43rd ISEE/CICR colloquium

Speaker: Dr. Bjorn Stevens, Director at Max-Planck Institute for Meteorology and Professor at University of Hamburg

ISEE coordinator: Dr. Hirohiko Masunaga (Division for Meteorological and Atmospheric Research)

Date and Time: Dec 25 (Tue), 2018, 15:00-16:30

Place: Research Institutes Building I (ISEE), 6th floor meeting space (617)

Title: "Shallow clouds and circulations"

Abstract: Shallow cloud systems, in the tropics, have long been the focus of studies trying to constrain Earth's equilibrium climate sensitivity, and are thought to be important for the climate system through their disproportionate sensitivity to aerosol forcing. Recent work, by our group and others, show them to also be important in idealized studies of convective aggregation, through their radiative cooling of the boundary layer and its influence mass transport in the boundary layer. Both work with simple conceptual models and an analysis of the structure of the inter-tropical convergence zone, as evident in aqua-planet simulations using state of the art-climate models, suggests that similar effects of shallow convection may help explain the very different structure of the ITCZ in these models. Prospects for better understanding shallow clouds, using large-eddy simulation and storm resolving models, also on very large-domains so as to capture their interaction with much larger scale circulations, as well as from ongoing and planned observations, are outlined.