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Analysis of the impact of Sand Dust Storm on Agricultural productivity

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Sand Dust Storm (SDS) caused by wind and sand is prevalent in arid and semi-arid regions. The environmental and socio-economic impacts of SDS were increased particularly in agricultural land. Future strategies are needed to reduce these effects. According to FAO, Kazakhstan is the 11st largest wheat producing country and traditionally has an advantageous environmental condition to agriculture. As the land degradation and soil erosion due to over-grazing and over-farming becoming severe, SDS occurrence and desertification are progressing. The impact of SDS becomes severe in spring (March - May), especially in the central Asia region during the crop production and harvesting season to cause direct and indirect damage. Due to the lack of availability of satellite-based data and available data, the agricultural risk early warning system doesn't working in central Asia. Therefore In this Study, spatially understanding of the impact of SDS and agricultural productivity and through analysis of correlation between SDS and agricultural productivity to prepare for damage. The most representative indicators for agricultural productivity and SDS were selected and monthly data for 2005 was constructed. Each data was constructed based on satellite imagery and extracted only agricultural area of land cover map. The processed data were analyzed to correlation using extracted data from the same spatial point. Indicators related to SDS and agricultural productivity are presented on a monthly basis, and the result can be used to select indicators which are input in SDS and agricultural productivity evaluation in the same way. This basic study will be able to quantitatively and spatially assess the impact of SDS on agricultural productivity, and will be able to provide national plan appropriate measures.