Hemant Khatri

hkhatri@princeton.edu (+1) 609-933-8985 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
Project: *Southern Ocean dynamics*

Feb'19 – Aug'19 **Modelling Associate (Intern)**, Risk Management Solutions, London, UK
Project: *Impacts of sea level rise on storm surge*

Jan'13 – Jun'13 **Research Assistant**, TIFR Centre for Interdisciplinary Sciences, India
Project: *Water droplet growth in cloud formation*

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.

Publications

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

Seminars

- **Mar 2019 –** Jet drift over topography and jet-topography interactions, *GFDL, Princeton, USA*.
- **Dec 2017 –** Geophysical jets: formation and existence, *Queen Mary University, London, UK*.

Teaching Experience

Guest Lecturer	Atmospheric and Oceanic Wave Dynamics (Feb 2020)
Teaching Assistant	Mathematical Methods, Multivariable Calculus, Numerical Analysis (2016–18) Geophysical Fluid Dynamics (Spring 2015)

Miscellaneous

Reviewer	Journal of Physical Oceanography, Ocean Modelling, Fluids, Journal of Physics: Conference Series (IOP).
Programming	MATLAB, Python, Fortran, R, C/C^{++}, QGIS.
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)*

References

Dr Pavel Berloff
Reader, Department of Mathematics,
Imperial College London, UK.
p.berloff@imperial.ac.uk
http://www.imperial.ac.uk/~pberloff/

Dr Jai Sukhatme
Associate Professor, Centre for Atmospheric & Oceanic Sciences,
Indian Institute of Science, India.
jai@iisc.ac.in
http://caos.iisc.ac.in/faculty/jai.html

Dr Stephen Griffies
Physical Scientist, Oceans and Climate Group,
Geophysical Fluid Dynamics Laboratory, USA.
Stephen.Griffies@noaa.gov
https://stephengriffies.github.io