

# THE DOMINANT DIRECTIONS OF WIND EROSION IN VOJVODINA

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## INTRODUCTION

Most commonly, wind erosion is associated with extremely arid, desert areas. However, even the area of Vojvodina, notably lowland and agricultural (northern part of Serbia, 2.15 million ha) is not exempted from these processes. Wind erosion is the most intense, most frequent form of erosion processes in Vojvodina.

Both natural and anthropogenic conditions favour the occurrence of wind erosion. The continental climate of the Pannonian Plain with frequent strong winds, attaining the rates of even 40 m/s; annual precipitation sometimes even below 300 mm; large temperature amplitudes; markedly plain relief; more than 75% of the area being plow fields which are at a time without any vegetation cover and which under conditions of intensified agricultural production may be very erodible; insufficient and inappropriately located forest areas, are only some of the factors which clearly indicating that the danger of wind erosion in Vojvodina is potentially very high, and if the forecast climatic changes are to become true, the situation may be even worsened.

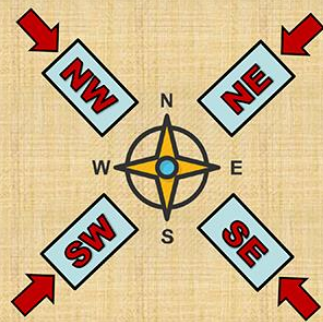
Adverse consequences are most pronounced in agriculture, water management and the environment. The dominant directions of wind erosion show temporal and spatial variation and depend on the coincidence of a number of factors. Determining the dominant directions is important for fully defining the process and implementing erosion control measures.

## MATERIAL AND METHODS

Multi-year research of wind erosion was conducted on a several characteristic localities: Subotica Sands, Deliblato Sands, as well as near Novi Sad and Bečej, both on Chernozem soil type.

Soil conditions: permanent and intensive agricultural processing, crushed surface layer, no wind protection.

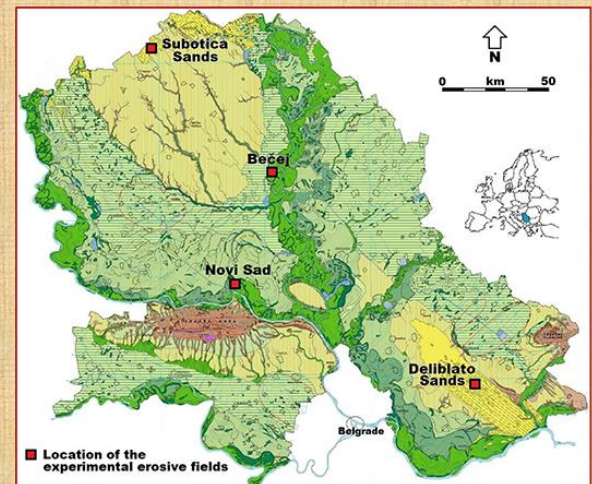
The intensity of erosion has been measured by static catcher of wind-borne particles, run-off sampler deflameter type. They are set in groups of 4 pieces, with the openings positioned in different directions, chosen according to dominant winds. With this kind of measuring, the intensity of the wind erosion processes is expressed by horizontal flux - aeolian sediment transport over one meter wide transect during a certain period of time (kg/m in a year).



Wind erosion samplers



Destructive effects of wind erosion:  
Arable soil; Drainage / irrigation canal



Map of Vojvodina (northern part of Serbia) with location of the experimental erosive fields

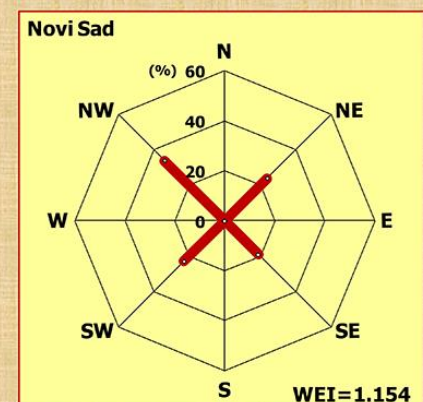
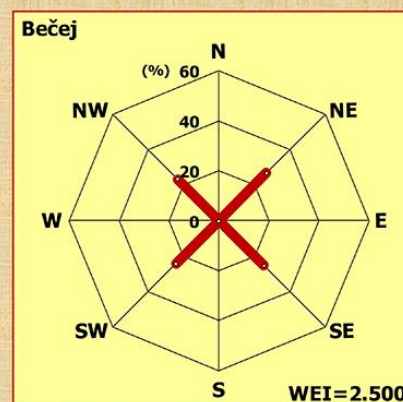
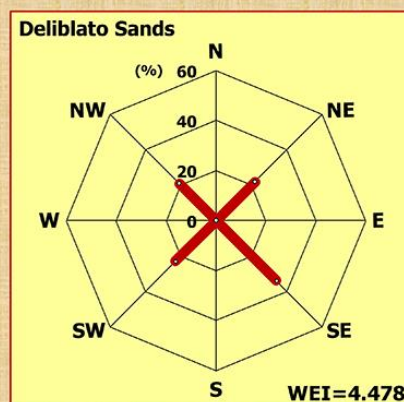
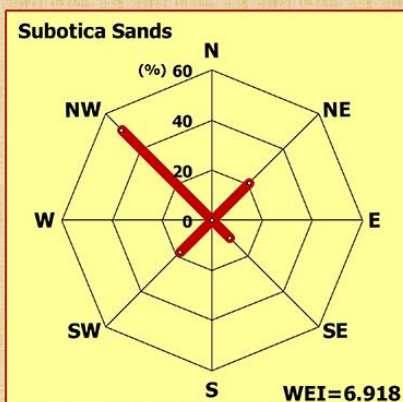
## RESULTS

Different factors causing wind erosion, and simultaneous occurrence of unfavourable erosive events, resulted in the occurrence and development of erosion processes of various intensities.

On the erosive fields, different average yearly intensities of wind erosion (WEI) and their percentage distribution by direction were noted:

Subotica Sands	WEI = 6.918 kg/m/year	(NE - 21%, SE - 10%, SW - 18%, NW - 51%)
Deliblato Sands	WEI = 4.478 kg/m/year	(NE - 22%, SE - 34%, SW - 23%, NW - 21%)
Bečej	WEI = 2.500 kg/m/year	(NE - 27%, SE - 26%, SW - 24%, NW - 23%)
Novi Sad	WEI = 1.154 kg/m/year	(NE - 24%, SE - 19%, SW - 23%, NW - 34%)

In Novi Sad and especially Subotica Sands localities, the NW direction is dominant in the production and transportation of deposit; in Deliblato Sands - SE; in Bečej - relatively equal from all directions.



Annual wind erosion intensities - WEI (kg/m/year) and the distribution of aeolian sediment (%) per directions

## CONCLUSIONS

In natural and anthropogenic conditions on the territory of Vojvodina wind erosion processes represent important factor of soil destruction and also have a negative effect on the other elements of the environment.

The noted distributions are not always in direct correlation with the direction, speed and frequency of dominant wind - they are rather a consequence of complex, joint actions of a number of relevant factors.