



On-site and off-site impacts of wind erosion in Europe: an overview

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Wind erosion is globally one of the main soil degradation problems and causes serious problems for agriculture, infrastructure and human health. Although wind erosion is most severe in the arid and semi-arid areas of the world, it is also a problem in several parts of Europe, where roughly 42 million hectares are affected by wind erosion, especially in Iceland, northwest Europe and eastern Europe. The main on-site problems caused by wind erosion are reduced water holding capacities of the soil, declining soil fertility, and crop damage. Major off-site impacts are undesired deposition of wind-blown sand (on roads, in canals and buildings), reduced visibility, and adverse health effects due to high atmospheric loadings of soil-derived dust particles. Especially the problem of breathing the finest dust particles is receiving increased attention and is considered to be a serious health threat. In this presentation the major results of past wind erosion research in Europe will be described. Special attention will be given to the off-site problem of high atmospheric concentrations of fine dust particles originating from natural land surfaces. Three major sources of fine dust are distinguished: 1. dust emitted from European soils due to wind erosion, 2. dust raised into the atmosphere by tillage operations and driving on dirt roads, and 3. soil dust from remote sources entering Europe. For each source type the main studies that have quantified dust loadings will be summarized and discussed. Finally the quantification techniques available for the study of on-site and off-site impacts of wind erosion will be presented, and the major shortcomings in the European wind erosion research will be described.