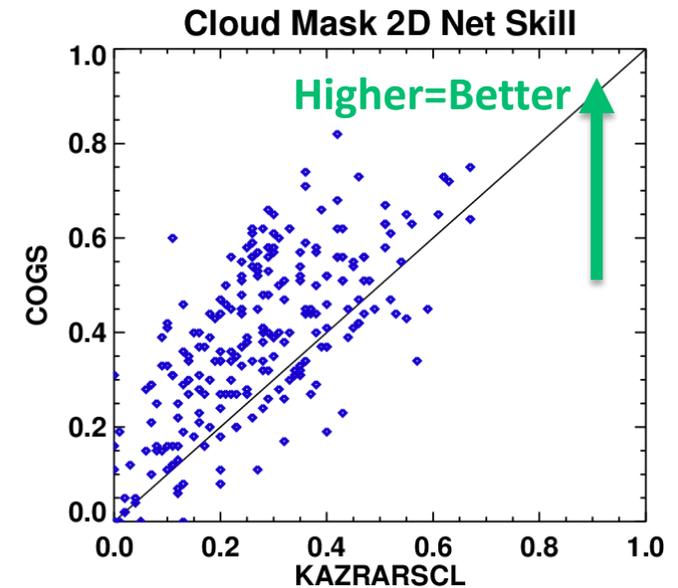


# LASSO Update for Shallow Convection

ARM

- ▶ LASSO paper in BAMS just released as the primary citation, (Gustafson et al, 2020)
- ▶ Releasing 17 new shallow-convection cases for 2019 and then shallow convection goes on hiatus
- ▶ Adding high-frequency observations to bundles
- ▶ COGS cloud masks lead to better LES cloud verifications →
- ▶ Reprocessing cases to fix bugs in VARANAL and ECMWF forcings
  - VARANAL impacted for 2018 and one case in 2015
  - ECMWF vertical velocity is off by 10x (all cases)
- ▶ Contact Bill Gustafson and Andy Vogelmann at [lasso@arm.gov](mailto:lasso@arm.gov)



Comparison of time-height cloud skill for 2018 cases using cloud masks from KAZRARSCl vs. COGS.

## New CACTI LASSO Scenario

- ▶ Developing the CACTI scenario this year and expect simulation integration to continue into 2021
- ▶ Primary science drivers focus on life cycle and behavior of initiating and initially isolated deep convective cells
  - Convective initiation, e.g., what determines timing, scale, and location of initiation?
  - Early upscale growth, e.g., how do internal storm dynamics vs. the environment control growth?
- ▶ Implications of science drivers on configuration choices
  - Both initiation & growth require resolving thermals within convective cores
  - Both require frequent sampling to identify evolution of statistics and motion

## CACTI Modeling Approach

- ▶ Aiming for ~10 cases with convective initiation near the AMF site
- ▶ Using ensembles for forcing selection
  - Ensembles of km-scale grid spacing to identify which forcing likely works best for LES
  - CACTI obs. used to vet the ensembles and LES
  - 1–3 LES per case, dependent on available computing resources
- ▶ Nature runs with 100 m grid spacing, domain size and position adjusted based on storm
- ▶ We want to know how you would use ARM's simulations to help us design them! [lasso@arm.gov](mailto:lasso@arm.gov)

