SNICAR-AD: A unified shortwave radiative transfer treatment for snow on land and snow on sea ice

Cheng Dang, Charlie Zender
(University of California, Irvine)

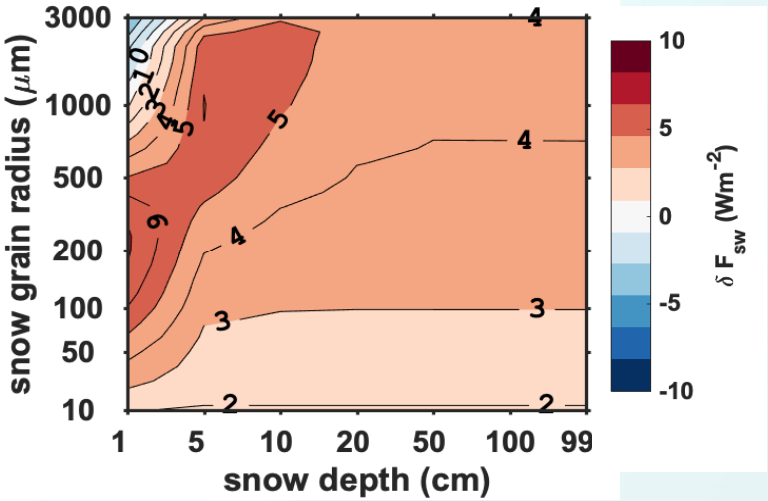
Mark Flanner
Adrian Turner, Stephen Price, Mark Petersen , Qi Tang

SNICAR-AD: A unified shortwave radiative transfer treatment for snow on land and snow on sea ice

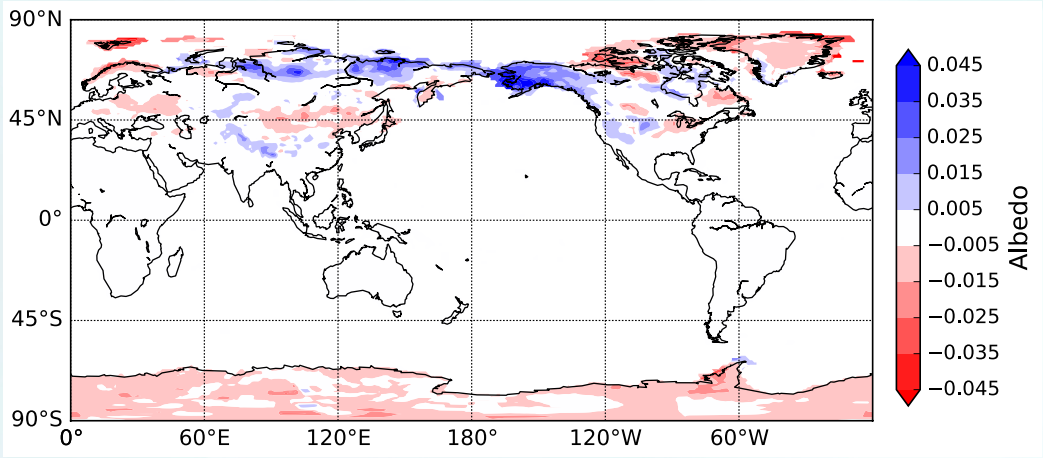
Land vs. MPAS-Seaice

10-year E3SM SNICAR_AD.exp vs. Deckv1b

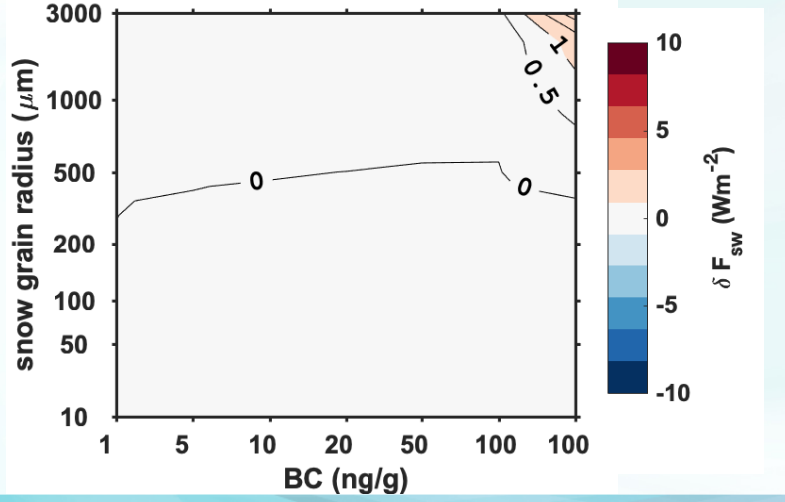
Pure snow



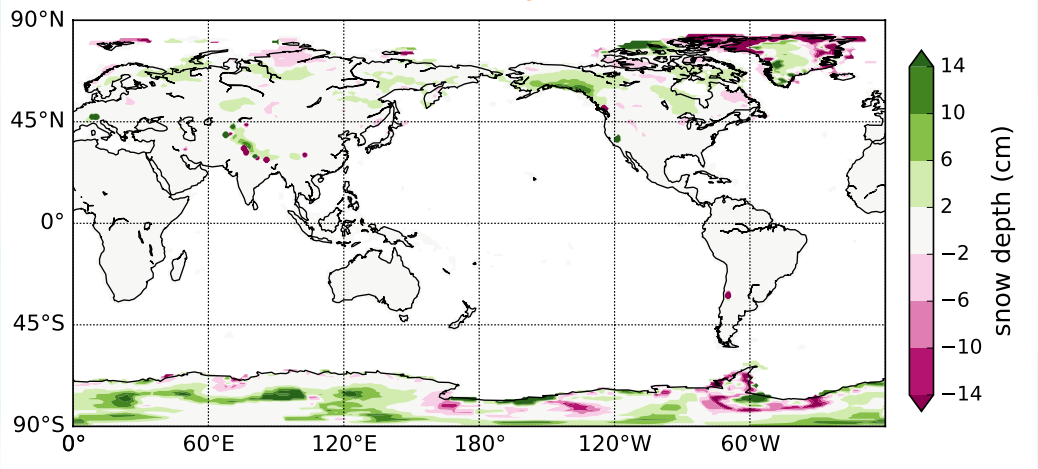
Albedo



Radiative effects by BC



Snow Depth

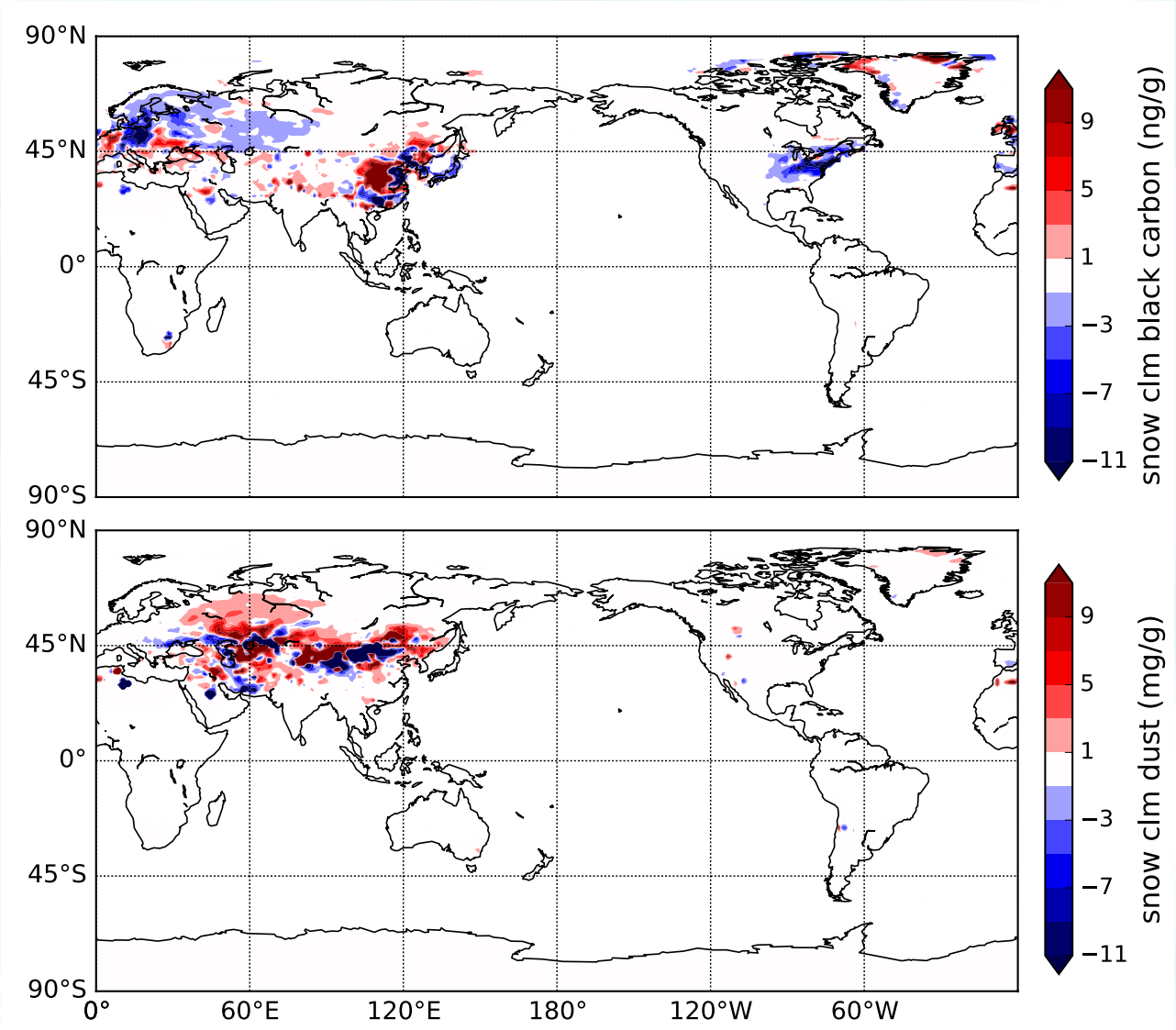


SNICAR-AD: A unified shortwave radiative transfer treatment for snow on land and snow on sea ice

10-year E3SM SNICAR_AD.exp vs. Deckv1b

Black Carbon

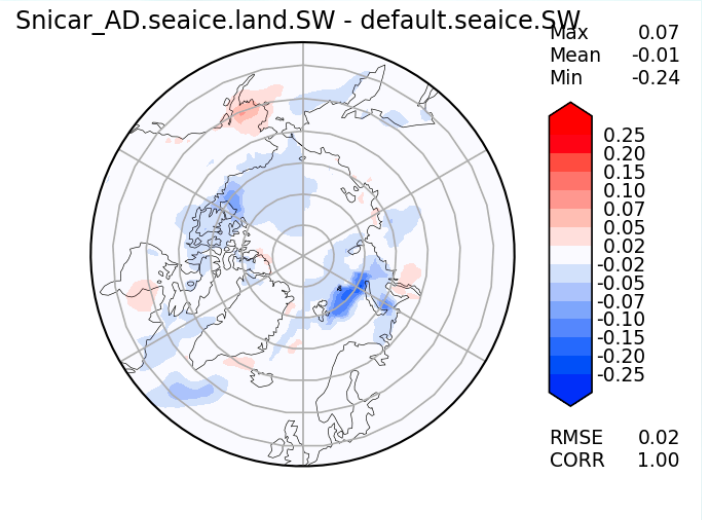
Dust

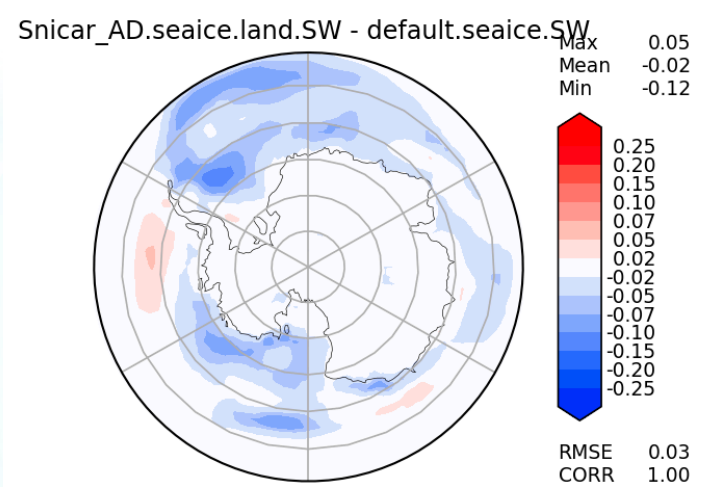


SNICAR-AD: A unified shortwave radiative transfer treatment for snow on land and snow on sea ice

10-year E3SM SNICAR_AD.exp vs. Deckv1b

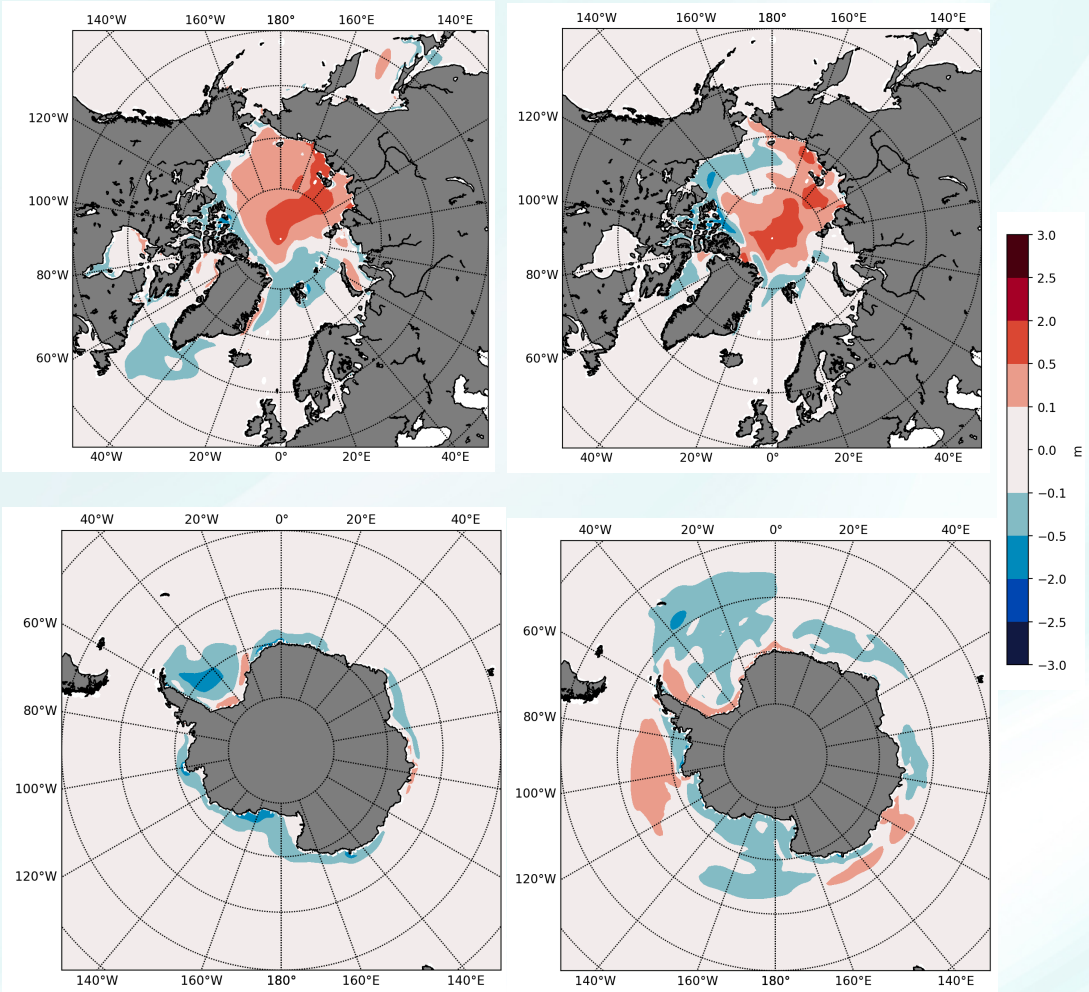
Surface albedo





ANN

Sea-ice thickness



Feb. Mar.

Oct. Nov.

- Dang, C., Zender, C. S., and Flanner, M. G.: Inter-comparison and improvement of 2-stream shortwave radiative transfer models for unified treatment of cryospheric surfaces in ESMs, The Cryosphere Discuss., https://doi.org/10.5194/tc-2019-22, in review, 2019.

- E3SM diags: https://portal.nersc.gov/project/m2833/cdang/e3sm_diags.m2m.SNICAR_AD_seaice_land.piControl.ne30_oEC.edison/viewer/

- MPAS-analysis: https://portal.nersc.gov/project/m2833/cdang/mpas_analysis.m2m.SNICAR_AD_landseaice_vs_seaice.piControl.ne30_oEC.edison/

Cheng Dang (cdang5@uci.edu)