

ZHAO NING

Ph.D., Researcher
 MCM, CCOAR, RIGC, Japan Agency for Marine-Earth Science and Technology
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EDUCATION

- | | |
|--------------------|---|
| OCT 2014-SEP 2017 | Ph.D., <i>Earth System Science and Technology</i> , Kyushu University, Japan
Advised by: Prof. Atsuhiko Isobe |
| SEP 2010-JULY 2013 | M.Sc., <i>Environmental Sciences</i> , Shanghai Ocean University, China
Advised by: Prof. Zhen Han |
| SEP 2006-JULY 2010 | B.Eng., <i>Marine Fisheries Science and Technology</i> , Shanghai Ocean University, China
Supervised by: Prof. Zhen Han |

RESEARCH EXPERIENCE

- | | |
|--------------------|---|
| Apr 2019-Present | Researcher , Center for Coupled Ocean-Atmosphere Research, Japan Agency for Marine-Earth Science and Technology, Japan
Center Director: Dr. Kunio Yoneyama
Research Keywords: Air-Sea Interactions, Extreme Precipitation Events |
| OCT 2017-MAR 2019 | Post-doctoral Fellow , Research Institute for Applied Mechanics, Kyushu University, Japan
Advisor: Prof. Naoki Hirose
Theme: The atmospheric responses to a diurnally-varying SST |
| OCT 2014-SEP 2017 | Research Assistant , Kyushu University, Japan
Advisor: Prof. Atsuhiko Isobe
Theme: Sub-weekly scale interactions between extratropical cyclones and the Sea of Japan based on numerical experiments |
| MAR 2012-FEB 2013 | Special Research Student , Nagasaki University, Japan
Advisor: Prof. Atsuyoshi Manda
Theme: Seasonal variation of the Subpolar Front in the Sea of Japan and its mechanisms |
| SEP 2010-JULY 2013 | Graduate Research Assistant , Shanghai Ocean University, China
Advisor: Prof. Zhen Han
Theme: Reconstruction of three-dimensional sea water temperature structures in the Northwestern Pacific using Argo and satellite-based datasets |
| SEP 2009-JULY 2010 | Undergraduate Research Assistant , Shanghai Ocean University, China
Supervisor: Prof. Zhen Han
Theme: Bio-energy flow of the ecosystems in the East China Sea based on the 'Ecopath' Model |

FUNDINGS & SCHOLARSHIPS

- | | |
|-----------|---|
| 2023-2025 | JSPS Kakenhi · Grant-in-Aid for Scientific Research(C) · Collaborator
日本近海の温暖化は九州地方の豪雨を強化するか |
| 2020-2023 | JSPS Kakenhi · Grant-in-Aid for Early-Career Scientists · PI
Role of the subdaily air-sea interaction on the convection over the Maritime Continent (¥4,320,000) |
| 2014-2017 | Kuma Toshimi International Scholarship (¥1,800,000) |

COLLABORATIONS

2020-2022	北太平洋亜熱帯海面水温偏差に関する共同研究 (JAMSTEC & University of Hawai'i; extended)
2019-Present	九州大学応用力学研究所特定研究 「東アジア縁辺海が暖候期における集中豪雨に及ぼす影響」
2019-Present	新学術領域研究「中緯度大気海洋」 A01 台風・爆弾低気圧の予測可能性とスケール間大気海洋相互作用
2019-Present	Years of the Maritime Continent

PUBLICATIONS

Peer-reviewed

1. Zhao, N., Peiming Wu, A. Manda, X. Guo, and B. Wang, 2023. Moisture sources of the Tohoku heavy rainfalls in August 2022 and the influences of tropical storms. *Geophysical Research Letters*, doi:10.1029/2023GL104166. In press.
2. X. Zhang, N. Zhao, and Z. Han, 2023. A modified U-net model for predicting the sea surface salinity over the western Pacific Ocean. *Remote Sensing*, 15(6), 1684, doi:10.3390/rs15061684.
3. Zhao, N., P. Wu, S. Yokoi, and M. Hattori, 2022. Why does eastward propagating convection weaken over Sumatra Island in an active phase of the MJO? *Monthly Weather Review*, 150(4), doi: 10.1175/MWR-D-21-0251.1.
4. Zhao, N., A. Manda, X. Guo, and B. Wang, 2022. Impacts of moisture supply from the subtropical western Pacific on the subtropical High and the atmospheric river during the heavy rain of 2020 in Japan. *Frontiers in Earth Science*, doi:10.3389/feart.2022.1043093.
5. Zhao, N., A. Manda, X. Guo, K. Kikuchi, T. Nasuno, M. Nakano, Y. Zhang, and B. Wang, 2020. A Lagrangian view of moisture transport related to the heavy rainfall of July 2020 in Japan: Importance of the moistening over the subtropical regions. *Geophysical Research Letters*, 48, e2020GL091441, doi:10.1029/2020GL091441.
6. X. Guo, N. Zhao, K. Kikuchi, T. Nasuno, M. Nakano, H. Annamalai, 2021. Atmospheric Rivers over the Indo-Pacific and its Associations with Boreal Summer Intraseasonal Oscillation. *Journal of Climate*, 32(24), 9711-9728, doi: 10.1175/JCLI-D-21-0290.
7. B. Wang, L. Wu, N. Zhao, T. Liu, and N. Hirose, 2021. Summer Wind Effects on Coastal Upwelling in the Southwestern Yellow Sea. *Journal of Marine Science and Engineering*, 9(9), 1021, doi:10.3390/jmse9091021.
8. Zhao, N. and T. Nasuno, 2020. How does the air-sea coupling frequency affect convection during the MJO passage? *Journal of Advances in Modeling Earth Systems*, 12, e2020MS002058, doi: 10.1029/2020MS002058.
9. Zhao, N., S. Iwasaki, M. Yamamoto, and A. Isobe, 2018. Modulation of Extratropical Cyclones by Previous Cyclones via the Sea Surface Temperature Anomaly over the Sea of Japan in Winter. *Journal of Geophysical Research: Atmospheres*, 123 (12), 6312-6330, doi: 10.1029/2017JD027503.
10. Zhao, N., S. Iwasaki, A. Isobe, R.-C. Lien, and B. Wang, 2016. Intensification of the subpolar front in the Sea of Japan during winter cyclones. *Journal of Geophysical Research: Oceans*, 121 (4), 2253-2267, doi: 10.1002/2015JC011565.
11. Zhao, N., Z. Han, and X. Liu, 2016. Preliminary study on the frontogenesis and frontolysis of the oceanic temperature front in the Northwestern Pacific Ocean. *Marine Sciences*, 40 (1), 123-131, doi: 10.11759/hyxx20130419002. (in Chinese with English abstract)
12. Zhao, N. and Z. Han, 2015. A simulation model of seawater vertical temperature by using back-propagation neural network. *Polish Maritime Research*, 22 (s1), 82-88, doi: 10.1515/pomr-2015-0037.
13. Zhao, N., Z. Han, and A. Manda, 2014. Frontogenesis and frontolysis of the subpolar front in the surface mixed layer of the Japan Sea. *Journal of Geophysical Research: Oceans*, 119 (2), 1498-1509, doi: 10.1002/2013JC009419.
14. Zhao, N., Z. Han, and S. Wang, 2014. A segment-based seawater temperature model by using the relative gradient method. *Periodical of Ocean University of China*, 44 (9), 25-29. (in Chinese with English abstract)
15. Han, Z., and N. Zhao, 2012. Seawater temperature model from Argo data by LM-BP neural network in the Northwestern Pacific Ocean. *Marine Environmental Science*, 31 (4), 555-560, doi: 10.3969/j.issn.1007-6336.2012.04.021. (in Chinese with English abstract)

Non-peer-reviewed

Thesis

- Sub-weekly scale interactions between the Japan Sea and extratropical cyclones in winter. Ph.D. thesis, 2017, Kyushu University.
- Study on the seawater temperature in the western North Pacific by using Argo data. M.Sc. thesis, 2013, Shanghai Ocean University. (in Chinese with English abstract)

In Preparation & Under Review

- Guo, X., **N. Zhao**, T. Nasuno, K. Kikuchi, M. Nakano, H. Annamalai, 202X. Distinct features of atmospheric rivers over the western North Pacific in post-El Niño and non-post-El Niño summers. Under review.
- Wang, B., L. Hua, H. Mei, X. Wu, Y. Kang, and **N. Zhao**. Ocean carbon emission prediction and management measures based on artificial intelligence remote sensing estimation in the context of carbon neutrality. Under review.
- Seiki, A., A. Nagano, **N. Zhao**, I. Ueki, and S. Yokoi. Diurnal SST warming and the boreal summer intraseasonal oscillation in the Philippine Sea. In prep.

CONFERENCES & SEMINARS**Convening**

- (CONVENER) Session: Subtropical Air-Sea Interaction. Ocean Science Meetings 2024, Feb 2024, New Orleans, Louisiana, USA & Online
- (CONVENER) Session: Atmosphere, Ocean, and Land Processes in the Maritime Continent and Indo-Pacific. AGU Fall Meeting 2023, Dec 2023, San Francisco, California, USA & Online
- (CONVENER) Session: Atmosphere, Ocean, and Land Processes in the Maritime Continent and Indo-Pacific. AGU Fall Meeting 2022, Dec 2022, Chicago, Illinois, USA & Online
- (CO-CONVENER) Session: Subtropical Air-Sea Interaction. Ocean Science Meetings 2022, Feb 2022, Honolulu, Hawaii, USA & Online
- (PRIMARY CONVENER) Session: Atmosphere, Ocean, and Land Processes in the Maritime Continent and Indo-Pacific. AGU Fall Meeting 2021, Dec 2021, New Orleans, LA, USA & Online
- (CO-CONVENER) Session: Atmosphere, Ocean, and Land Processes in the Maritime Continent and Indo-Pacific. AGU Fall Meeting 2020, Dec 2020, Online, USA

Presentations

- (ORAL BY ENGLISH) Moisture sources of the record-breaking heavy rainfalls over Tohoku region in August 2022. AOGS Annual Meeting 2023, Aug 2023, Suntec, Singapore
- (ORAL BY ENGLISH) Moisture sources of the record-breaking heavy rainfalls over Tohoku region in August 2022. JpGU Annual Meeting 2023, May 2023, Makuhari Messe, Chiba, Japan
- (ORAL BY JAPANESE) Abnormal moisture transport routes for the heavy rainfalls over the Tohoku region, Japan in August 2022, Mar 2023, Kyushu University, Fukuoka, Japan
- (POSTER BY ENGLISH) Impact of warm SST in the western Subtropical Pacific on the Heavy Rain of 2020 in Japan. Ocean Sciences Meeting 2022, Feb 2022, Online, USA
- (POSTER BY ENGLISH) Why does convection weaken over Sumatra Island in an active phase of the MJO? AGU Fall Meeting 2021, Dec 2021, New Orleans, LA, USA & Online Everywhere
- (ORAL BY JAPANESE) Impact of warm SST in the western Subtropical Pacific on the Heavy Rain of 2020 in Japan. The Meteorological Society of Japan 2021 Fall Meeting, Dec 2021, Mie University, Mie, Japan
- (ORAL BY ENGLISH) Why does eastward propagating convection weaken over Sumatra Island in an active phase of the MJO? JpGU Annual Meeting 2021, Jun 2021, Online, Japan
- (POSTER BY ENGLISH) 粒子追跡で見た令和 2 年 7 月豪雨の水蒸気輸送. 新学術領域研究「中緯度大気海洋」(気候系の Hotspot2) 第 1 回領域全体会議, Sep 2020, Online, Japan
- (POSTER BY ENGLISH) How does the air-sea coupling frequency affect convection during the MJO passage? Ocean Sciences Meeting 2020, Feb 2020, San Diego Convention Center, San Diego, USA
- (POSTER BY ENGLISH) How does the air-sea coupling frequency affect convection during the MJO passage? The Meteorological Society of Japan 2019 Fall Meeting, Oct 2019, Fukuoka International Congress Center, Fukuoka, Japan
- (POSTER BY ENGLISH) How does the air-sea coupling frequency affect convection during the MJO passage? The Oceanographic Society of Japan 2019 Fall Meeting, Sep 2019, Toyama International Conference Center, Toyama, Japan
- (ORAL BY ENGLISH) Atmospheric Response to a Diurnally Varying Sea Surface Temperature in the Tsushima Strait Area, The 20th Pacific-Asian Marginal Seas (PAMS) Meeting, Mar 2019, International Convention Cen-

ter Kaohsiung, Kaohsiung, Taiwan

- (ORAL BY ENGLISH) 高解像度海面水温に対する対馬海峡域の大気応答, The Oceanographic Society of Japan 2018 Fall Meeting, Sep 2018, Tokyo University of Marine Science and Technology, Tokyo, Japan
- (ORAL BY ENGLISH) Local Atmosphere Response to a High-resolution SST Dataset in the Tsushima Strait Area, 15th Japan Korea (Korea-Japan) Joint Seminar in the Ocean and the Atmosphere, Sep 2018, Howard Johnson Hotel Jeju Yeongdong, Jeju, Korea
- (ORAL BY JAPANESE) 高解像度海面水温に対する対馬海峡域の大気応答, 海洋モデリング研究会, Jul 2018, Kuju Joint Training Center for National Universities in Kyushu Area, Oita, Japan
- (ORAL BY JAPANESE) 高解像度海面水温に対する対馬海峡域の大気応答, 研究集会・宗谷暖流を始めとした対馬暖流系の変動メカニズム, Jul 2018, Hokkaido University, Sapporo, Japan
- (ORAL BY ENGLISH) Sub-weekly Scale Interactions between the Sea of Japan and Extra-tropical Cyclones in Winter, 2018 Ocean Sciences Meeting, Feb 2018, Oregon Convention Center, Portland, USA
- (ORAL BY JAPANESE) 冬季東アジア周辺の温帯低気圧による海面水温変化・新たな可能性, 2017 年度気候システム研究集会, Sep 2017, Fukuoka University, Fukuoka, Japan
- (INVITED/POSTER) Effect of SST in the Sea of Japan on the Winter Cyclones, The 1st JpGU-AGU Joint Meeting, May 2017, Makuhari Messe, Chiba, Japan
- (ORAL BY ENGLISH) Effect of SST in the Sea of Japan on the Winter Cyclones, The 19th Pacific-Asian Marginal Seas (PAMS) Meeting, Apr 2017, Seogwipo KAL Hotel, Jeju Island, South Korea
- (ORAL BY JAPANESE) Effect of SST in the Sea of Japan on the Winter Cyclones, The Meteorological Society of Japan 2016 Fall Meeting, Oct 2016, Nagoya University, Nagoya, Japan
- (ORAL BY JAPANESE) Effect of SST in the Sea of Japan on the Winter Cyclones, 激甚化する台風・爆弾低気圧起源の災害ハザード予測研究 Workshop, Oct 2016, Kyushu University, Fukuoka, Japan
- (ORAL BY JAPANESE) 温帯低気圧における日本海の海面水温変化, 2016 年度気候システム研究集会, Sep 2016, Nagasaki University, Nagasaki, Japan
- (ORAL BY ENGLISH) Effect of SST in the Sea of Japan on the Winter Cyclones, The Oceanographic Society of Japan 2016 Spring Meeting, Mar 2016, The University of Tokyo, Tokyo, Japan
- (ORAL BY JAPANESE) Intensification of the subpolar front in the Japan Sea during the winter cyclones, The Oceanographic Society of Japan 2015 Fall Meeting, Sep 2015, Ehime University, Matsuyama, Japan
- (ORAL BY JAPANESE) Intensification of the subpolar front in the Japan Sea during the winter cyclones, 2015 年度気候システム研究集会, Sep 2015, Kagoshima University, Kagoshima, Japan
- (ORAL BY JAPANESE) Intensification of the subpolar front in the Japan Sea during the winter cyclones, 2015 年度海洋学会若手会, Aug 2015, The University of Tokyo, Tokyo, Japan
- (ORAL BY JAPANESE) Intensification of the subpolar front in the Japan Sea during the winter cyclones, 研究集会・宗谷暖流を始めとした対馬暖流系の変動メカニズム, Jul 2015, Hokkaido University, Sapporo, Japan

OTHER PROFESSIONAL ACTIVITIES

Awards:

Reviewer Award, Journal of Meteorological Research, Springer (Jul, 2022)

Top Downloaded Article, Wiley (Feb, 2023)

Society Memberships:

The Oceanographic Society of Japan (2014-Present)

The Meteorological Society of Japan (2015-Present)

American Geophysical Union (2017-Present)

Journal Reviewer:

Geophysical Research Letters, Earth and Space Science, Geoscience Letters, Quarterly Journal of the Royal Meteorological Society, Journal of Hydrology, Atmospheric Research, Journal of Hydrometeorology, Earth's Future, Journal of Geophysical Research: Oceans, Journal of Geophysical Research: Atmospheres, Deep Sea Research: Part I, Climate Dynamics, Journal of Meteorological Research, Acta Oceanologica Sinica, Journal of Oceanography

Teaching Assistant:

OCT 2014-MAR 2015 | *Ocean Modelling II*, Lecturer: Prof. Naoki Hirose
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

APR 2015-SEP 2015 | *Geophysical Fluid Dynamics*, Lecturer: Prof. Atsuhiko Isobe
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

ABILITIES

Programming Languages	Fortran, Shell Script, Python & Matlab
Figure Plotting	Generic Mapping Tools (GMT), Python, GrADS, Adobe Illustrator&Photoshop
Languages	Chinese (native), English, Japanese
Documents Handling	Microsoft Office, \LaTeX
OS	Windows, Mac OS, Linux (PC & Super Computer)
Others	Photography