Reducing OCO-2 regional biases through novel 3D cloud, albedo, and meteorology estimation

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Poster

3d-clouds effects result from scattering from clouds outside the field of view. These effects have previously been shown to result in a bias in estimate of carbon dioxide on the order of 0.4 ppm for good quality, bias-corrected OCO-2 observations affected by 3d-clouds (Massie et al., 2021). In this paper we directly retrieve 3d-clouds from OCO-2 synthetic and actual radiances utilizing a spectral parametrization of 3d-clouds (Schmidt et al., 2023). We find that retrieving 3d-clouds improves carbon dioxide biases in scenes affected by 3d-clouds over ocean but does not improve XCO2 over land.

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