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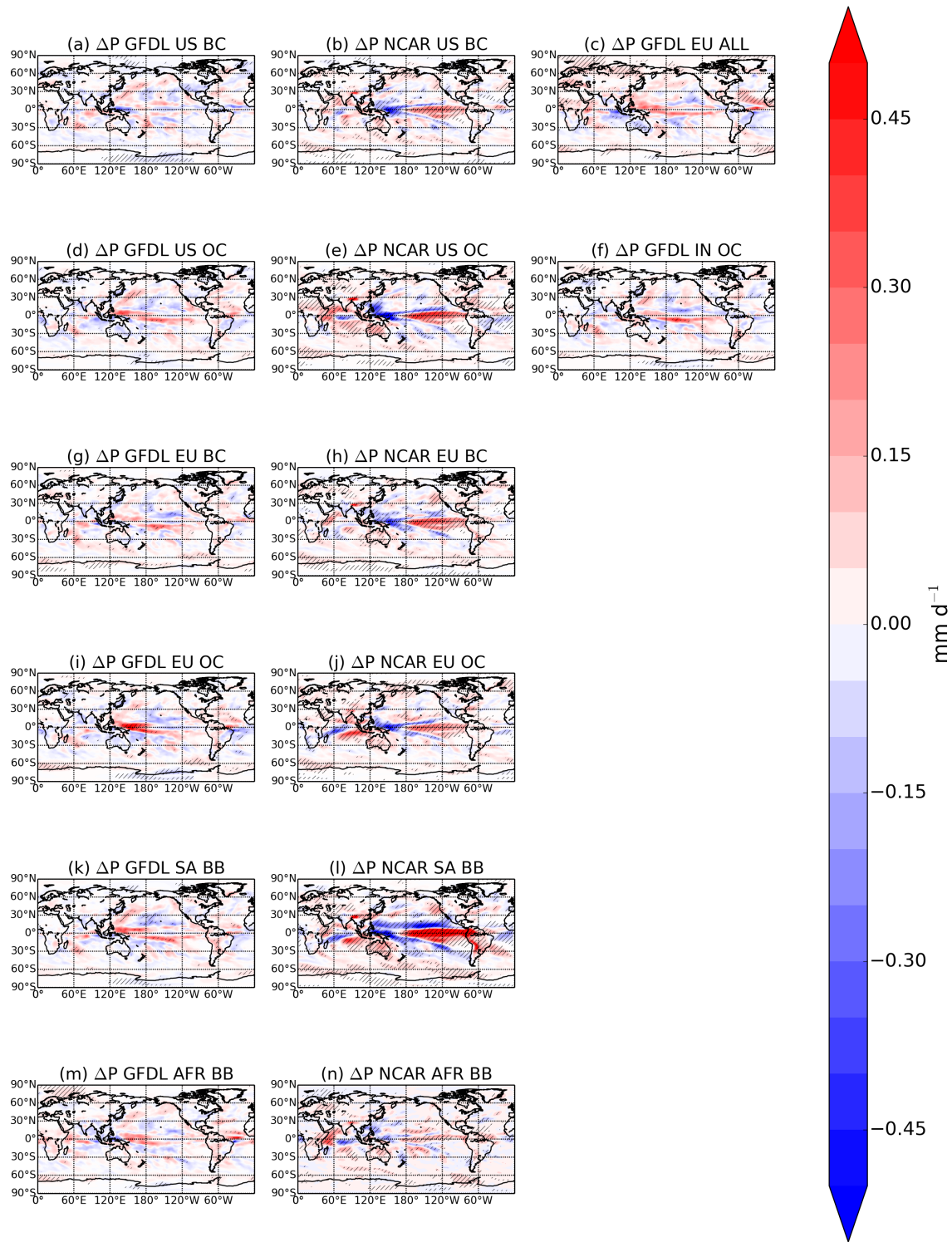
*Supplement of*

## **Connecting regional aerosol emissions reductions to local and remote precipitation responses**

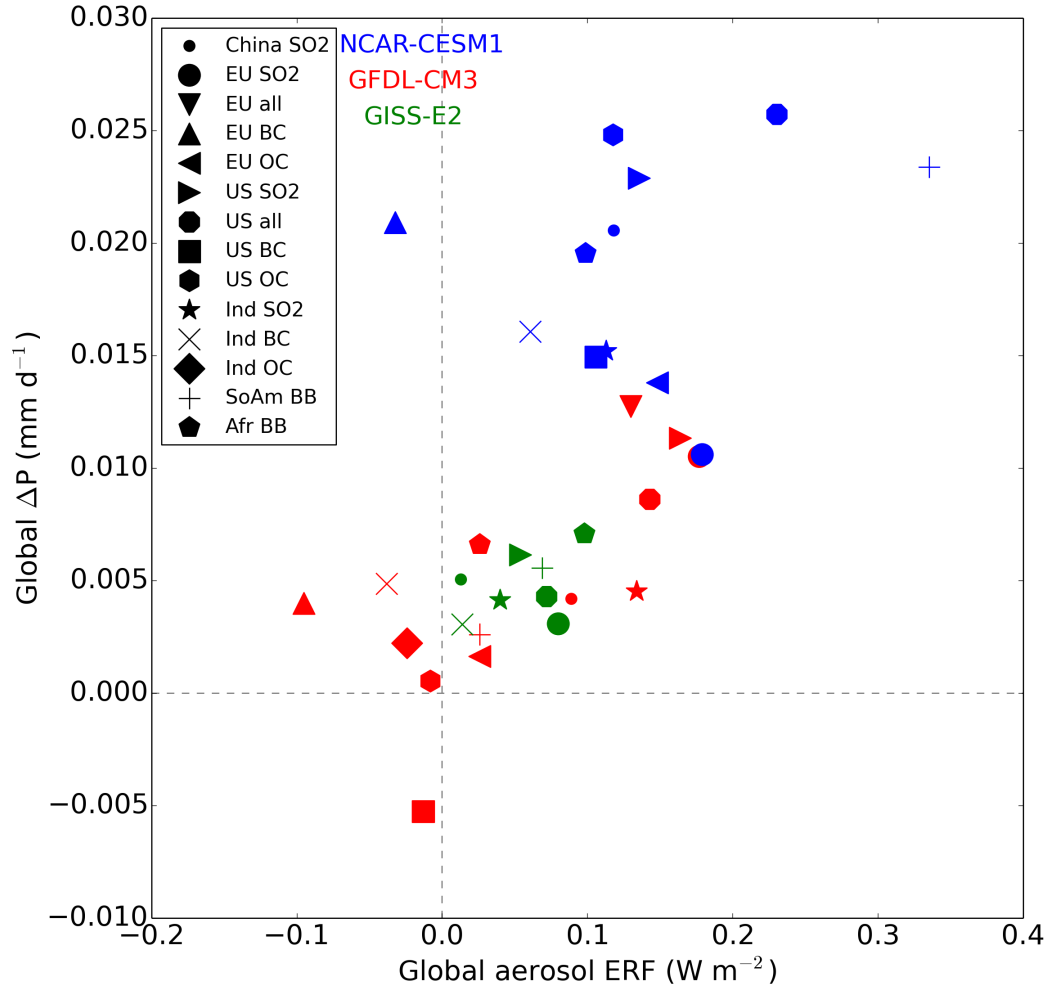
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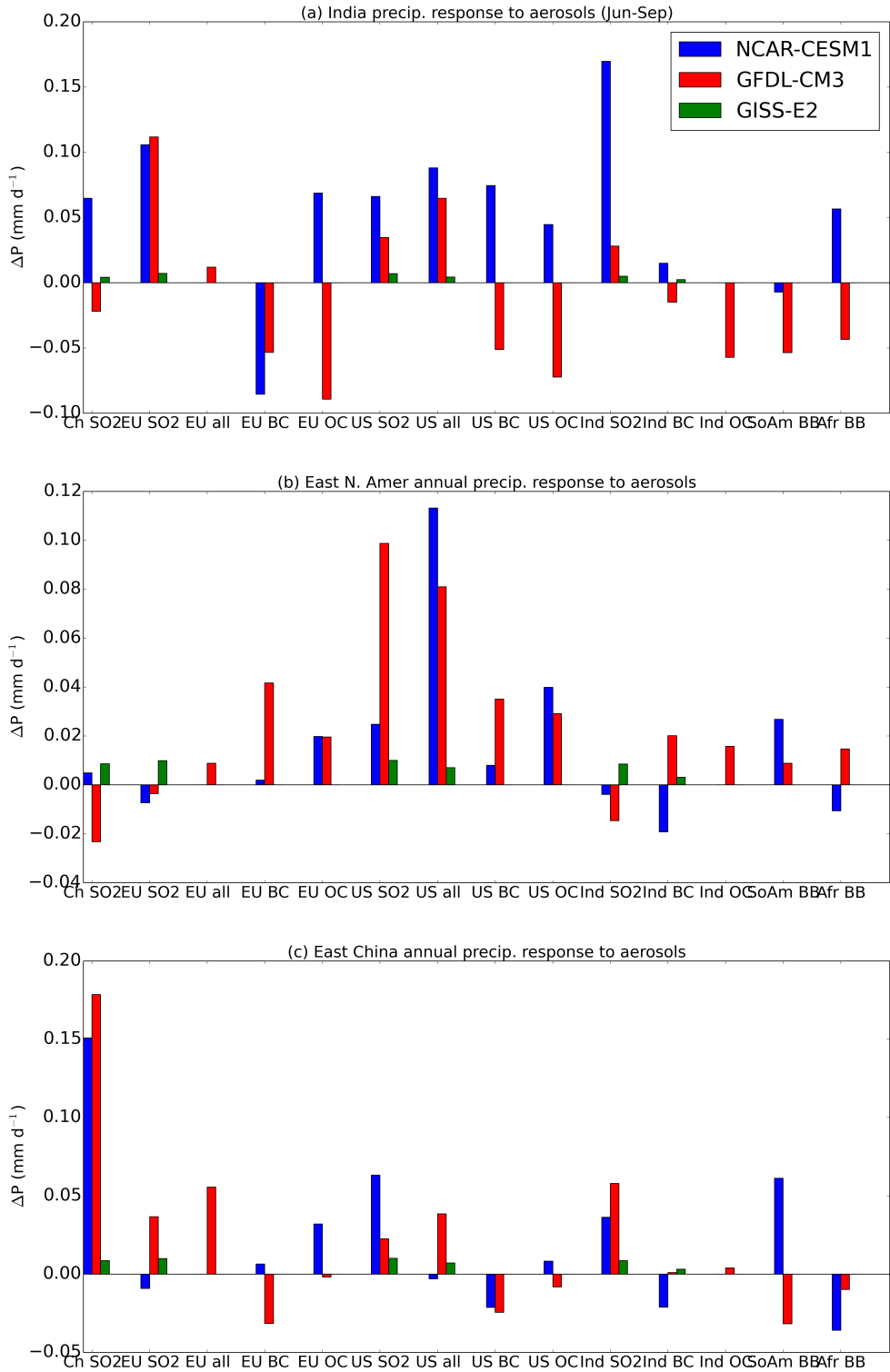
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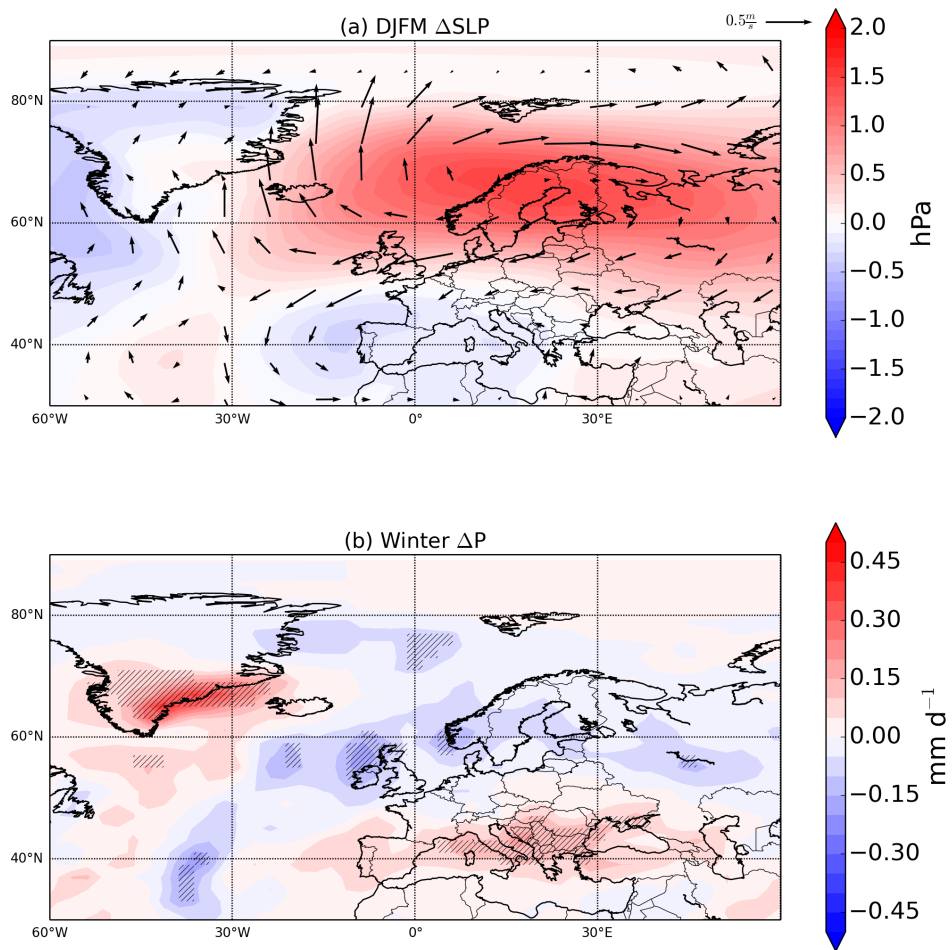
**Figure S1: 200-year annual mean precipitation response to aerosol emissions decreases in each of the three models (GFDL-CM3, first column; NCAR-CESM1, second column; GISS-E2, third column) for several different regional emissions decreases (see Table 1)**



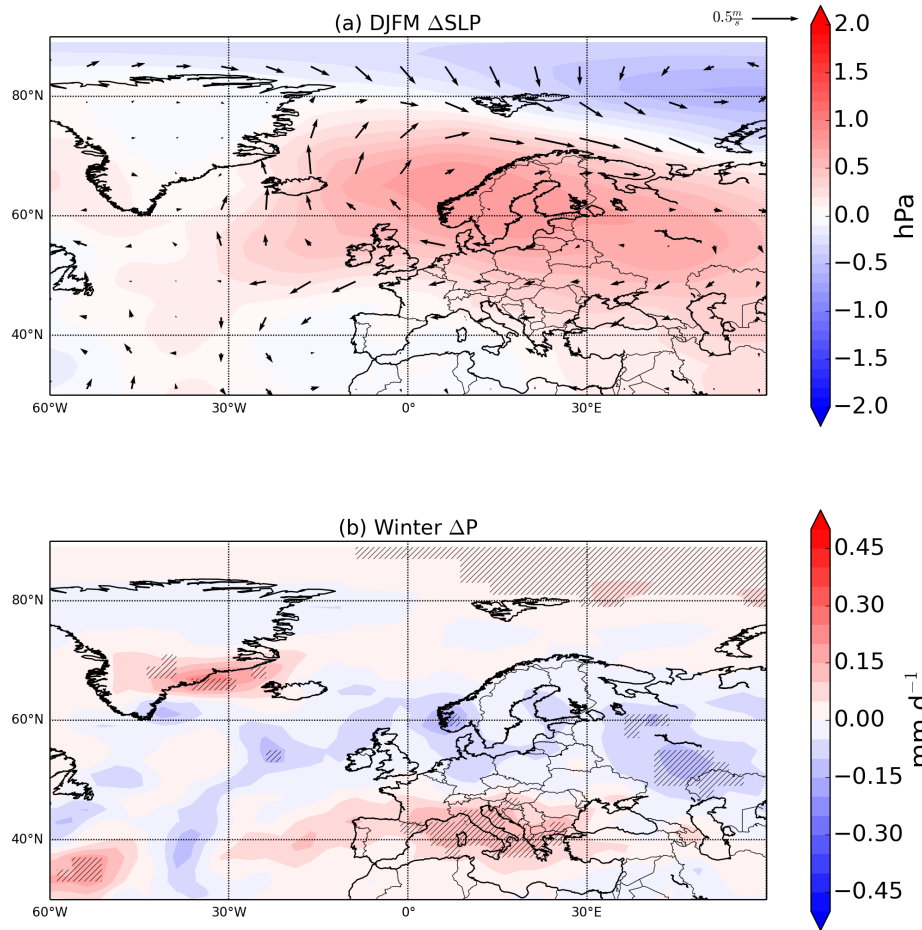
**Figure S2: Scatterplot of global aerosol effective radiative forcing and precipitation response for GFDL-CM3 (red), NCAR-CESM1 (blue), and GISS-E2 (green)**



**Figure S3: Regional and global precipitation response to each individual aerosol emissions decrease (Table 1). (a) India, Jun-Sep, (b) Eastern North America, annual, (c) Eastern China, annual**



**Figure S4: Wintertime response in sea-level pressure and surface winds (a) and precipitation (b) to reduction of European BC emissions in GFDL-CM3**



**Figure S5: Same as S4, but for European OA emissions**

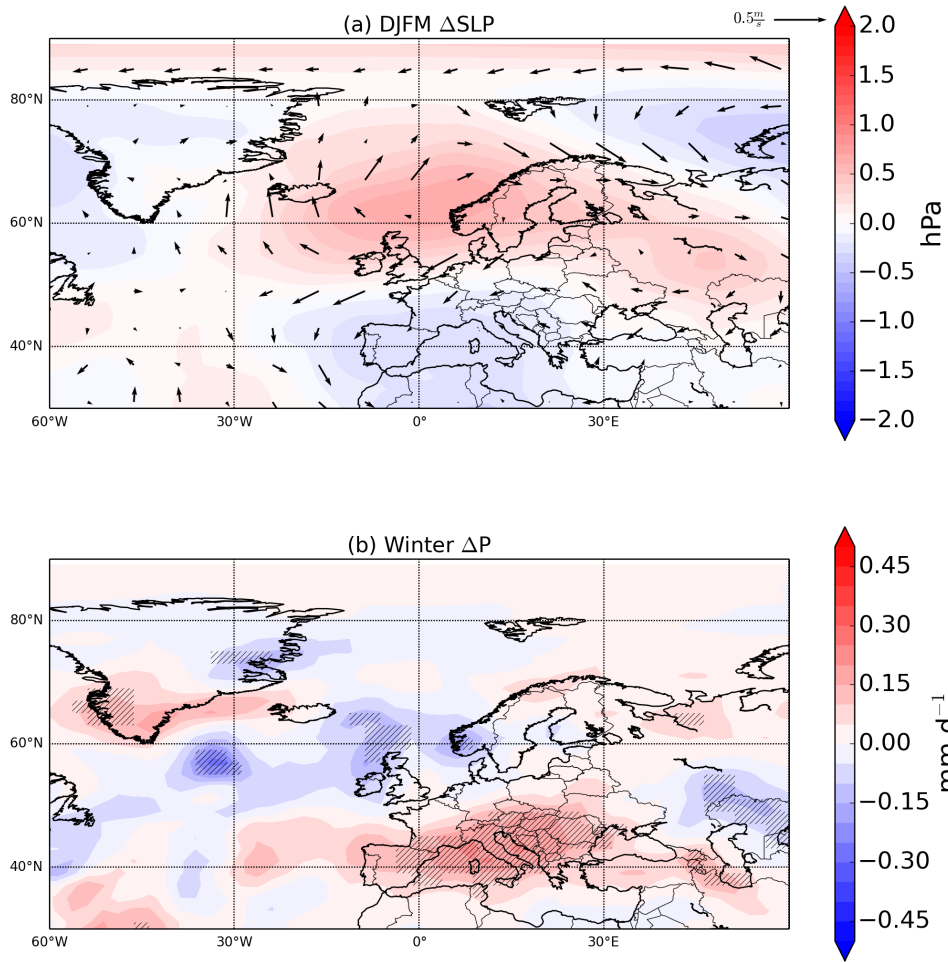
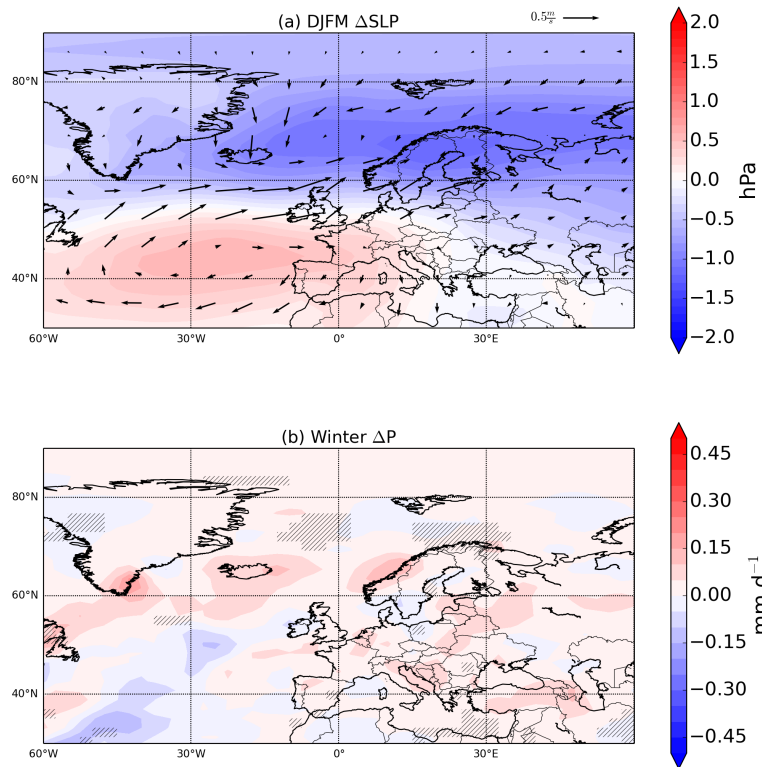
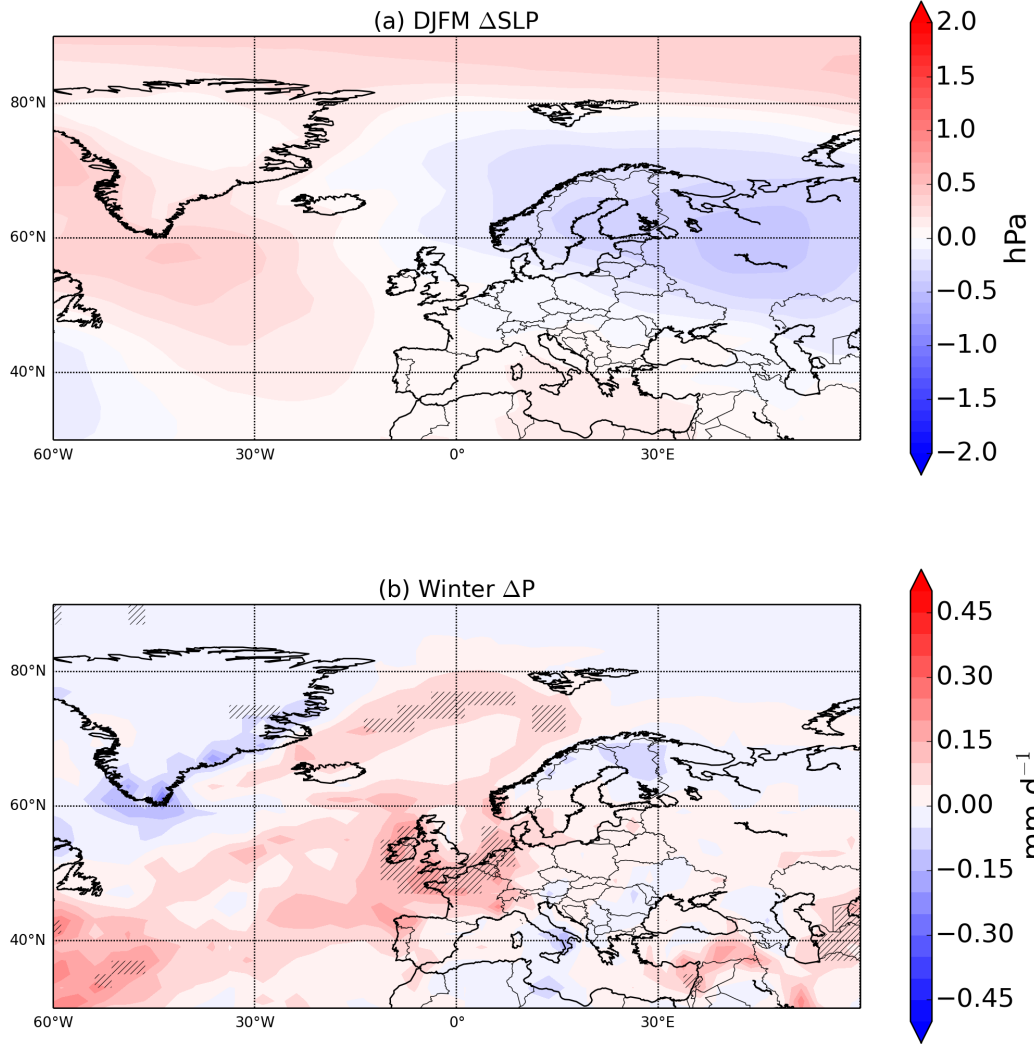


Figure S6: Same as S5, but for an emissions sum of BC, OA, and SO<sub>2</sub>



**Figure S7: Wintertime response in sea-level pressure and surface winds (a) and precipitation (b) to reduction of European SO<sub>2</sub> emissions in NCAR-CESM1**





**Figure S8: Wintertime response in sea-level pressure (a) and precipitation (b) to reduction of European SO<sub>2</sub> emissions in GISS-E2**