

Weekly CEA FM Seminar: Spring 2015



JOHNS HOPKINS

Center for Environmental
& Applied Fluid Mechanics

Date: **Friday, January 30, 2015**
Time: 11:00 AM
Location: Gilman Hall # 132
Speaker: **Prof. Alexander Smits** (Princeton University)
Title: ***"High Reynolds number flows, the atmospheric boundary layer, and wind turbines"***

Abstract

The flow over large vehicles, such as ships, submarines, and airplanes are typified by high Reynolds number flows. This is also true for the atmospheric boundary layer (ABL), and so the understanding of turbulence at high Reynolds number is crucial to the prediction of many important flows. We use pipe and boundary layer flow measurements over a very large Reynolds number range to examine scaling behaviors, and show that at sufficiently high Reynolds number these flows reveal both expected and unexpected implications for our understanding and our capacity to model turbulence. We have also examined the effects of stable stratification on turbulent transport, which reflects the behavior of the nighttime ABL, and methods for experimentally modeling the performance of wind turbines, and their interaction with the ABL.

Bio

Dr. Smits is the Eugene Higgins Professor of Mechanical and Aerospace Engineering at Princeton, as well as a Professorial Fellow at Monash University in Australia. His research interests are centered on fundamental, experimental research in turbulence and fluid mechanics.