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Marine Aerosol Precursor Emissions for Earth System Models

(w14_marineaerosol)

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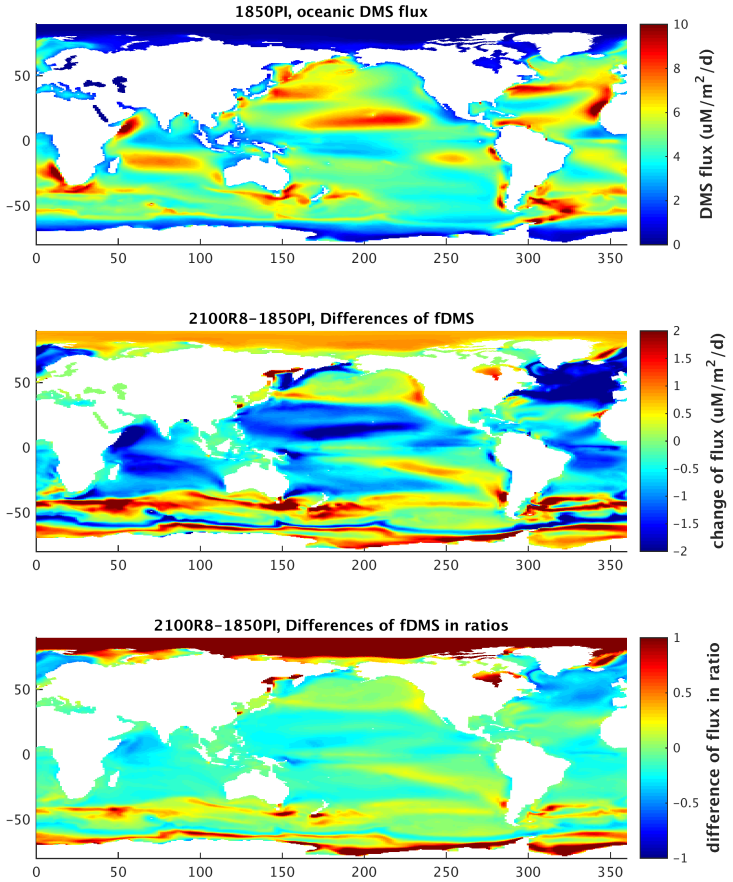
- Dimethyl sulfide (DMS) is generated by marine ecosystems and plays a major role in cloud formation over the ocean
- Currently, Earth System Models use imposed flux of DMS from the ocean to the atmosphere that is independent of the climate state
- We have added DMS as a prognostic variable to the Community Earth System Model (CESM) that depends on the distribution of phytoplankton species, and thus changes with climate
- DMS flux decreases by 8% overall in 2100 compared to 1850, but significant regional differences can be much larger
- Examination of cloud feedbacks related to marine DMS production is underway



Top: model-calculated DMS flux (averaged over the final 20 years of the run) from a Pre-Industrial (1850) simulation.
Middle: difference in DMS flux between the year 2100 run and 1850 run.
Bottom: the relative difference in DMS flux (middle panel divided by the top panel)