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**ENHANCED DUST PRODUCTION FORECASTS USING SOIL MOISTURE
MODELS IN THE FOUR CORNERS AREAS**

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ABSTRACT: Dust production is governed by physical soil characteristics (e.g. soil texture), land cover (e.g. vegetation), land management (e.g. grazing), and soil moisture content along with hydro-climate parameters, such as precipitation, streamflow, air temperature, and wind speed. Traditional methods used for forecasting dust emission are generally based on the applications of atmospheric model and wind erosion models. The objective of this research is to demonstrate the use of a spatially explicit hydrologic model to improve descriptions of dust emissions. The Variable Infiltration Capacity (VIC) large-scale, semi-distributed hydrologic model are used to improve predictions of soil moisture content with a 1/8 degree grid cell resolution at a 3h time step. The geographical domain of the four corner areas is as latitude & longitude (37°15'N, 35°15'S, 111°W, 108°E). VIC output result included soil moisture profiles, which were used to update parameters to simulate dust emission by the Dust Regional Atmospheric Model (DREAM). Inter-annual variability and monthly trends show the effects of soil moisture through both baseline and climate change scenarios. The next step in this work will be to refine the spatial resolution of the models along with focusing on land use impacts on dust emissions.

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