



**Scenario: Present-day (2020)**

**CKD model: ecRad-RRTMG (fix SSI)**

Bias TOA upwelling:  $0.68 \text{ W m}^{-2}$

Bias surface downwelling:  $1.75 \text{ W m}^{-2}$

RMSE TOA upwelling:  $0.76 \text{ W m}^{-2}$

RMSE surface downwelling:  $1.96 \text{ W m}^{-2}$

RMSE heating rate (0.02-4 hPa):  $0.660 \text{ K d}^{-1}$

RMSE heating rate (4-1100 hPa):  $0.136 \text{ K d}^{-1}$