

THE EFFECTS OF ANTHROPOGENIC AEROSOLS FROM CHILE AND MEXICO IN ECHAM-HAMMOZ



Tuuli Miinalainen¹ // Harri Kokkola² // Kari E.J. Lehtinen^{1,2} // Thomas Kühn^{1,2}

¹ Department of Applied Physics, University of Eastern Finland, Kuopio, Finland //

² Atmospheric Research Centre of Eastern Finland, Finnish Meteorological Institute, Kuopio, Finland

GLOBAL CLIMATE MODELING

Aerosol-climate model
ECHAM-HAMMOZ
(ECHAM6.3-HAM2.3)
with the sectional aerosol
micro-physics module
SALSA2.0

WHAT: Studying the effects on local climate of anthropogenic black carbon (BC), organic carbon (OC) and sulfur dioxide (SO₂) originating from Chile and Mexico.

WHY: The interdisciplinary research project ClimaSlow (climate law + modeling): Chile & Mexico have ambitious climate strategies and interesting local climate

HOW: Using an aerosol-chemistry-climate model to simulate climatic effects of atmospheric aerosols

MAIN FINDINGS: Each country has different potential to affect radiation and climate

MODELING SET UP

- BASE scenario with all aerosol emissions included (year 2015),
- 10 years simulated
- 3 individual cases without the aerosols from Chile and Mexico (NO_SO2, NO_BC and NO_OC)
- Meteorology nudged, fixed SST/SIC

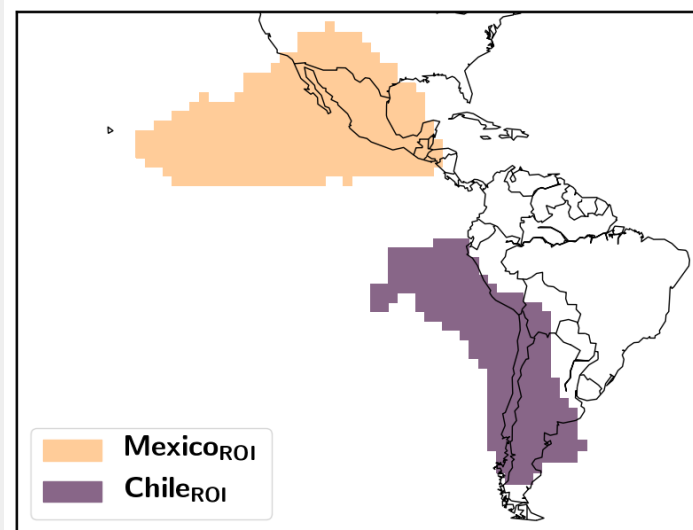
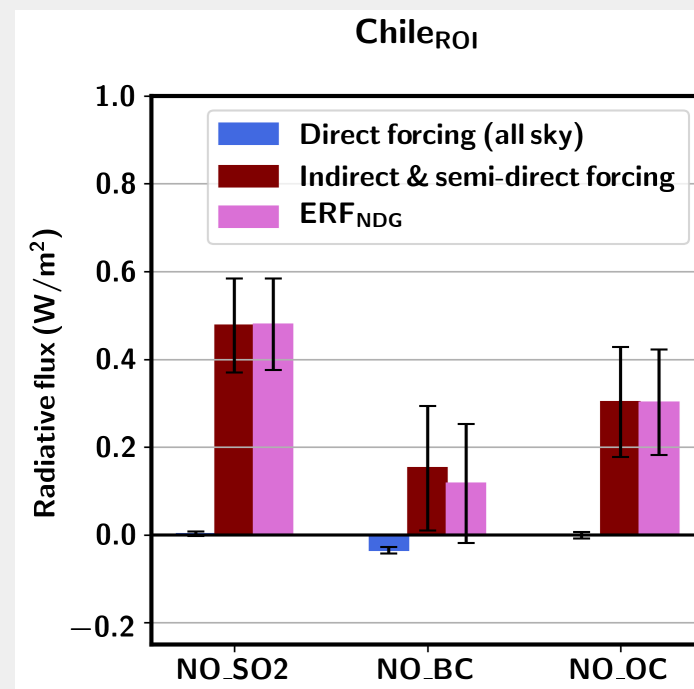


Figure 1. Regions of interest (ROIs) for data-analysis defined based on the relative differences in N₁₀₀ and CDNC burdens



Figures 2 & 3:
The direct aerosol forcing, indirect & semi-direct forcing, and effective radiative forcing (ERF_{NDG}) for Chile_{ROI} and Mexico_{ROI}

