Hemant Khatri

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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, India**
CGPA: 8.3/10, *First Class Honours*

Professional Experience

Feb'19 – Present **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'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.

Publications

- Khatri, H. and Berloff, P. (under review). Tilted, drifting jets over a sloped topography: Effects of vanishing eddy viscosity.
- 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*.

Invited 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*.

Workshops

Jun'18 Rossbypalooza — Understanding climate through simple models
University of Chicago, USA

Aug'17 Fundamental aspects of turbulent flows in climate dynamics
School of Physics, Les Houches, France

Jun'14 Global climate change: Environment, technology and society
University of Exeter, UK

Teaching Experience

Fall 2017 **Teaching Assistant –** Mathematical Methods I, Multivariable Calculus

Spring 2017 **Teaching Assistant –** Mathematical Methods II, Numerical Analysis

Fall 2016 **Teaching Assistant –** Mathematical Methods I.

Spring 2015 **Teaching Assistant –** Geophysical Fluid Dynamics

Miscellaneous

Reviewer Journal of Physical Oceanography, Ocean Modelling, Fluids, Journal of Physics: Conference Series (IOP).

Programming MATLAB, Python, Fortran, R, C/C^{++}, QGIS.

References

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

Dr Jai Sukhatme
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http://caos.iisc.ac.in/faculty/jai.html