



## **Integration of stochastic simulation models and remote sensing data for a new approach in soil contamination assessment**

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New developments are expected for soil policy in European countries when the Soil Directive, now under discussion, will be concluded. In the short term, it will be necessary for Portugal and other countries to develop legal diplomas for soil contamination regulation, following the same legal procedure applied a few years ago for preventing and assessing water and air pollution. Therefore, the application of evaluation methods suited for soil contamination assessment will be required to supply essential information for remediation actions planning.

The methodology proposed in this work integrates a set of new aspects – geostatistical models and remote sensing data integration - that greatly differ from the common approaches used presently in soil contamination assessments. The innovative aspects on this approach are considered to be the following:

- Soil contamination assessment using stochastic simulation, for the integration of pollutant concentrations (obtained by soil sampling and analysis) and satellite images.
- Characterization and classification model for contaminated areas based on a non-point “support”, namely, the remediation technology foreseen (meaning that this model will depend on the physical limitations of the remediation technique to be applied).
- Environmental costs assessment using loss functions based on local uncertainty evaluation, present and future land use, contamination degree and the remediation tech-

nique foreseen.

The proposed methodology will be applied to a case study, namely, a coastal lagoon located in the North of Portugal (Barrinha de Esmoriz) with a soil/sediment contamination problem. In terms of its ecological value, the Barrinha de Esmoriz was included in the list of the natural sites to be integrated in the Natura Network 2000.