creating figures.
- Numerical models: MIROC (atmosphere-ocean coupled General Circulation Model, mainly version MIROC4m, which contributed to PMIP2), IcIES (ice sheet model), SICOPOLIS (ice sheet model), COCO (ocean component model of MIROC)

## **Non-academic-related Activities**

- Citizen Runner: Highest Records (2019-2023): 13'19" (3km), 23'07" (5km), 49'22" (10km), 85'13" (10 miles), 109'43" (21.0975km), 178'42" (30km), 309'12" (42.195km, Chiba Aqua-line marathon, 2022/11), 229'37" (23.5km & 1050m gain, Kaya-Oeyama Tozan marathon, 2023/9)
- Go Player: I play Go at public halls with elderly persons in the neighborhood. Skill: 5 Dan at the Nihon ki-in, Fox Weiqi Go Server, Toyo-igo Internet Playgrounds. (Max: 6 Dan at Fox Weiqi Go server 2023/9)
- Former member of students geoscience study group at The University of Tokyo-Komaba Campus: Division of Geography (2008-2010, 58th); Division of Meteorology (2008-2011, 20th)
- Former Associate member of UT-Life (folded on 2018), a web journal by students at The University of Tokyo (2008-2011)