



## **Assessment of climate sensitivity to the representation of aerosols in a coupled ocean-atmosphere model**

Laura Watson, Martine Michou, Pierre Nabat, and David Saint-Martin  
Météo-France, CNRM, Toulouse, France (laura.watson@meteo.fr)

Atmospheric aerosols can significantly affect the Earth's radiative balance due to absorption, scattering, and indirect effects upon the climate system. Although our understanding of aerosol properties has improved over recent decades, aerosol radiative forcing remains as one of the largest uncertainties when projecting future climate change. A coupled ocean-atmosphere general circulation model was used to perform sensitivity tests in order to investigate how the representation of aerosols within the model can affect decadal climate variability. These tests included looking at the difference between using constant emissions versus using emissions that evolve over a period of thirty years; examining the impacts of including indirect effects from sea salt and organics; altering the aerosol optical properties; and using an interactive aerosol scheme versus using 2-D climatologies. The results of these sensitivity tests show how modifying certain aspects of the aerosol scheme can significantly modify radiative flux and global surface temperature.