



**Scenario: Present day (2020)**

**CKD model: RRTMGP**

Bias TOA upwelling:  $-0.27 \text{ W m}^{-2}$

Bias surface downwelling:  $-0.36 \text{ W m}^{-2}$

RMSE TOA upwelling:  $0.37 \text{ W m}^{-2}$

RMSE surface downwelling:  $0.78 \text{ W m}^{-2}$

RMSE heating rate (0.02-4 hPa):  $0.236 \text{ K d}^{-1}$

RMSE heating rate (4-1100 hPa):  $0.057 \text{ K d}^{-1}$