Geophysical Research Abstracts
Vol. 17, EGU2015-6988-1, 2015
EGU General Assembly 2015

Detection limits of CDNC and albedo changes by Marine Cloud Brightening

Aswathy V.N, Johannes Quaas, and Johannes Mülmenstädt
Universitat Leipzig, Leipzig, Germany (aswathy.nair@uni-leipzig.de)

Marine cloud brightening (MCB) is one of the proposed futuristic climate engineering techniques. MCB aims in seeding marine stratocumulus clouds with cloud condensation nuclei which might increase the cloud droplet number concentration(CDNC) and thereby increasing the albedo of the clouds.
Clouds are highly variable, complex and inhomogeneous in nature. Detecting the signals of climate engineering in the high natural variability of clouds is essential to prove the efficiency of climate engineering. Objective of this work is to perform a detection limit for the albedo change induced by MCB climate engineering. We thus provide a top-down approach reducing the extent in region and time period required to provide a statistically significant change in albedo due to MCB climate engineering.
Study involve satellite observations from MODIS and CERES. We evaluate the change in low could cover albedo with change in CDNC, which is derived from MODIS data. Study aim to provide a map of the detection limits for different regions in terms of CDNC increment as well as albedo change. We intend to provide a quantitative solution for otherwise obvious queries such as how large? how long? and how much intense? the MCB experiment should be to provide a statistically significant signal from the noisy natural variability. We also try to use signatures easier to identify in cloud properties, like temporally as well as spatially changing pattern in modification.