Geophysical Research Abstracts
Vol. 20, EGU2018-11540, 2018
EGU General Assembly 2018

Modeling comparisons to ORACLES airborne observations of smoke and clouds in the southeast Atlantic

Samuel LeBlanc (1,2), Pablo Saide (3), Paquita Zuidema (4), Sarah Doherty (5), Yohei Shinozuka (1,2), Yang Zhang (6), Leonhard Pfister (7), Ju-Mee Ryoo (1,2), Jens Redemann (7), Sharon Burton (8), Richard Ferrare (8), Steve Howell (9), Steffen Freitag (9), Amie Dobracki (9), and the ORACLES science team

(1) Bay Area Environmental Research Institute, Petaulma, California, USA, (2) NASA Ames Research Center Cooperative for Research in Earth Science and Technology, Moffett Field, California, USA, (3) University of California, Los Angeles, Los Angeles, California, USA, (4) University of Miami, Miami, Florida, USA, (5) JISAO, Univ. of Washington, Seattle, Washington, USA, (6) North Carolina State University, Raleigh, North Carolina, USA, (7) NASA Ames Research Center, Moffett Field, California, USA, (8) NASA Langley Research Center, Hampton, Virginia, USA, (9) University of Hawaii at Manoa, Honolulu, Hawaii, USA

Smoke from biomass burning is a global-scale pollutant generating deep impacts to our society and planet. Smoke interactions with the cloudy boundary layer of the southeast Atlantic, both radiative and microphysical, affect the regional radiative climate, with implications for the regional distribution of precipitation. An ability to accurately model and forecast this phenomenon is crucial to further our understanding of the impacts. Here we quantify how well the smoke and cloud properties are simulated when compared to observations over the southeast Atlantic made during the first deployment of the NASA ORACLES (ObseRvations of Aerosols above CLouds and their intEractionS) field experiment. We sample the modeled fields from the locations and times of our 2016 airborne measurements and calculate their mean, median, standard deviation and percentiles for 2x2 degree longitude-latitude boxes. In addition, we compare the vertical distributions of clouds and aerosols and of aerosol properties, since this is a strong determinant of both the aerosols direct forcing and its impact on clouds. We present observation-model comparisons for a wide range of aerosol and related properties including black carbon mass, organic aerosol mass, carbon monoxide mixing ratio, single scattering albedo and cloud fraction.