Analysis of Possible Coal Dust Dispersion Patterns Using Topographic and Structural Data: The Case of Trabzon Port

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Key words: Geoinformation/GI; Risk management; Spatial planning; Keyword 1; Keyword 2; Keyword 3

SUMMARY

Trabzon Port is located on the eastern side of the city center of Trabzon, on the southeastern coast of the Black Sea. It is one of the main trade and transport centers in the Eastern Black Sea region. The unloading of coal in the port area raises environmental concerns, especially because of the dust that can be transported toward nearby residential areas. This study aims to analyze the possible directions and accumulation tendencies of coal dust by using topographic and structural data of the port and its surroundings. The digital elevation model (DEM), building geometries, and port boundary data are evaluated in a geographic environment. These datasets are studied together with wind directions, surface roughness, slope, and building density to understand how airflow may interact with the terrain and built-up areas. The ongoing analysis is expected to identify areas sensitive to dust transport and to produce a relative dispersion tendency map. The results of this approach will help to prioritize environmental risk zones and to provide a spatial basis for future detailed modeling and validation studies in urban coastal areas where topography strongly affects air movement.
