

Optical characterization of the São Domingos Mine heaps with satellite imaging

Rui J. Oliveira¹, Bento Caldeira¹, Maria João Costa¹,
Patrícia Palma² and Ana Fialho³

¹ *Institute of Earth Sciences, Physics Department and Earth Remote Sensing Laboratory, University of Évora, Portugal*

² *Institute of Earth Sciences and Polytechnic Institute of Beja, Department of Technologies and Applied Sciences, Beja, Portugal*

³ *Center for Research in Accounting and Taxation, Management Department, University of Évora, Portugal*

Correspondence Author: ruio@uevora.pt

Talk Abstract

The INCOME Project proposes the creation of an environmental management model for mining areas contaminated by toxic metals [1]. This model integrates the results of the application of a set of analytical methods [2] and instruments for monitoring contaminated areas, such as biophysical analyses, soil, and water chemistry, geophysics, and satellite [3] hyperspectral remote sensing. Data from all research will be used as inputs to be used by artificial intelligence, which will allow the production of contamination models using less data than standard methodologies.

The optical characterization of the mining heap using satellite data available from the Copernicus program (EU Space Programme) allows extracting information about the surface to make the correspondence with heavy metals.

This work will include the optical analysis of satellite data relating to the surface of the São Domingos Mine (Mértola, Portugal).

Keywords: Optical characterization, Satellite imaging, Remote Sensing.

Acknowledgements

The work was supported by the Promove Program of the “la Caixa” Foundation, in partnership with BPI and the Foundation for Science and Technology (FCT), in the scope of the project INCOME – Inputs para uma região mais sustentável: Instrumentos para a gestão de zonas contaminadas por metais (Inputs for a more sustainable region: Instruments for managing metal-contaminated areas), PD23-00013.

References

- [1] Oliveira, R. J., Caldeira, B., Palma, P., Costa, M. J., and Fialho, A.: Tools for managing metal contaminated areas: multidisciplinary approach to develop inputs for a more sustainable region, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-11549, <https://doi.org/10.5194/egusphere-egu24-11549>, 2024.
- [2] Alvarenga, P., Palma, P., De Varennes, A., & Cunha-Queda, A. C. (2012). A contribution towards the risk assessment of soils from the São Domingos Mine (Portugal): Chemical, microbial and ecotoxicological indicators. *Environmental Pollution*, 161, 50-56.
- [3] Copernicus Data Space - Sentinel 2: Modified Copernicus Sentinel data 2024 processed in Copernicus Browser.