

Hemant Khatri

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🌐 <http://hmkhatri.github.io/>

📍 Atmospheric and Oceanic Sciences, 300 Forrestal Road, Sayre Hall, Princeton, NJ 08540, USA

Research Interests

Turbulence in the oceans and atmosphere, impacts of topography on the ocean circulation, heat and tracer transport by eddies.

Education

- 2015 – 19 📌 **Ph.D., Mathematics**, Imperial College London, UK
Thesis title: *Dynamics of ocean jets over topography*
Advisor: Pavel Berloff
- 2013 – 15 📌 **M.Sc., Atmospheric & Oceanic Sciences**, Indian Institute of Science (IISc), India
Thesis title: *Mesoscale turbulence on the ocean surface from satellite altimetry*
Advisor: Jai Sukhatme | CGPA: 7.2/8
- 2009 – 13 📌 **B.E., Chemical Engineering**, Birla Institute of Technology & Science (BITS), India
CGPA: 8.3/10, *First Class Honours*

Professional Experience

- Oct'19 – Present 📌 **Postdoctoral Research Associate**, Atmospheric & Oceanic Sciences (AOS), Princeton University, USA
- Feb'19 – Aug'19 📌 **Modelling Associate (Intern)**, Risk Management Solutions, London, UK
- Jan'13 – Jun'13 📌 **Research Assistant**, TIFR Centre for Interdisciplinary Sciences, India

Fellowships and Awards

- Oct'19 – Present 📌 **AOS Postdoctoral fellowship**, Princeton University, USA.
- Oct'16 – Jul'19 📌 **Research grants**, Mathematics for Planet Earth, Imperial College London, UK.
- Feb'16 – Jul'19 📌 **President's PhD scholarship**, Imperial College London, UK.
- Jan'14 – Jun'15 📌 **Jeremy Grantham fellowship**, Divecha Centre for Climate Change, IISc, India.
- Aug'13 – Oct'15 📌 **GATE fellowship**, Ministry of Human Resource Development, India.
- Aug'11 – Jun'13 📌 **Merit-cum-Need scholarship**, BITS Pilani, India.

Teaching & Mentorship

- Guest Lecturer 📌 Atmospheric and Oceanic Wave Dynamics (Feb 2020)
- Teaching Assistant 📌 Mathematical Methods, Multivariable Calculus, Numerical Analysis (2016–18)
Geophysical Fluid Dynamics (Spring 2015)
- Mentor 📌 Jack Davies, Co-advised on his Masters thesis project (2019)

Publications

- Khatri, H., Griffies, S., Uchida, T., Wang, H. and Menemenlis, D. (2020). A synthesis of upper ocean geostrophic kinetic energy spectra from a global submesoscale permitting simulation (in review).
- Davies, J., Khatri, H. and Berloff, P. (2020). Linear stability analysis for flows over sinusoidal bottom topography, *Journal of Fluid Mechanics* (in press).
- Khatri, H. and Berloff, P. (2019). Tilted drifting jets over a sloped topography: effects of vanishing eddy viscosity, *Journal of Fluid Mechanics*.
- Khatri, H. and Berloff, P. (2018). Role of eddies in the maintenance of multiple jets embedded in eastward and westward baroclinic shears, *Fluids*.
- Khatri, H. and Berloff, P. (2018). A mechanism for jet drift over topography, *Journal of Fluid Mechanics*.
- Khatri, H., Sukhatme, J., Kumar, A. and Verma, M. K. (2018). Surface ocean enstrophy, kinetic energy fluxes, and spectra from satellite altimetry, *Journal of Geophysical Research: Oceans*.


Conferences

- **Apr 2019** – Dynamics of ocean jets formed over a sloped topography, *Workshop "Conservation Principles, Data, and Uncertainty in Atmosphere-Ocean Modelling"*, Potsdam, Germany. **Poster**
- **Sep 2018** – Ocean surface turbulence: Is it QG or surface-QG like?, *CliMathNet Conference*, Reading, UK. **Talk**
- **Jun 2018** – Dynamics of ocean jets formed over a sloped topography, *Gordon Ocean Mixing Conference*, Andover, USA. **Poster**
- **Jun 2018** – Ocean surface spectral fluxes of kinetic energy, enstrophy and buoyancy, *Gordon Ocean Mixing Conference*, Andover, USA. **Poster**
- **Sep 2017** – Drifting quasi-zonal jets, *Rotating Fluids Meeting*, University of Oxford, UK. **Talk**
- **Jul 2017** – Random to organised motions in the oceans, *SIAM Annual conference*, Imperial College London, UK. **Talk**
- **Jun 2017** – Effects of zonally varying topography on the dynamics of oceanic jets, *21st conference on atmospheric and oceanic fluid dynamics*, Portland, USA. **Poster**
- **Apr 2017** – Kinetic energy and enstrophy fluxes on the ocean surface, *Meeting: Energy transfers in the atmosphere and oceans*, Hamburg, Germany. **Talk**

Workshops & Seminars

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| Workshop | ■ Rossbypalooza – University of Chicago (Jun 2018)
Turbulent flows and climate dynamics – School of Physics, Les Houches (Aug 2017)
Global climate change – University of Exeter (Jun 2014) |
| Seminar | ■ New York University, USA (Mar 2020)
Geophysical Fluid Dynamics Laboratory, Princeton, USA (Mar 2019)
Queen Mary University, London, UK (Dec 2017) |


Service


Reviewer  Journal of Physical Oceanography, Ocean Modelling, Fluids, Journal of Fluid Mechanics, Journal of Advances in Modeling Earth Systems, Journal of Physics: Conference Series (IOP).

References

Dr Pavel Berloff


Reader, Department of Mathematics,
Imperial College London, UK.


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 <http://www.imperial.ac.uk/~pberloff/>

Dr Stephen Griffies


Physical Scientist, Oceans and Climate Group,
Geophysical Fluid Dynamics Laboratory, USA.


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Dr Jai Sukhatme

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Oceanic Sciences,
Indian Institute of Science, India.

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