Gaku NISHIHIRA

3rd-year student of the doctoral course (D3)
Department of Geophysics, Graduate School of Science, Tohoku University, Sendai, Japan
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Education

Student Intern *2024*
Dept. SOEST/IPRC, University of Hawaii-Manoa, Honolulu, USA
Advisor: Bo Qiu, Niklas Schneider, and Kelvin Richards

M.Sc., Physical Oceanography *2023*
Tohoku University, Sendai, Japan
Thesis: Impact of surface ocean warming due to La Niña events and marine heatwave on mid-latitude atmospheric field.
Supervisor: Shusaku Sugimoto

B.Sc., Geophysics *2021*
Tohoku University, Sendai, Japan

Born in Nago, Okinawa, Japan *1998*

Professional Experience

2023–2026 Research Fellow of the Japan Society for the Promotion Science (DC1)
Host: Shusaku Sugimoto

Publications

[3] Adiwira, H., S. Yasunaka, J. M. Kass, A. H. O. Açıkbaş, S. Adiningsih, E. Gairin, H. B. C. Ilham, E. Lahcene, Y. Li, **G. Nishihira**, P. Peñalver-Pereira, F. M. P. Sie, C. L. Amedo-Repollo, C. L. Ames, D. Armitage, A. Brännström, U. Dieckmann, T. Fujii, F. Husnik, M. Kawamiya, T. Masuda, C. Plessy, L. Sallan, T. Shimada, S. L., Smith, P. Strutton, A. Wirasatriya and T. Suga, 2025: Pathways to an integrated understanding of marine

environments and ecosystems in the Asia-Pacific Region. *Front. Mar. Sci.*, **12**, 1680145. https://doi.org/10.3389/fmars.2025.1680145

[2] **Nishihira, G.** and S. Sugimoto, 2024: Record-breaking marine heatwave over the central North Pacific in 2021 summer: its formation associated with loss of the Central Mode Water. *J. Phys. Oceanogr.*, **54**, 2361–2372. https://doi.org/10.1175/JPO-D-24-0021.1

[1] **Nishihira, G.** and S. Sugimoto, 2022: Severe cold winters in East Asia linked to first winter of La Niña events and in North America linked to second winter. *Geophys. Res. Lett.*, **49**, e2021GL095334. https://doi.org/10.1029/2021GL095334

Presentations (with Peer-reviewed)

1. Ocean Science Meeting 2026 (Poster)
   Gaku Nishihira, Shusaku Sugimoto, Bo Qiu, Niklas Schneider, Kelvin Richards: Change in the atmospheric forcing increases wintertime sea surface temperature in the subarctic region around Japan. CC24A-0852, Scottish Event Campus, Glasgow, UK, 2026/02/24.

2. Ocean Science Meeting 2024 (Oral)
   Gaku Nishihira, Shusaku Sugimoto: Record-breaking marine heatwave over the central North Pacific in 2021 summer: its formation associated with loss of the Central Mode Water. AI43A-06, The Ernest N. Morial Convention Center, New Orleans, USA, 2024/02/22.

3. IUGG2023 (Poster)
   Gaku Nishihira, Shusaku Sugimoto: Formation of an intense marine heatwave in the central North Pacific during 2021 summer by the atmospheric and oceanic conditions. M31p-250, CityCube Berlin, Berlin, Germany, 2023/07/12.
   https://doi.org/10.57757/IUGG23-2216

Presentations (without Peer-reviewed)

1. **Gaku Nishihira**, Shusaku Sugimoto, Bo Qiu, Niklas Schneider, Kelvin Richards: Change in the atmospheric forcing increases wintertime sea surface temperature in the subpolar region around Japan. International Workshop “Mid-latitude Atmosphere-Ocean-Ecosystem Interactions: Processes, Predictability, and Habitability”, Shiiki-Hall, Kyushu University, Fukuoka, Japan, 2025/07/16, Oral.

2. **Gaku Nishihira**, Shusaku Sugimoto: Change in the atmospheric forcing increases wintertime sea surface temperature in the subpolar region around Japan. Earth, Sea and

Sky XI: International Joint Graduate Program Workshop in Earth and Environmental Sciences, P-11, Tohoku University, Sendai, Japan, 2025/06/02, Poster.

3. **Gaku Nishihira**, Shusaku Sugimoto: Change in the atmospheric forcing increases wintertime sea surface temperature in the subpolar region around Japan. Japan Geoscience Union Meeting 2025, ACG36-P19, Makuhari-Messe, Chiba, Japan, 2025/05/26, Poster.

4. **Gaku Nishihira**, Shusaku Sugimoto: Ocean-driven record-breaking marine heatwave over the central North Pacific in 2021 summer. World Class University Program, Faculty of Fisheries and Marine Sciences, Guest Lecture “Marine Heatwave”, Diponegoro University, Semarang, Indonesia, 2025/03/12, Oral.

5. **Gaku Nishihira**, Yuma Kawakami, Shusaku Sugimoto, Bo Qiu, Niklas Schneider, Kelvin Richards: Increasing wintertime sea surface temperature around the subarctic front region in the western North Pacific. Earth, Sea and Sky Ⅸ: International Joint Graduate Program Workshop in Earth and Environmental Sciences, P-23, Tohoku University, Sendai, Japan, 2024/06/03, Poster.

6. **Gaku Nishihira**, Yuma Kawakami, Shusaku Sugimoto: Increasing wintertime sea surface temperature around the subarctic front region in the western North Pacific. Japan Geoscience Union Meeting 2024, ACG32-09, Makuhari-Messe, Chiba, Japan, 2024/05/26, Oral.

7. **Gaku Nishihira**, Shusaku Sugimoto: Record-breaking marine heatwave over the central North Pacific in 2021 summer: its formation associated with loss of the Central Mode Water. Workshop for Interaction of Ocean, Atmosphere, and Land by Remote Sensing and Numerical Model, 18PM-N03, Nagoya University, Nagoya, Japan, 2023/12/18, Oral.

8. **Gaku Nishihira**, Shusaku Sugimoto: Formation of record-breaking marine heatwave over the central North Pacific in 2021 summer. International Symposium: Past, Present, and Future of the Marine Environment and Ecosystems, P8, Tohoku University, Sendai, Japan, 2023/10/18, Poster.

9. **Gaku Nishihira**, Shusaku Sugimoto: Record-breaking marine heatwave over the central North Pacific in 2021 summer: its formation associated with loss of the Central Mode Water. Mid-latitude Ocean-Atmosphere Interactions: Their Processes and Predictability, P-46, Toyama International Conference Center, Toyama, Japan, 2023/06/17, Poster.

10. **Gaku Nishihira**, Shusaku Sugimoto: Record-breaking marine heatwave over the central North Pacific in 2021 summer: its formation associated with loss of the Central Mode Water. Earth, Sea and Sky Ⅷ: International Joint Graduate Program Workshop in Earth and Environmental Sciences, P-26, Tohoku University, Sendai, Japan, 2023/05/31, Poster.

11. **Gaku Nishihira**, Shusaku Sugimoto: Formation of an intense marine heatwave in the central North Pacific during 2021 summer favored by the atmospheric and oceanic conditions. Japan Geoscience Union Meeting 2023, ACG30-04, Makuhari-Messe, Chiba, Japan, 2023/05/21, Oral (choose *Highlight talk*).

12. **Gaku Nishihira**, Shusaku Sugimoto: Unprecedented marine heatwave in the central North Pacific during summer/fall 2021. e-ASIA Joint Research Program Workshop, Tohoku University, Sendai, Japan, 2022/11/09, Oral.

13. **Gaku Nishihira**, Shusaku Sugimoto: Severe cold winters in East Asia linked to first winter of La Niña events and in North America linked to second winter. Earth, Sea and Sky Ⅶ: International Joint Graduate Program Workshop in Earth and Environmental Sciences, P-21, Tohoku University, Sendai, Japan, 2022/06/09, Poster.

Presentations (in Japanese)

1. **西平 楽**, 杉本 周作：大気が駆動する日本近海の亜寒帯域における海面水温上昇. 2025 年度日本海洋学会秋季大会, 25F-08-05, 北海道大学函館キャンパス, 2025/09/24, 口頭発表.

2. **西平 楽**, 杉本 周作：Change in the atmospheric forcing increases wintertime sea surface temperature in the subpolar region around Japan. 学術変革領域研究「ハビタブル日本」令和 6 年度領域全体会議, 新潟大学五十嵐キャンパス, 2025/03/07, ポスター発表.

3. **西平 楽**, 杉本 周作：2021 年夏季北太平洋中央部における観測史上最大の海洋熱波の形成. 2024 年度長期予報研究連絡会研究会, Online, 2025/01/27, 口頭発表.

4. **西平 楽**, 杉本 周作：海洋が駆動する海洋熱波 –2021 年夏季の北太平洋中央部に着目して–. 海洋顕著現象 WG ランチタイムセミナー, Online, 2024/12/11, 口頭発表.

5. **西平 楽**, 杉本 周作：2021 年夏季に発現した北太平洋中央部における観測史上最大の海洋熱波の形成. 大気海洋相互作用研究会主催 2023 年度山中湖シンポジウム, 東海大学山中湖セミナーハウス, 2023/08/08, 口頭発表.

6. **西平 楽**, 杉本 周作：ラニーニャ現象時の冬季大気大循環場：1 年目と 2 年目の比較. 2022 年度長期予報研究連絡会研究会, Online, 2023/01/17, 口頭発表.

7. **西平 楽**, 杉本 周作：2021 年夏季・秋季に発現した北太平洋中央部における観測史上最大の海洋熱波. 名古屋大学宇宙地球環境研究所（ISEE）共同利用研究集会「大気海洋相互作用に関する研究集会」, 京都大学吉田キャンパス, 2022/11/26, 口頭発表.

8. **西平 楽**, 杉本 周作：2021 年夏季・秋季に発現した北太平洋中央部における観測史上最大の海洋熱波の形成と衰退について. 日本気象学会 2022 年度秋季大会, A302, 北海道大学札幌キャンパス, 2022/10/26, 口頭発表.

9. **西平 楽**, 杉本 周作：2021 年夏季・秋季に発現した北太平洋中央部における観測史上最高の海洋熱波. 2022 年度日本海洋学会秋季大会, 22F-12-20, 名古屋大学東山キャンパス, 2022/09/05, 口頭発表.

10. **西平 楽**, 杉本 周作：La Niña 現象時の冬季大気大循環場 ～1 年目と 2 年目の比較～. 2021 年度日本海洋学会秋季大会, 21F-08-8, Online, 2021/09/16, 口頭発表.

11. **西平 楽**, 杉本 周作：La Niña 現象時の冬季大気大循環場：1 年目と 2 年目の比較. Japan Geoscience Union Meeting 2021, AOS19-03, Online, 2021/06/05, 口頭発表.

Fundings

2023–2026 Research Fellow of the Japan Society for the Promotion Science (DC1)

2022–2026 The International Joint Program Graduate Program in Earth and Environmental Sciences, Tohoku University (GP-EES)

Cruise Experiences

2022 R/V Shinsei-maru, KS-22-10, 15 Jul–02 Aug, Yokosuka-Kushiro-Hachinohe
R/V Hakuho-maru, KH-22-1, 17 Jan–26 Jan, Tokyo-Kagoshima

2021 R/V Shinsei-maru, KS-21-9, 24 May–01 Jun, Yokosuka-Shingu
R/V Hakuho-maru, KH-21-1, 14 Feb–25 Feb, Tokyo-Kagoshima