

CGD SEMINAR



DATE: Tuesday, 23 May 2017

TIME: 11 a.m.

LOCATION: NCAR, 1850 Table Mesa Drive
Mesa Lab, Main Seminar Room

TITLE: Observations and modeling of the
atmospheric boundary layer and its
impact on the general circulation

SPEAKER: Gunilla Svensson, Stockholm University

ABSTRACT:

The atmospheric boundary layer is the turbulent layer that is in contact with the surface and where the exchange of heat and momentum by turbulent processes occur. Turbulence is a small-scale process that are not resolved in numerical models used for weather prediction and climate projections and therefore has to be parameterized. Some evaluation of boundary-layer properties and surface fluxes will be presented. The focus will be on the link between the momentum transfer at the surface and its effects on the general circulation.

The effect of the boundary-layer friction on large-scale circulation can be expressed in terms of the cross-isobaric flow angle, related to the surface stress acting on the flow. Analysis of this angle reveals that it is systematically underestimated in climate models and reanalysis products. An idealized single-column model framework and LES results are used to examine the turning angle over a range of geostrophic winds and static stabilities. It is found that both the vertical resolution and the stability functions, e.g. the so-called long- and short-tail formulation in stably stratified conditions, impact the cross-isobaric angle.

Live webcast: <http://www.fin.ucar.edu/it/mms/ml-live.htm>

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