

KAVLI INSTITUTE FOR THEORETICAL PHYSICS
www.kitp.ucsb.edu

KITP Conference: Frontiers in Oceanic, Atmospheric, and Cryospheric Boundary Layers

(May 21-25, 2018)

**Coordinators: Baylor Fox-Kemper, Daria Halkides, Brad Marston, and
Fiamma Straneo**

Monday, May 21, 2018

**Session: Planetary Circulations & Turbulence, Chair: Baylor Fox-Kemper
(Brown U.)**

| | |
|-------------------------------------|---|
| 8:50am Lars Bildsten (KITP) | Welcome |
| 8:55am Baylor Fox-Kemper (Brown U.) | Introduction: A brief summary of KITP boundary layer program so far |
| 9:00am Peter Sullivan (NCAR / UCAR) | Temperature fronts in stable boundary layers |
| 9:45am Jim McWilliams (UCLA) | Oceanic boundary layer frontogenesis & wave interactions |
| 10:30am | Morning Break |
| 11:00am Keith Julien (CU Boulder) | Investigations of rapidly rotating, stratified & nonhydrostatic flows |
| 11:45am Leif Thomas (Stanford) | Symmetric Instability (SI)- Turbulence: A Unique Form of BL Turbulence |
| 12:30pm | Lunch Break |
| 2:00pm Krista Soderlund (U. Texas) | Convective Dynamics of Icy Ocean Worlds |
| 2:45pm Yong Hu (LaRC) | Ocean & atmos. BL measurements from existing & future space based lidar |
| 3:30pm | Afternoon Break |

Session: Ocean Biophysics, Chair: Dimitris Menemenlis (JPL)

| | |
|------------------------------------|---|
| 4:00pm Laure Resplandy (Princeton) | Carbon export in the ocean: gravitational, mixed-layer & subduction pumps |
|------------------------------------|---|

4: 45pm Kelvin Richards (IPRC) The impact of marine viruses in a
stirring and mixing environment

5: 30pm **SHUTTLE TO BWSCI**

Tuesday, May 22, 2018

Session: Clouds & Convection, Chair: Brad Marston (Brown U.)

9: 00am Chris Bretherton (U. Washington) Physical processes and pattern
formation in cloudy boundary layers

9: 45am Tapio Schneider (Caltech) Unifying the modeling of BLs,
convection, clouds & driving it with
data

10: 30am **Morning Break**

11: 00am Joao Teixeira (JPL) Subtropical Turbulence and Clouds:
From LES to Climate Models

11: 45am Jonathan Mitchell (UCLA) Stratus and stable layers in the Solar
System (boundaries optional)

12: 30pm **Lunch Break**

2: 00pm Sergej Zilitinkevich (Helsinki) Revision of conventional theory of
turbulence in essentially stratified
flows

Session: Cryospheric Boundary Layers, Chair: Andy Thompson (Caltech)

2: 45pm Dimitris Menemenlis (JPL) Don't let your PBL scheme be
rejected by brine!

3: 30pm **Afternoon Break**

4: 00pm G. Manucharyan (Caltech) Submesoscale sea ice-ocean
interactions in marginal ice zones

4: 45pm Ian Eisenman (UCSD) Iceberg dynamics in glacial and
modern oceans

5: 30pm **RECEPTION**

6: 00pm **SPECIAL EVENTS DINNER**

8: 00pm **SHUTTLE TO BWSCI**

Wednesday, May 23, 2018

Session: Climate Linkages, Chair: Brodie Pearson (Brown U.)

- 9:00am George Philander (Princeton) The Precarious Present: Is Global Warming Inhibiting an Incipient Ice Age?
- 9:45am Surendra Adhikari (Caltech) Solitary Waves of Glacial Mass Loss Detected in Greenland Crustal Motion
- 10:30am **Morning Break**
- 11:00am Paul Kushner (U. Toronto) Which burners heat up the Arctic atmosphere?
- 11:45am Simona Bordoni (Caltech) Role of BL dynamics in large-scale Hadley circulations & convergence zones
- 12:30pm **Lunch Break**
- 2:00pm **FREE AFTERNOON **Shuttle Available to BWSCI****

Thursday, May 24, 2018

Session: Interdisciplinary, Chair: Qing LI (Brown U.)

- 9:00am Wes Patterson (JHU/APL) Exploring Europa : Jupiter's Ocean World
- 9:45am Frank Bryan (NCAR) Mesoscale Air-Sea Interaction
- 10:30am **Morning Break**
- 11:00am Juan Restrepo (OSU) Defining a Trend in A Time Series: Can We Tell How Warm it's Getting?
- 11:45am Hussein Aluie (U. Rochester) Energy Pathways & Cascades in both Scale and Space: Ocean Applications
- 12:30pm **Lunch Break**
- 2:00pm Tom Dunne (UCSB) On the geophysical aspects of the local debris flows
- 2:45pm **Afternoon Break**

Session: Diversity & Retention in Earth & Planetary Sciences, Chair: D. Halkides (ESR)

- 3:00pm George Philander (Princeton) The Hedgehog and the Fox A Nelson Mandela Perspective on Global Warming
- 3:45pm Ashanti Johnson (Cirrus Acad) Diversity & retention of underrepresented groups in STEM & Earth Sciences

4:30pm Open discussion forum

5:30pm **RECEPTION**

6:00pm **SPECIAL EVENTS DINNER**

8:00pm **SHUTTLE TO BWSCI**

Friday, May 25, 2018

Session: Ocean Mixing, Chair: Shafer Smith (Courant Institute)

9:00am Andy Thompson (Caltech) Evolution & arrest of a turbulent stratified oceanic bottom BL over a slope

9:45am Stephen Belcher (U. Reading) The OSMOSIS Project

10:30am **Morning Break**

11:00am

11:45am Discussion

12:30pm **Lunch Break**

2:00pm **CONFERENCE ENDS - SHUTTLE TO BWSCI *Also available to SB Airport and SB Airbus, Goleta location (See Registration Desk BEFORE FRIDAY to sign up.)**