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# Quantifying DMS-cloud-climate interactions using the ECHAM5-HAMMOZ model

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The CLAW hypothesis (Charlson et al. 1987) proposes a feedback loop between ocean ecosystems and the earth ś climate. The exact contribution of each process in their proposed feedback loop is still uncertain. Here we use a state of the art general circulation model, ECHAM5-HAMMOZ, to assess changes in cloud microphysical properties arising from prescribed perturbations to oceanic dimethyl sulphide (DMS) emissions in a present day climate scenario. ECHAM5-HAMMOZ consists of three interlinked modules, the atmospheric model ECHAM5, the aerosol module HAM and the tropospheric chemistry module MOZ. This study focuses on the atmosphere over the southern oceans where anthropogenic influence is minimal. We investigate changes in a range of aerosol and cloud properties to establish and quantify the linkages between them. We focus on changes in cloud droplet number concentration (CDNC), cloud droplet effective radii, total cloud cover and radiative forcing due to changes in DMS. Our preliminary results suggest that ECHAM5-HAMMOZ produces a realistic simulation of the first and second indirect aerosols effects over the Southern Ocean. The regions with higher DMS emissions show an increase in CDNC, a decrease in cloud effective radius and an increase in cloud cover. The magnitude of these changes is quantified with the ECHAM5-HAMMOZ model and will be discussed in detail.