



Future changes in East Asia Summer Monsoon

Fangxing Tian, Buwen Dong, Jon Robson, and Rowan Sutton

Reading, Meteorology, Reading, United Kingdom (fangxing.tian@reading.ac.uk)

Projected changes in East Asian summer monsoon (EASM) between present day (1994-2011) and future period (2045-2055) are analyzed by using two coupled climate model (MetUM-GOML1 and MetUM-GOML2) under RCP 4.5 scenario. The result shows precipitation over eastern China increased by around 1mm/day. This increase is contributed by both dynamic and thermodynamic components. The dynamic component is related to the enhanced EASM, because the warming over land is much stronger than over ocean. The increased thermodynamic component is because the warming of ocean increases the air specific humidity. Over a small region on south eastern China, the changes of precipitation have opposite sign, which is decreased in GOML1 and increased in GOML2. This difference reflects the large uncertainty in future precipitation change over the East Asian monsoon area. For the surface air temperature, both the maximum and minimum daily temperature increased in future. The temperature increase over south eastern China is mainly due to the decrease of AOD, which enhanced the solar radiation. Over north western China, the cloud amount decreased, leading to more solar radiation. The increased solar radiation decreases soil moisture and then less latent heat flux. Finally, the surface warming is enhanced.