Special CEAFM Seminar: Fall 2016

JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Date: **Monday, September 26, 2016 (Special Date)**

Time: 2:00 p.m. **(Special Time)**

Location: Latrobe Hall # 106 **(Special Location)**

Speaker: **Dr. Christopher J. Keylock** (University of Sheffield)

Title: ***"The Velocity-Intermittency Approach to Studying Environmental Turbulence"***

Abstract

It is increasingly recognised that some knowledge of coherent structure dynamics is useful for understanding the dynamics of environmental processes. However, it is common in the field to be making single-point measurements of one or two velocity components, meaning that the velocity gradient tensor is not accessible. Velocity-intermittency methods are useful in identifying, at the very least, "active periods" in a time series, if not coherent structures in the formal sense. Work so far permits us to define different canonical turbulent flows based on their velocity-intermittency structure, which provides a possible means to classify complex, environmental flows. This whole approach also raises fundamental questions about the manner in which Kolmogorov's ideas operate in environmental flows. In this talk, I will outline how we have implemented the velocity-intermittency approach and consider three examples: canopy flows in the atmosphere and hydrosphere, flow over alluvial bed-forms and scale-to-scale coupling in boundary-layers.

Bio

Dr. Keylock studied at Oxford and the University of British Columbia before working for the Icelandic Meteorological Office and then going on to complete his PhD at Cambridge. He currently works in the Department of Civil and Structural Engineering, University of Sheffield and is an Associate Editor for Water Resources Research. His early work was on the development of risk analysis methods for snow avalanches, and more recent work in this field has focused on the measurement of avalanche dynamics. His primary interests at present are on the dynamics of turbulence phenomena, with a view to enhancing fundamental understanding of environmental flows. He edited a collection of papers on fundamental aspects of such matters, published as the April 2016 edition of Fluid Dynamics Research.