AIR ENTRAINMENT BY BREAKING WAVES

Thursday, February 1, 2018 | 3:00pm
2164 Martin Hall, DeWALT Seminar Room

Guest Speaker
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ABSTRACT
Breaking waves at the water surface is a striking example of turbulent mixing across a fluid interface. The impact of the jet generates turbulence, entrains air into the water and ejects droplets into the air. A fundamental understanding of the general multi-scale properties of the resulting multiphase turbulent flow is necessary to develop more accurate gas transfer or spray generation parameterizations.

In this talk, Dr. Deike will discuss a model for air entrainment by breaking waves in the ocean, based on laboratory experiments and direct numerical simulations at the wave and bubble scale, and then up-scaled to the ocean using measurements of the wave and wave breaking statistics. This approach leads to semi-empirical formulas relating wind and wave variable, such as wind speed and significant wave height, to air entrainment by breaking. He will discuss implications for air-sea exchanges of gases and marine aerosols, key to the climate system.

BIO
Since 2017, Dr. Luc Deike has been an Assistant Professor at Princeton University, in the Mechanical and Aerospace Engineering Department and the Princeton Environmental Institute. Previously he was a postdoctoral researcher at Scripps Institution of Oceanography (2013-2016). He received his PhD in Physics at University Sorbonne Paris Cite (2013).