Yanxu Chen (Sue)

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EDUCATION

Ecole Normale Supérieure **Paris**

- Ph.D., Dynamics and Physics of the Atmosphere and Ocean — Dec 2018 until now

McGill University **Montreal**

- M.Sc., Atmospheric and Oceanic Sciences — Sep 2016-Dec 2018
- Coursework includes: Atmospheric and Oceanic Dynamics, Waves and Instability, Turbulence in Atmosphere and Oceans, Dynamics of Current Climates, Synoptic Meteorology, etc.

Sun Yat-sen University (SYSU) **Guangzhou**

- B.Sc., Marine Sciences — Sep 2012-Jun 2016
- GPA: 3.98/4.0 (or 91/100 in centesimal system)
- Academically ranked the first among 66 students.
- Graduated with the honour of 'Outstanding Graduate' based on thesis and the four-year academic performance.
- Coursework includes: Fluid Mechanics, Physical Oceanography, Marine Survey and Observation Techniques, Coastal Process and Engineering Application, Remote Sensing and GIS, etc.

Hong Kong University of Science and Technology (HKUST) **Hong Kong**

- Summer Exchange — Jun 2014-Aug 2014
- Coursework includes: Environmental Sciences, Technology and Innovations, etc.

AWARDS

2019	Chaire Chanel Research Grant	LMD-ENS
2018	Graduate Research Enhancement and Travel Award	McGill University
2017	Stephen and Anastasia Mysak Graduate Fellowship	McGill University
	Graduate Excellence Fellowship	McGill University
	Graduate Research Enhancement and Travel Award	McGill University
	Travel Grant from the World Climate Research Programme (WCRP)	WCRP
2016	Stephen and Anastasia Mysak Graduate Fellowship	McGill University
	Graduate Excellence Fellowship	McGill University
	Mitacs Globalink Graduate Fellowship	Mitacs
	Outstanding Graduate of Sun Yat-sen University (only four students from our major)	Sun Yat-sen University
2015	Sun Yat-sen University Scholarship for Outstanding Students	Sun Yat-sen University
	Research Scholarship from China Scholarship Council	China Scholarship Council
	Second Prize of the National Ocean Knowledge Competition	State Oceanic Administration, China
2014	Sun Yat-sen University Scholarship for Outstanding Students	Sun Yat-sen University
	Baogang Scholarship for Excellent Students (three students in the university)	Sun Yat-sen University
	Award from Province-based Research Training Program	Education Bureau, China

	Award from National Entrepreneurship Training Program	Education Bureau, China
2013	Sun Yat-sen University Scholarship for Outstanding Students	Sun Yat-sen University
	National Scholarship (only one student from our major)	Education Bureau, China

RESEARCH EXPERIENCES

Laboratoire de Météorologie Dynamique, École Normale Supérieure — **Paris**

Graduate Student — Dec 2018 until now

- Supervised by Profs. Sabrina Speich and Laurent Bopp
- Research keywords: ocean mesoscale eddies and heat uptake.

Project: The role of ocean mesoscale dynamics in the ocean heat and carbon uptake.

Department of Atmospheric and Oceanic Sciences, McGill University — **Montreal**

Graduate Student — Sep 2016-Dec 2018

- Supervised by Profs. David Straub and Louis-Philippe Nadeau
- Research keywords: air-sea interaction and Ekman layer dynamics.

Project 1: Analyzed impacts of synoptic winds on low-frequency wind stress over ocean, as well as the influence of stability (temperature) on wind stress drag coefficient.

Project 2 (thesis): Applied the flow-dependent nonlinear Ekman layer in a two-layer shallow water model and analyzed how the interior flow responds differently compared with the typical wind-induced shallow water model.

Department of Earth and Atmospheric Sciences, University of Alberta — **Edmonton**

Summer Research Intern — May 2015-Sep 2015

- Supervised by Prof. Paul Myers
- Research keywords: the role of freshwater in high-latitude oceans.

Project: Compared several numerical simulations to understand the potential impact of freshwater processes and surface atmospheric conditions on the ocean and sea ice around Greenland. (Quantification includes mixed layer depth, ice thickness and fluxes through major straits.)

Institute of Coastland Estuarine Research, Sun Yat-sen University — **Guangzhou**

Undergrad Research Assistant — Jan 2015-Jun 2016

- Supervised by Profs. Qingshu Yang and Huayang Cai
- Research keywords: estuarine dynamics, especially the interaction between river discharge and tides.

Project 1: Collected hydrological data of three main branches in the Pearl River Delta and analyzed the impact of El Nino and La Nina on floods of the Pearl River from the perspective of statistic analysis.

Project 2 (thesis): Combined a one-dimensional analytical model for tidal hydrodynamics with a statistical method of joint probability distribution to analyze the response of water levels to river discharge and tidal range in estuaries.

Center for Coastal Ocean Science and Technology, Sun Yat-sen University — **Guangzhou**

Undergrad Research Assistant — May 2014-May 2015

- Supervised by Prof. Jiaxue Wu
- Research keywords: bottom boundary layer dynamics.

Project: Analyzed five characteristics of turbulence (fluctuation intensity, eddy viscosity coefficient, frictional velocity, drag coefficient and the rate of turbulent kinetic energy dissipation) within the Pearl River Estuary bottom boundary layer and determined their temporal-spatial variations.

PUBLICATIONS

- Role of mesoscale eddies in global mode water distribution and ventilation. (GRL, under review) **Chen and Speich**
- Formation and transport of the South Atlantic subtropical mode water in eddy-permitting observations. (JGR Oceans, 2021) **Chen, Speich and Laxenaire**
- Interaction of nonlinear Ekman pumping, near-inertial oscillations, and geostrophic turbulence in an idealized coupled model. (JPO, 2021) **Chen, Straub and Nadeau**
- EUREC4A. (Earth System Science Data, 2021) **Stevens et al.**

TEACHING EXPERIENCES

- **Introduction to Oceanic Sciences (McGill)** **Winter 2018**
  Instructor: Prof. Carolina Dufour
- **Natural Disasters (McGill)** **Fall 2017**
  Instructors: Profs. John Gyakum and Souad Guernina
- **Pearl River Delta Field Trip (SYSU)** **Fall 2015**
  Instructor: Prof. Yaping Lei

PRESENTATIONS

- **Ocean Sciences Meeting 2022** **virtually**
  Oral presentation: Global mode water detection and its representation in heat transport
- **TRIATLAS General Assembly 2021** **virtually**
  Poster presentation: Formation and transport of the South Atlantic subtropical mode water in eddy-permitting observations
- **AGU Fall Meeting 2020** **virtually**
  Oral presentation: Effect of mesoscale eddies on mode water formation, transport and heat uptake in the world ocean
- **EGU General Assembly 2020** **virtually**
  Oral presentation: Effect of mesoscale eddies on subtropical mode water formation and ocean heat storage
- **EUREC4A Planning Workshop 2019** **Paris, France**
  Oral presentation: The effect of mesoscale eddies on air-sea interactions
- **EGU General Assembly 2019** **Vienna, Austria**
  Oral presentation: Flow-dependent Ekman theory and its application to shallow water models
- **McGill AOS Student Seminar 2018** **Montreal, Canada**
  Oral presentation: Flow-dependent Ekman theory
- **Ocean Mixing Gordon Research Conference 2018** **Andover, USA**
  Poster presentation: Flow-dependent Ekman theory
- **Seminar at Laboratoire de Météorologie Dynamique, École Normale Supérieure 2018** **Paris, France**
  Oral presentation: Flow-dependent Ekman theory
- **Ocean Sciences Meeting 2018** **Portland, USA**
  Poster presentation: A shallow water model forced by flow-dependent Ekman pumping
- **Ocean Mesoscale Eddy Interaction with the Atmosphere Workshop 2018** **Portland, USA**
  Poster presentation: The application of flow-dependent Ekman transport to a two-layer shallow water model

- **McGill AOS Student Seminar 2017** **Montreal, Canada**

  Oral presentation: Wind-driven Ekman transport of curvilinear flows
- **51st CMOS Congress 2017** **Toronto, Canada**

  Poster presentation: Frequency analysis of wind forcing over ocean gyres
- **University of Alberta Summer Poster Symposium 2015** **Edmonton, Canada**

  Poster presentation: Comparison of different ANHA simulations and analysis of time series for straits near Greenland

SKILLS

- Versed in skills for numerical modeling and statistics (Linux System, Fortran, Matlab, Python, Latex etc).