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Using Open Remote Sensing and Geographic Data for SMART Monitoring of Nature-based TOURISM in the Azores Islands Natural Parks: towards (more) Sustainability

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Abstract. A remote sensing-based operational tool using Sentinel-2 and Landsat-8 free and open access satellite multispectral data, and based on the Google Earth Engine (GEE) platform, is under development for monitoring land-cover/land-use changes in the Azores Islands Natural Park.

1. Context

Protected Areas in oceanic islands as the Azores (Portugal) face particular socioeconomic and environmental challenges, which increase their vulnerability to threats such as climate variability, biodiversity loss, biological invasions, environmental degradation, natural hazards and overexploitation of resources [1]. Tourism plays an important and undeniable role in these territories, as nature-based tourism has shown a growing economic relevance, and protected areas offer unique opportunities for visitor experiences. Since protected areas generally restrict most primary sector activities, tourism is one of the few suitable tools for local development [2]. For nature-based tourism destinations (as it is the case for the Azores), the concept of “sustainable destination” mostly relies on the environmental quality and ecological preservation of conservation areas, which requires the development and application of robust and cost-effective site planning, management and monitoring approaches. In the Archipelago of the Azores, the main threat for nature conservation is land-cover/land-use change (LCLUC), mostly driven by urban and tourism development, the spread of invasive alien species, natural hazards, and also the intensification of agricultural activity and livestock grazing [3][4][5].

2. Objectives and Methodological Approach

This work aims at developing and setting up a remote sensing-based operational tool for monitoring LCLUC in the Azores Islands Natural Park. This tool is mostly fed by Copernicus Sentinel-2 and Landsat-8 satellite multispectral data, which are both free and open access. This operational tool, which workflow is shown in Figure 1, is based on the cloud-based Google Earth Engine (GEE) platform [6].



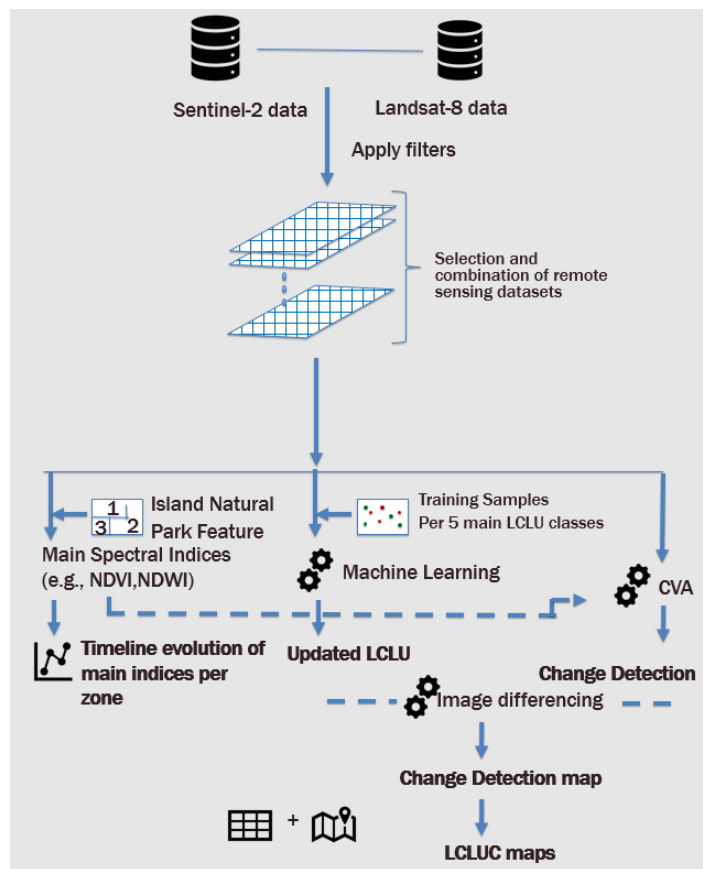


Figure 1. Methodological workflow

This platform will be able to support decision-making in land-cover/land-use planning/management in the most relevant, valuable, and sensitive natural/semi-natural touristic sites located in the Azores. It will also allow strengthening law enforcement by public authorities, constituting, therefore, an important step towards a cost-effective touristic land-use planning/management and sustainability awareness among decision-makers, landowners/land managers, tourists/visitors, further stakeholders, and the general public.

3. Acknowledgments

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