

KITP Conference: Atmospheres, Oceans, Earths -- Unifying perspectives on geophysical and environmental multiphase flows

(Oct 31 - Nov 3, 2022)

Coordinators: Elisabeth Guazzelli, Michael Manga, and Ray Shaw

Monday, Oct 31, 2022

Multiphase turbulent flows, Chair: Raymond Shaw (Michigan Technological U)

8:50am	Lars Bildsten (KITP)	Welcome[Video][CC]
9:00am	Alfredo Soldati (TU Wien)	Dynamics of anisotropic fibers in turbulent shear flow[Video][CC]
9:30am	Rama Govindarajan (ICTS)	Aspects of particle transport in vortical flow[Video][CC]
10:00am	Federico Toschi (TU Eindhoven)	How the growth of ice depends on the fluid dynamics underneath[Video][CC]
10:30am		Morning Break
11:00am	Herman Clercx (TU Eindhoven)	On dispersion, preferential concentration and settling of inertial particles in (stratified) turbulence[Slides][Video][CC]
11:45am	Jeremie Bec (CNRS)	Turbophoresis of heavy inertial particles in statistically homogeneous flow[Slides][Video][CC]
12:30pm		Lunch Break

Turbulence and clouds, Chair: Eckart Meiburg (UCSB)

2:00pm	Eberhard Bodenschatz (MPI)	In situ measurements of cloud microphysics in the field[Video][CC]
2:30pm	Alain Pumir (ENS Lyon)	Settling and collision of ice crystals in turbulent clouds[Slides][Video][CC]
3:00pm	Sisi Chen (NCAR)	Studying ice-droplet-turbulence interactions at an ultra-fine scale via direct numerical simulation[Video][CC]
3:30pm		Afternoon Break
4:00pm		Poster Session 1
5:30pm		SHUTTLE TO BWSCI

Tuesday, Nov 1, 2022

Atmospheric clouds 1, Chair: Raymond Shaw (Michigan Technological U)

9:00am	Anna Jaruga (Caltech)	Particle-based methods for cloud microphysics: towards learning climate model parameterizations from libraries of particle simulations[Slides][Video][CC]
9:30am	Graham Feingold (NOAA)	Top-down and bottom-up approaches to the complex atmospheric system[Video][CC]
10:00am	Fabian Hoffmann (U Munich)	Zooming out: understanding cloud systems from complex and idealized models[Video][CC]
10:30am		Morning Break
11:00am	Ilan Koren (Weizmann Inst.)	Cloud fields - living near the bifurcation point[Video][CC]
11:30am	Franziska Glassmeier (TU Delft)	Chances & challenges for capturing mesoscale cloudiness[Video][CC]
12:00pm		Lunch Break

Atmospheric clouds 2, Chair: Anna Jaruga (Caltech)

2:00pm	Adele Igel (UC Davis)	Modulation by cloud droplet size of microphysical and radiative processes and their feedbacks to mixing at cloud top[Video][CC]
2:45pm	Joao Teixeira (JPL)	Turbulence, clouds and climate models[Video][CC]

3:30pm	Afternoon Break
4:00pm	Poster Session 2
5:30pm	Cocktail Reception
6:00pm	Dinner
8:00pm	Shuttle to BWSCI

Wednesday, Nov 2, 2022

Granular/suspension flows: settling, creeping, shearing, Chair: Elisabeth Guazzelli (Université Paris Cité, CNRS)

9:00am Mathew Wells (U Toronto)	Influence of convective sedimentation on particle settling rates beneath river plumes[Video][CC]
9:45am Jeffrey Morris (CCNY)	Two topics in sheared suspensions: Contact force networks and inertial flow transitions[Slides][Video][CC]
10:30am	Morning Break
11:00am Cacey Bester (Swarthmore)	Granular physics with a geological context: Creep in a photoelastic granular medium[Slides][Video][CC]
11:30am Bernhard Vowinckel (TU Braunschweig)	Rheology of sheared sediment beds: Particle resolved simulations[Slides][Video][CC]
12:00pm Franco Tapia (U. Tokyo)	Local rheology: Viscous to inertial transition in dense suspensions[Video][CC]
12:30pm	Lunch Break

Granular/suspension flows: The granularity of particulate flows

2:00pm Pascale Aussillous (Aix-Marseille U)	Flow of immersed granular media: experiments and continuum two-phase modelling[Slides][Video][CC]
2:45pm Tian-Jian Hsu (U Delaware)	The role of turbulent coherent structures on the evolving seabed[Slides][Video][CC]
3:30pm	Afternoon Break
4:00pm Corey O'hern (Yale)	Local fluctuations in the shear modulus of granular beds[Slides][Video][CC]
4:45pm Kyle Strom (Virginia Tech)	Field and laboratory observations of floc aggregates in muddy suspensions[Video][CC]
5:30pm	Cocktail Reception
6:00pm	Dinners
8:00pm	Shuttle to BWSCI

Thursday, Nov 3, 2022

Geophysical flows can be creepy, Chair: Michael Manga (Berkeley)

9:00am Douglas Jerolmack (U Penn)	From creepy to catastrophic: some puzzling behaviors of natural particle-fluid mixtures across the dry to dilute regimes[Video][CC]
9:30am Kimberly Hill (Minnesota)	Considerations of simultaneous influences of climate, local sediments, and hydrology in the behaviors of debris flows on alluvial fans: field measurements and laboratory experiments[Video][CC]
10:00am George Bergantz (UW)	On the remarkable diversity of multiphase processes in volcanic systems[Slides][Video][CC]

10:30am

Morning Break

11:00am Valerie Vidal (ENS Lyon)

[Emergence of oscillations during fluid injection in water-saturated sands\[Video\]\[CC\]](#)

11:45am Nathalie Vriend (CU Boulder)

[Bedform dynamics: interaction, attraction and repulsion of dunes\[Video\]\[CC\]](#)

12:30pm

Lunch Break

Explosive volcanic eruptions, Chair: Michael Manga (Berkeley)

2:00pm Joe Dufek (U Oregon)

[Granular and fluid instabilities in explosive volcanic eruptions: Consequences of clustering and collisions in compressible flows\[Video\]\[CC\]](#)

2:30pm Gert Lube (Massey U)

[The turbulence characteristics of pyroclastic density currents and their relationships with flow runout, deposition, and hazard behaviours\[Video\]\[CC\]](#)

3:00pm Olivier Roche (IRD-UCA)

[Factors controlling the runout distance of pyroclastic density currents: statistical analysis and implications\[Video\]\[CC\]](#)

3:30pm **CONFERENCE END SHUTTLE TO BWSCI *Also available to SB Airport and SB Airbus, Goleta location (See Registration Desk BEFORE THURSDAY to sign up.)**