







Reducing the Southern Ocean Shortwave Bias through Improved Representations of Marine Boundary Layer Mixing:

Case Study Analyses

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Comparison between ICON and Observations

Motivation:

- radiative bias observed in Southern Ocean with ICON due to an underestimation of boundary layer clouds
- reduced by new triggering of shallow convection

ICON:

test different shallow convection/turbulence parameterization

Observations:

- HIMAWARI: cloud distribution, cloud reflectivity
- SOCRATES (02.2018) aircraft
- MARCUS (10.2017-03.2018) ship



SOCRATES – RF11

RF11:

- Date: 20180217
- Place: South of Tasmania
- Aircraft HIAPER
- Cumulus in cold sector of a cyclone

Instruments:

• Radar, lidar, in-situ probes, 7 dropsondes launched

Study:

- Vertical profiles from dropsondes
- Radar reflectivity
- Vertical wind variance



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radar observations and ICON

· Expand analysis to MARCUS

Mech. M. et al. (2020) PRMTRA 1.0: the Passive and Active Mil

radiometer and radar measurements of the cloudy strengthere. Geosci. Model Dev. 13, 4229-4251 https://doi.org/10.5394/gmd-33-4225-2020



