Geophysical Research Abstracts
Vol. 14, EGU2012-12823, 2012
EGU General Assembly 2012

Controlled Hurricane Weakening Via Marine Cloud Brightening

J Latham (1), B Parkes (2), A. Gadian (2), and S Salter (3)

(2) The University of Leeds, Institute of Climate and Atmospheric Science, School of Earth and Environment, Leeds, United Kingdom (b.parkes@see.leeds.ac.uk), (1) National Center for Atmospheric Research, USA, (3) University of Edinburgh, UK

The basic idea under examination herein is to cool ocean surface waters in regions in which the genesis and early development of hurricanes occurs. This would be achieved by seeding – with copious quantities of seawater cloud condensation nuclei (CCN) - low-level maritime stratocumulus clouds covering either these regions, or ones from which ocean currents flow to them. As a consequence, the cloud droplet number concentration within the clouds increases, thereby enhancing their reflectivity for incoming sunlight, and possibly their longevity. This approach is therefore a more localised application of the Marine Cloud Brightening geoengineering, global cooling technique (MCB). Herein we demonstrate, by utilising a climate ocean/atmosphere coupled HadGEM1 model, that – subject to defined caveats - judicious seeding of maritime stratocumulus clouds could substantially reduce sea surface temperatures (SSTs) in oceanic regions where hurricanes often develop. Thus the seeding might reduce hurricane intensity. The extent to which the magnitude of this effect could be controlled is yet to be determined.
Rough calculations based on observationally-based relationships between SST and maximum wind-speed together with the SST-reduction values emanating from our computations, suggest that cooling produced by MCB may be able to achieve a 1-category reduction of hurricane intensity, and prevent the formation of a significant number of hurricanes.