

**Program for ‘Theoretical and Practical Perspectives in Geophysical Fluid Dynamics’ (TAP-GFD),**  
<https://www.icts.res.in/program/TAPGFD>  
**20-31 May, 2024**  
**Venue: Ramanujan Lecture Hall**  
**International Center for Theoretical Sciences, Bengaluru, India**

**Program: 1st Week (20-24 May 2024)**

Time	Mon 20 May	Tue 21 May	Wed 22 May	Thu 23 May	Fri 24 May
9:30-9:45	Welcome/ Introduction			Networking and Social Activities  (Public Holiday)	
9:45-10:30	Carsten Eden Lecture: (Part 1)	Julian Mak Lecture: (Part 1)	Alexa Griesel Lecture: (Part 1)		Pascale Lelong
10:30-11:00	Coffee Break				Coffee Break
11:00-11:45	Carsten Eden Lecture: (Part 2)	Julian Mak Lecture: (Part 2)	Alexa Griesel Lecture: (Part 2)		Nicole Jones* (11:00-11:20)
11:45-12:00	Discussion and Break				Pratik Prashant Aghor (11:20-11:40)
12:00-12:30	Manikandan Mathur	Zoi Kourkouraidou	Manita Chouksey		Pablo Sebastia Saez (11:40-12:00)
12:30-14:30	Lunch Break				Lunch Break
14:30-14:50	Nimit Kumar	Rajaram Lakkaraju	Saurabh Rathore		Concluding discussion
14:50-15:10	Harshit Tiwari	Moritz Epke	Kaushik Srinivasan*		
15:10-15:30	Yohei Onuki*	Yueng-Djern Lenn*	Tutorial: <b>Machine Learning</b>		
15:30-15:50	Jin-Han Xie*	Caitlin Whalen*	Han Wang and Julian Mak (15:15-16:00)		
15:50-16:30	Coffee Break				End of Week #1
16:30-16:50	Krishna Priya	Poster Session (16:30-18:00)	Tutorial Exercise: <b>Machine Learning</b>  Han Wang and Julian Mak (16:30-18:00)		Coffee Break
16:50-17:10	Sanjay CP				
17:10-17:30	Discussion				
19:00-21:00	Dinner				

\*Online

**Program: 2nd Week (27-31 May 2024)**

Time	Mon 27 May	Tue 28 May	Wed 29 May	Thu 30 May	Fri 31 May
9:30-9:45	Welcome/ Introduction				Networking and Social Activities
9:45-10:30	Scott D. Bachman Lecture: (Part 1)	David Straub Lecture: (Part 1)	Sridhar Balasubramanian (10:00-10:30)	Mara Frielich* (10:00-10:20)	
10:30-11:00	Coffee Break			Coffee Break	
11:00-11:45	Scott D. Bachman Lecture: (Part 2)	David Straub Lecture: (Part 2)	Jin-Song von Storch* Lecture	Debasis Sengupta (11:00-11:30)	
11:45-12:00	Discussion and Break			Jai Sukhatme (11:30-12:00)	
12:00-12:30	Ivan Sudakow	PN Vinayachandran	Hossein Kafiabad	Fabrizio Falasca	
12:30-14:30	Lunch Break				
14:30-14:50	Abhisek Chatterjee	Amit Apte*	Elizabeth Yankovsky*	Sajidh CK	
14:50-15:10	Abhijeet Minz	Valerio Lucarini*	Ashesh Chattopadhyay*	Joy Monteiro	
15:10-15:30	Michele Buzzicotti*	Coffee Break	Tutorial: <b>Vizualization with Python</b>	Concluding discussion and farewell	
15:30-15:50	Anjana S	James Girton  (ICTS Colloquium) 15:30-17:00	Pablo Sebastia Saez and Moritz Epke (15:15-16:00)		
15:50-16:30	Coffee Break		Coffee Break	Coffee Break	
16:30-18:00	Poster Session (16:30-18:00)		Tutorial Exercise: <b>Vizualization with Python</b>  Pablo Sebastia Saez and Moritz Epke (16:30-18:00)	End.	
19:00-21:00	Dinner				

\*Online

## Oral session (20-24 May 2024)

Speaker	Title
<b>Monday, May 20th 2024</b>	
Carsten Eden	Energetically consistent climate modelling
Manikandan Mathur	Small-scale instabilities in inertia-gravity waves
Nimit Kumar	Applications of Geophysical Fluid Dynamics in addressing the UN Ocean Decade Challenges
Harshit Tiwari	Classical 1/3 Nusselt scaling in compressible convection for extreme Rayleigh numbers
Yohei Onuki*	Breaking of internal waves simulated in a distorted domain model
Jin-Han Xie*	Oceanic energy flux across scales -- Observational evidence and mechanism
Krishna Priya	On two-dimensional turbulence over random topography
Sanjay CP	Internal gravity waves and tracer dispersion in the ocean
<b>Tuesday, May 21st 2024</b>	
Julian Mak	The geostrophic Eady problem revisited
Zoi Kourkouraidou	Effects of mesoscale eddies on the M2 internal tide in a 5km ICON-O simulation
Rajaram Lakkaraju	On scaling theories of vortex dynamics in two- dimensional turbulence
Moritz Epke	Impact of tides and eddies on ocean energy spectra in submesoscale resolving simulations of the South Atlantic
Yueng-Djern Lenn*	Mixing in the Arctic Ocean
Caitlin Whalen*	Linking Submesoscale Frontal Dynamics to the Large Scale Background Environment
<b>Wednesday, May 22nd 2024</b>	
Alexa Griesel	Meso- to submesoscale turbulence in the ocean
Manita Chouksey	The Balance Conundrum
Saurabh Rathore	Advancements in Oceanic Mesoscale Eddy Detection through Machine Learning
Kaushik Srinivasan*	Unraveling the dynamical interactions between mesoscales, submesoscales and inertia gravity waves in the ocean through cross-scale energy fluxes.
Han Wang* and Julian Mak	Tutorial on 'Basic aspects of convolutional neural networks'
<b>Friday, May 24th 2024</b>	
Pascale Lelong	Wave-Eddy Interactions In The Gulf Of Lion: Bridging Ogcm And Process Ocean Simulations
Nicole Jones*	Diapycnal mixing in the coastal ocean
Pratik Prashant Aghor	Symmetries and transition to turbulence in plane Poiseuille flow
Pablo Sebastia Saez	Exploring Internal Gravity Wave Interactions with Eddies and Waves

\*Online

## Oral session (27-31 May 2024)

Speaker	Title
<b>Monday, May 27th 2024</b>	
Scott D. Bachman	Worthy: Quantifying marine carbon dioxide removal through ocean modeling
Ivan Sudakow	Critical phenomena at the "permafrost-atmosphere" interface
Abhisek Chatterjee	Decadal heat content variability in the South Indian Ocean: role of local winds and Inter-basin connections
Abhijeet Minz	Generalized Lagrangian Mean
Michele Bucciotti*	Stochastic Multi-Scale Reconstruction of Turbulent Rotating Flows with Generative Models
Anjana S	The impact of Oceanic internal variability in modulating the low-frequency variability in the Indian Ocean
<b>Tuesday, May 28th 2024</b>	
David Straub	Mesoscale and submesoscale Ekman pumping in a turbulent ocean
PN Vinayachandran	Rendezvous with the Summer Monsoon Current in the Bay of Bengal
Amit Apte*	Hybrid filtering for Lagrangian data assimilation
Valerio Lucarini*	Metastability and Tipping Points in the Earth System
James Girton	A global experiment to characterize oceanic internal wave climates
<b>Wednesday, May 29th 2024</b>	
Sridhar Balasubramanian	Modeling of atmospheric cold pool dynamics
Jin-Song von Storch*	A theory of randomness
Hossein Kafiabad	Lagrangian means and their computation
Elizabeth Yankovsky*	Links between eddy horizontal and vertical structure: a geostrophic turbulence interpretation
Ashesh Chattopadhyay*	Stability of large-scale neural autoregressive models of geophysical turbulence
Pablo Sebastia Saez and Moritz Epke	Tutorial on 'Visualization with Python'
<b>Thursday, May 30th 2024</b>	
Mara Frieliich*	Observational characterization of the submesoscale transition: dynamics, energetics, and microbial ecology
Debasis Sengupta	A quasi-biweekly oscillation in the equatorial Indian Ocean and Bay of Bengal
Jai Sukhatme	Moist waves in the tropical atmosphere
Fabrizio Falasca	A data-driven framework for dimensionality reduction and causal inference in climate fields
Sajidh CK	State and Variability of Dynamic Sea Level for the Indian Ocean in CMIP6 Models
Joy Monteiro	Energetics of heat waves in an idealised model

\*Online

## Poster Session

Presenter	Title
<b>Tuesday, May 21st (16:30-18:00)</b>	
Tirtharaj Barman	Turbulent penetrative convection subject to background rotation and magnetic field
Anu V. S. Nath	Particle dispersion due to isolated coherent eddies
Amjad Hasan	Interaction of baroclinic flow with a gaussian vortex
Saraswathy Sabu	Trajectory of the intrusion of the Arabian Sea High Salinity water into the Bay of Bengal and its interannual variability
Dheeraj Kumar Sharma	Equatorially trapped waves in a stratified region in the Earth's outer core modeled using 2-layer shallow water equations
Sarswati Shah	Path-conservative central-upwind schemes for weakly compressible two-layer shallow water flow
Jalil Khan	Turbulent/non-turbulent interface in cloud like flows
Swarnali Dhar	A computational study on wind and wave driven mixing in the upper ocean
Shiva Kandpal	Non-inertia wave model with a concentrated lateral inflow in a finite-length channel
Gokul Suresh	Energetics of Rapidly Intensified(RI) and non-RI Tropical Cyclones(TC) over Bay of Bengal Region.
Akshit Nanda	Capturing the edge of chaos in pipe flows
Sonali Maurya	Multifractal formulism of Atmospheric Boundary Layer Data using Wavelet Leaders
Harishankar Muppurala	Disturbing interfaces - On the stability of shear flows with a free surface
<b>Monday, May 27th (16:30-18:00)</b>	
Prajwal Jadhav	Machine learning (ML) based parametrisation for submesoscale geophysical flows
Heet Joshi	Investigating the effect of stubble burning on aerosol optical characteristics over northern India in 2023
Sumana Mandal	Understanding the deep ocean temperature variability using BPR data
Bela Lodh	Analysis of flow structures in the dry convective atmospheric boundary layer and its application in improving heat flux parameterisations
Hardik Shah	Dynamical Pathways of Temperature Variability in a Heatwave Hotspot in South Asia
Nishant Uchale	Characteristics and projected changes in daily maximum precipitation across the globe
Lokahith Agasthya	Insights into Radiation impact on moist convection from idealised modelling
Alsumaina K N	Indian Ocean Dipole Response to global warming in IITM-ESM & CMIP6 Models
Debopam Ghosh	Unraveling Mars' Magnetic Mysteries: Insights from Crustal Magnetization and Spherical Harmonic Coefficient analysis
Karthik S B	Acoustic Halos in Solar Atmosphere
Kartav Kesri	Dependence of spicule properties on magnetic field -- results from magnetohydrodynamic simulations
Pooja Patel	Variations of eddy characteristics along the east coast of India
Mehak	Remote Influence of Madden Julian Oscillations on the Genesis of Mixed Rossby-Gravity Wave Events