

Wind Erosion Modeling on Agricultural Soils on East Georgia

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Wind erosion is an important variable in agricultural soil degradation. It is crucial to have the most precise quantitative data on potential soil loss due to wind erosion when planning mitigation measures. Various equations and models are developed for this purpose. National or regional planning of soil cultivation measures (including the type of soil ploughing, the extent of windbreaks, the variety composition, etc.) relies heavily on the resulting data. The wind erosion equation (WEQ) is one such equation. Using WEQ, this paper studies wind erosion on the agricultural soils of Eastern Georgia. As a result of its climatic characteristics, eastern Georgia is more susceptible to wind erosion; consequently, this factor determined its selection as a research area. Various research methodologies were implemented. Due to the fact that the WEQ combines five different factors (C climatic, I soil erodibility index, K topographic, L plot length, and V vegetation influence), multiple types of open data were incorporated into the research process. Including freely accessible climatic data and soil morphological information, physical and chemical characteristics, and satellite images from Sentinel 2 and MODIS. In combination with open data, the data received from the Georgian Ministry of Agriculture and Environmental Protection involving crops and windbreaks in the research area were processed. Using the online platform GEE and the Arcmap 10.8 Software, mathematical computations were performed. Last but not least, we received a raster file that depicts the potential soil loss due to wind erosion on the agricultural soils of Eastern Georgia.