Speaker:
Jonah Bloch-Johnson, Department of the geophysical sciences, University of Chicago

Title: “Feedback temperature-dependence and the risk of extreme global warming”

Time: 9:30, Tuesday 21.06.2016
Room: CHN P12

If you want to talk to Jonah on Monday (20th) or Tuesday (21st), please contact Maria Rugenstein (maria.rugenstein@env.ethz.ch)

Abstract

The Earth's climate is kept stable by a negative feedback: increases in the net energy flux into the planet lead to warming, which in turn leads to a reduction in this flux. The strength of this negative feedback determines the surface temperature response of the planet to perturbations such as increases in greenhouse gas concentrations. If the strength of this feedback itself depends on temperature, the temperature response can change drastically, becoming nonlinear or even discontinuous. Examinations of previous studies conducted with general circulation models suggest that these drastic changes in sensitivity are possible under anthropogenic emissions. Further, even though these outcomes are unlikely, their likelihood dominates assessment of the risk of warming. Using a perturbed physics ensemble of the NCAR atmospheric model, the causes of feedback temperature dependence are explored.