# GAOPENG XU, Ph.D.

Texas A&M University, College Station, 77843

Phone:+1 (979)402-7187 Email: gaopxu@tamu.edu

# **Research Description**

**<u>Research Interests</u>**: My research focuses on climate change, particularly oceanic changes projected by climate models. Key areas of interest include 1) coastal sea levels, 2) coastal upwelling, 3) ocean heat uptake, and 4) Arctic warming, with a recent focus on storm-induced extreme sea levels in coastal regions.

<u>Methods</u>: Observational data and numerical simulations using eddy-resolving fully coupled climate model (CESM) and other CMIP models

## Education

- Ph.D. in Oceanography | Texas A&M University | 08/2016 05/2022 Thesis: Investigating Impacts of Model Horizontal Resolution on Sea Surface Temperature Biases and Ocean Heat Uptake, Advisor: Ping Chang
- M.S. in Physical Oceanography | Ocean University of China | 08/2014 06/2016 Thesis: Study on the Distribution Characteristics of the SST's Skewness in North Pacific and its Effected Mechanism, Advisor: Lixin Wu
- B.S. in Mathematics and Applied Mathematics | Ocean University of China | 08/2010 06/2014 Thesis: h-Invex Function and Two New Ostrowski Type Inequalities, Advisor: Zhong Bo Fang

# **Academic Appointments**

Postdoctoral Research Associate | Texas A&M University | 06/2022– Now
Project I: "Combining global high-resolution climate simulations with ocean biogeochemistry, fisheries and decision-making models to improve sustainable fisheries management under climate change", Mentor: Ping Chang
Project II: "Improving Prediction and Projection of Gulf of Mexico Sea-Level Changes Using Eddy-Resolving Earth System Models", Mentor: Ping Chang
Project III: "Understanding the Role of Mesoscale Atmosphere-Ocean Interactions in Seasonal-to-Decadal Climate Prediction", Mentor: Ping Chang

Graduate Research Assistant | Texas A&M University | 08/2016 - 05/2022

# **Academic Mentorship**

Trevor Simpson (undergraduate at Texas A&M University), Assessing Long-Term Global Sea Level Changes in Satellite Observations and Climate Models, 2024

### Awards

Postdoctoral Scholar Travel Award, Texas A&M University, 2024

Travel support for CAMAS Workshop and Early Career School, 2023

Travel support for the CLIVAR Polar Amplification Workshop, 2023

A.T. Webber Fellowship, Texas A&M University, 2019

Donald & Melba Ross Graduate Scholarship, Texas A&M University, 2016, 2017, 2018

#### **Academic Service**

Reviewers of journals Nature Communications, Communications Earth & Environment, Journal of Climate, Journal of Geophysical Research - Oceans and Geophysical Research Letters

Undergraduate Research Scholars Thesis Proposal Reviewer in 2024 at Texas A&M University

### **Publications**

#### Peer-reviewed

**Xu, G.**, Rencurrel, M. C., Chang, P., Liu, X., Danabasoglu, G., Yeager, S. G., ... & Zhang, Q. (2024). High-resolution modelling identifies the Bering Strait's role in amplified Arctic warming. *Nature Climate Change*, 1-8. <u>https://doi.org/10.1038/s41558-024-02008-z</u>

**Xu, G.**, Chang, P., & Zhang, Q. (2024). Origins of biweekly sea surface temperature variability in the eastern equatorial Pacific and Atlantic. *Geophysical Research Letters*, *51*(8), e2023GL107328. <u>https://doi.org/10.1029/2023GL107328</u>

Small, R. J., Kurian, J., Chang, P., **Xu, G.**, Tsujino, H., Yeager, S., ... & Castruccio, F. (2024). Eastern Boundary Upwelling Systems in Ocean–Sea Ice Simulations Forced by CORE and JRA55-do: Mean State and Variability at the Surface. *Journal of Climate*, 37(9), 2821-2848. https://doi.org/10.1175/JCLI-D-23-0511.1

**Xu, G.**, Chang, P., Small, J., Danabasoglu, G., Yeager, S., Ramachandran, S., & Zhang, Q. (2023). Enhanced Upper Ocean Warming Projected by the Eddy-Resolving Community Earth System Model. *Geophysical Research Letters*, *50*(21), e2023GL106100. https://doi.org/10.1029/2023GL106100

Chang, P., **Xu, G.**, Kurian, J., Small, R. J., Danabasoglu, G., Yeager, S., ... & Chapman, P. (2023). Uncertain future of sustainable fisheries environment in eastern boundary upwelling zones under climate change. *Communications Earth & Environment*, *4*(1), 19. https://doi.org/10.1038/s43247-023-00681-0

**Xu, G.**, Chang, P., Ramachandran, S., Danabasoglu, G., Yeager, S., Small, J., ... & Wu, L. (2022). Impacts of Model Horizontal Resolution on Mean Sea-Surface Temperature Biases in the Community Earth System Model. *Journal of Geophysical Research: Oceans*, e2022JC019065. https://doi.org/10.1029/2022JC019065

Chang, P., Zhang, S., Danabasoglu, G., Yeager, S. G., Fu, H., Wang, H., ... **Xu, G.**, ... & Wu, L. (2020). An unprecedented set of high-resolution earth system simulations for understanding multiscale interactions in climate variability and change. *Journal of Advances in Modeling Earth Systems*, *12*(12), e2020MS002298. <u>https://doi.org/10.1029/2020MS002298</u>

Xu, G., & Fang, Z. B. (2017). A Generalization of Ostrowski type inequality on time scales with k points. *J. Math. Inequal*, *11*(1), 41-48. <u>http://dx.doi.org/10.7153/jmi-11-04</u>

**Xu, G.**, & Fang, Z. B. (2016). A new Ostrowski type inequality on time scales. *J. Math. Inequal*, *10*(3), 751-760. <u>http://dx.doi.org/10.7153/jmi-10-61</u>

#### In preparation

Xu, G., Chang, P., et al. (2024). Improving Simulations of Extreme Sea Level in the Gulf of Mexico with High-Resolution Community Earth System Model, *in prep*.

Xu, G., Chang, P., et al. (2024). Storm-driven nonstationarity of extreme sea levels along the U.S. Atlantic and Gulf of Mexico coasts, *in prep*.

Xu, G., Chang, P., et al. (2024). Loop current eddies and surface winds contributing to sea level rise in the Gulf of Mexico, *in prep*.

### Presentations

"Improving Simulations of Extreme Sea Level in the Gulf of Mexico with High-Resolution Community Earth System Model", Gulf Sea Level Variation and Rise In-Person All Hands Meeting, 08/2024 (Talk).

"Enhancing Gulf of Mexico Sea-Level Projections: Insights from the Eddy-resolving Community Earth System Model", Ocean Sciences Meeting 2024, 02/2024 (Poster)

"The Bering Strait's Overlooked Role in Amplified Arctic Warming: Insights from High-Resolution Climate Simulations", CAMAS 2024 Workshop, 02/2024 (Talk)

"The Bering Strait's Overlooked Role in Amplified Arctic Warming: Insights from High-Resolution Climate Simulations", US CLIVAR Polar Amplification Workshop, 01/2024 (Poster)

"Enhanced Upper Ocean Warming Projected by the Eddy-Resolving Community Earth System Model", The TCCS High-Resolution Modeling Workshop, 01/2023 (Talk)

### **Summer Schools**

NCAR Community Earth System Model Tutorial, Boulder, CO, USA

08/2018

### **Professional Membership**

American Geophysical Union