

EGU21-12671

<https://doi.org/10.5194/egusphere-egu21-12671>

EGU General Assembly 2021

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## Evaluation of the land use evolution near solid waste landfills using a new weighted environmental index based on GIS techniques

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Land use in the nearby of a Municipal Solid Waste (MSW) landfill can be strongly affected by the waste management tasks (transport, landfilling and closure). Effects extend from the phases prior to the construction of the landfill until years after the completion of the landfilling process in areas located beyond the perimeter of the plot occupied by the landfill. In this work a new methodology for the analysis of land use change over time is presented. The methodology is based on the use of a new environmental index named WEI (Weighted Environmental Index). WEI is based on the use of GIS techniques accounting for different information sources (digital cartography, aerial photographs and satellite images). WEI assigns environmental values to land use based on the degree of anthropogenic intervention and its occupation surface. A georeferenced multitemporal statistical analysis is performed considering the values of WEI previously assigned to every land use. The methodology has been applied to analyze the land use change near the main MSW landfills of Valencia Region (Spain) where landfilling is currently the only waste disposal technique available. Data have been obtained from the Spanish Land Occupation Information System (SIOSE) public database and integrate GIS information about land use/land cover on an extensive, high-detailed scale. Results demonstrate the application of the WEI to real case studies and the importance of integrating statistical analysis of WEI evolution over time to arrive at a better understanding of the socio-economic and environmental processes that induce land-use change.