

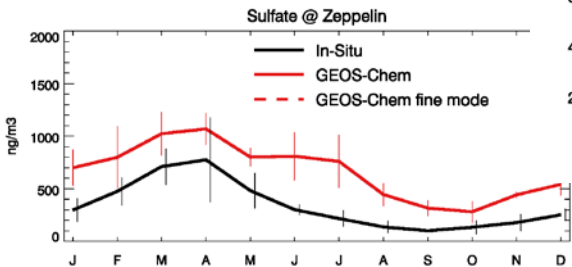
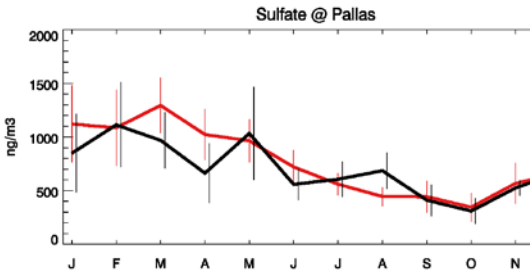
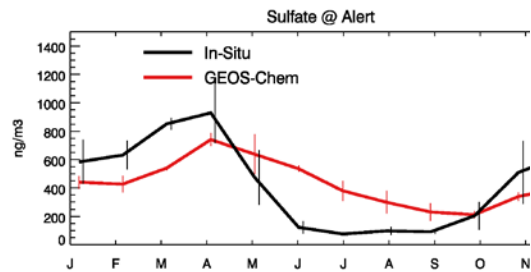
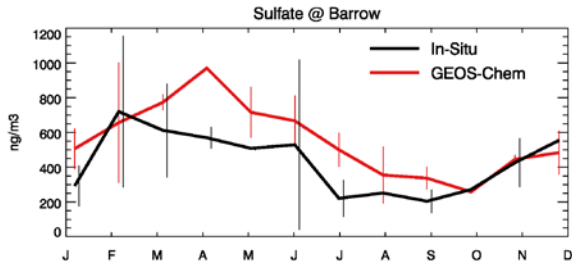
Spatial and temporal distribution of Arctic aerosols: Comparison between remote sensing, in-situ observations and GEOS-Chem

In-situ aerosol concentrations: surface

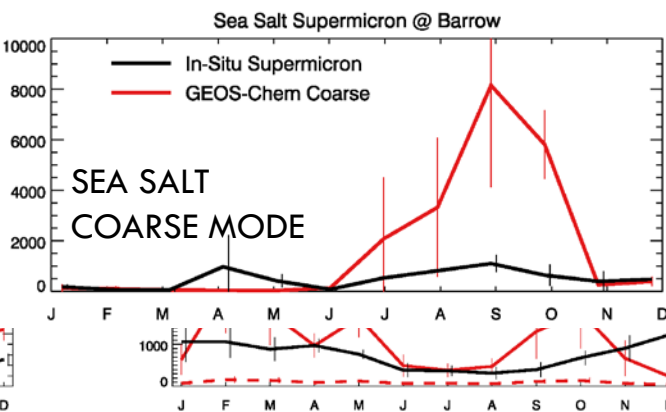
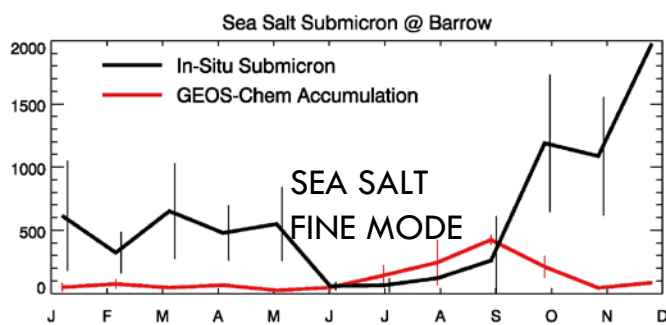
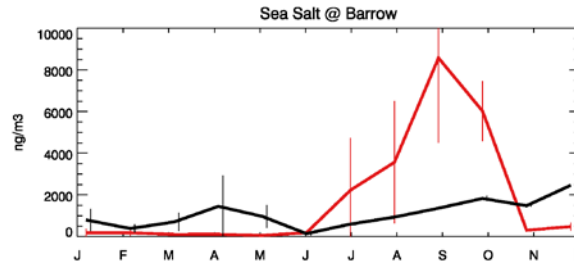
□ V9-01-03 Simulation, 2x2.5°, GFED-3 Daily Biomass Burning



Sulfate



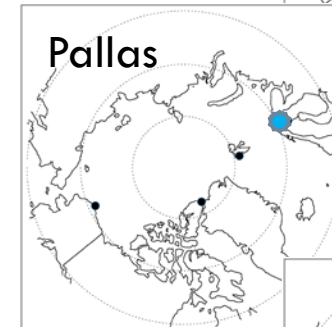
Sea Salt



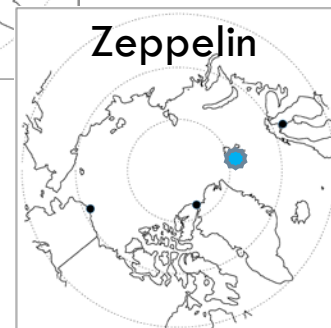
2006-2008



2006-2008

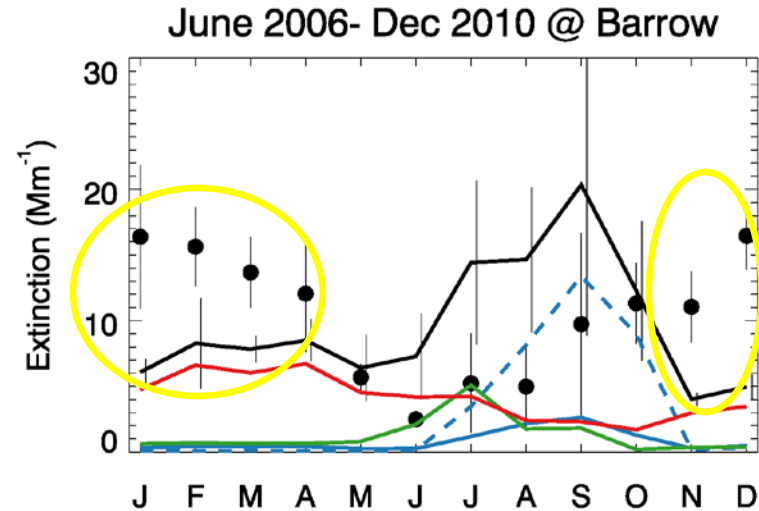
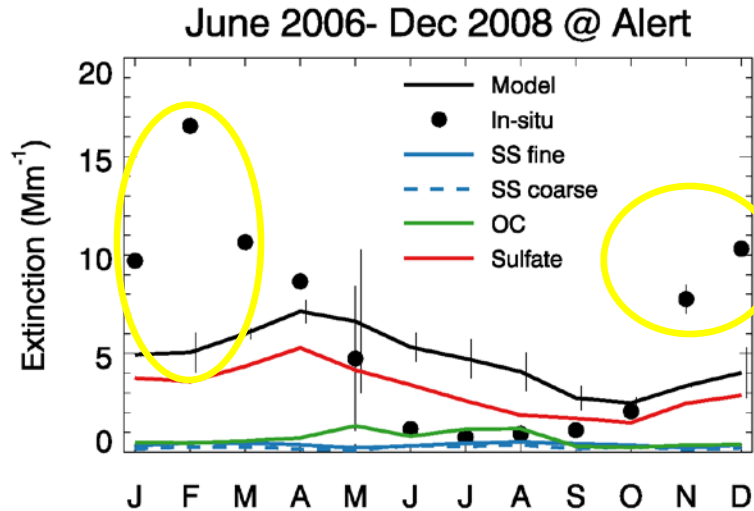


2006-2010

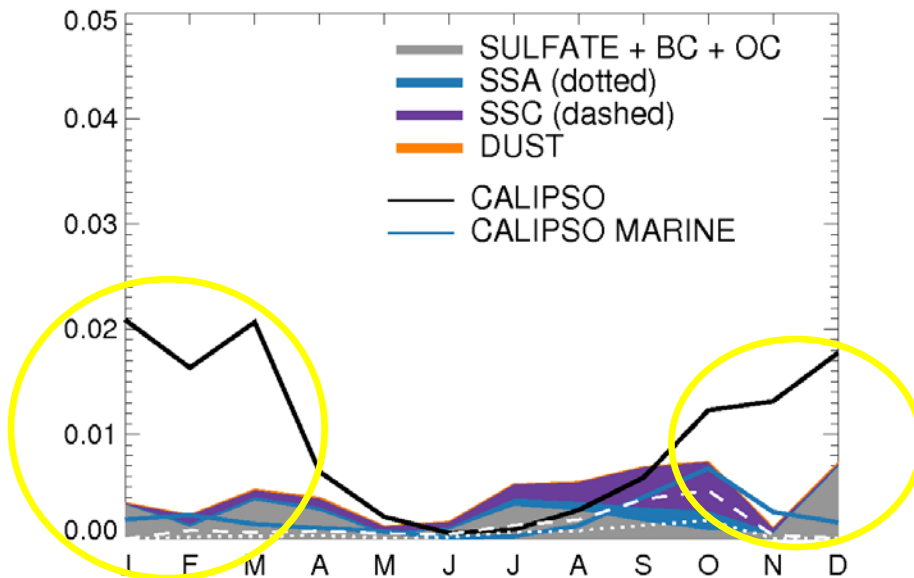


2006-2010

In-situ aerosol extinction at the surface



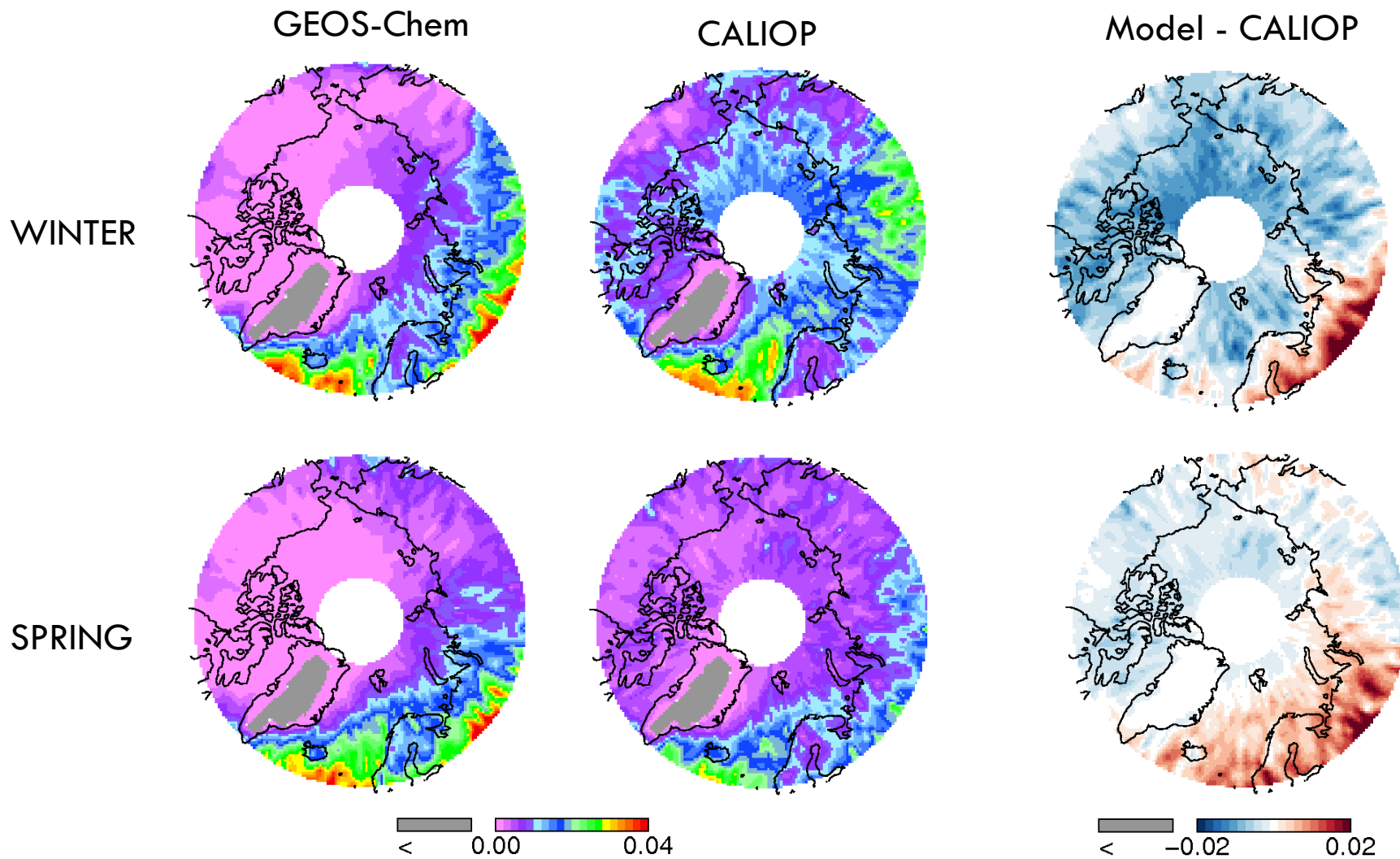
532 nm Mean Extinction 0-1 km(km^{-1}), All Arctic (70-82N)



- From November to March, the model underestimates the near-surface extinction by a factor 2-3

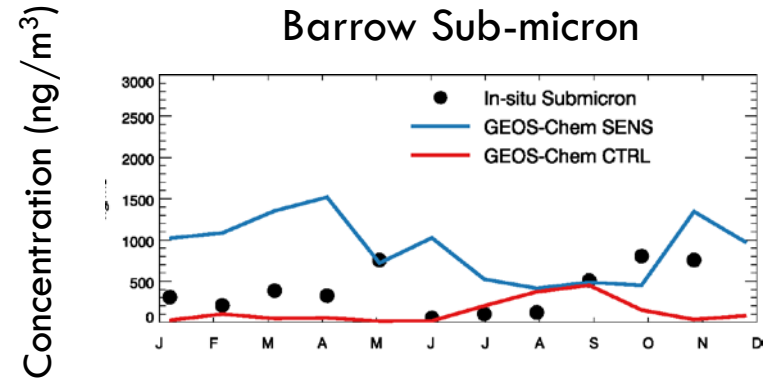
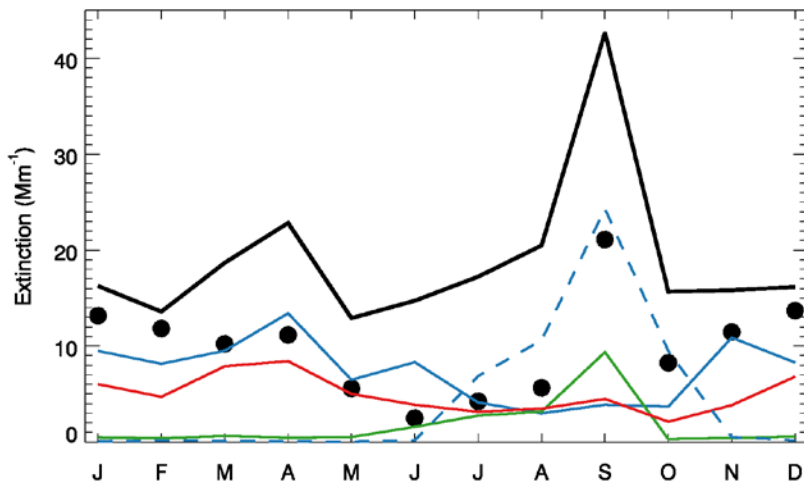
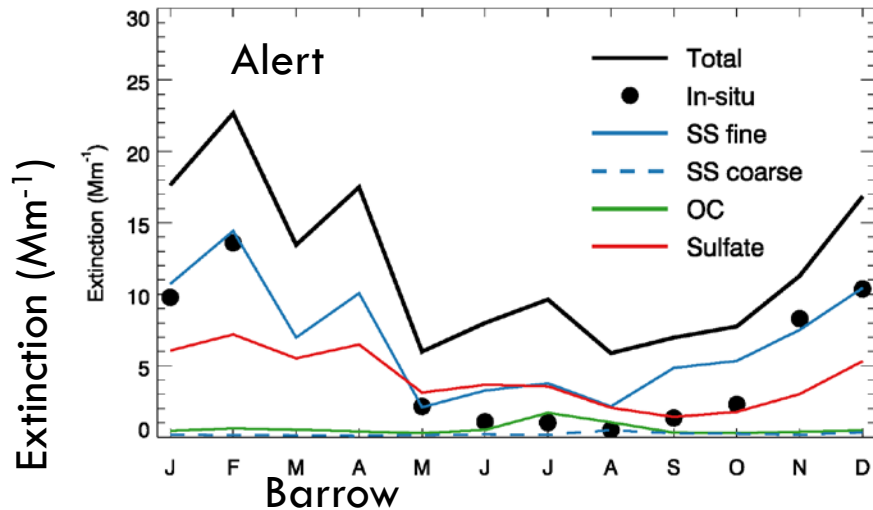
Near-surface extinction: comparison with CALIPSO in winter/spring

2006-2010 Mean extinction at 0-2 km (km^{-1})



Sensitivity simulation (year 2007)

- Double SO₂ emissions in central Russia and Kazakhstan (40-60N, 45-90E)
- Introduce fine sea salt source from sea ice : assumes that sea ice behaves as liquid water (Gong et al, 2005)



- The scheme overestimates fine sea salt by factor 2-3 at Barrow but it reproduces the seasonality of extinction
- The doubling of SO₂ impacts high latitude sulfate concentration in winter/spring the most (10-20%)

Thank you

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