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Description

The goal of HEAVY is to better understand and quantify the emission, transport and deposition of coarse and super coarse dust and their role on dust climate effects.

The overarching hypotheses are that 1) coarse and super coarse dust play a fundamental role in shaping the overall climate effect of desert dust, 2) a combination of uncertainties and omissions in model processes affecting their lifetime largely explain the systematic underestimation of the particles, and 3) constraining the abundance of coarse and super coarse dust will significantly reduce the prevailing uncertainties on the effects of dust upon climate.

HEAVY will improve the representation of sedimentation and turbulent transport of coarse and super coarse dust, along with their mineralogy, shape and optical properties that are key to climate effects. HEAVY will also investigate the potential role of moist convection upon the long-range transport of the coarsest particles using high resolution convection permitting simulations. Based on the model improvements, HEAVY will quantify the hidden effect of the coarsest dust particles upon the direct radiative effect, atmospheric chemistry and ice nucleation at global scale.

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