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Atmospheric deposition of minerals in dust over the open ocean and possible consequences on climate

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Dust minerals play important roles in initiating ocean primary productivity, cloud ice nucleation and atmospheric radiation. All three effects have impacts on climate and weather. Content of minerals in aerosols is determined by the mineral composition in arid soils. Numerical models for atmospheric transport of mineral dust might include simulation of mineral fractions as well if the geographic distribution of fractions is known. We describe recently developed global 1km gridded data of most frequent minerals in erodible soils (GMINER30). Simulation of some mineral fractions relevant for marine productivity, ice nucleation and atmospheric radiation modulation by minerals will be presented using aerosol transport DREAM-Mineral model, demonstrating the potential of such approach in climate change studies.