4th ESA EO SUMMER SCHOOL ON EARTH SYSTEM MONITORING AND MODELLING
ESRIN, FRASCATI, 4–14 August 2008

Using Remote Sensing Imagery for Azores Islands Natural Resources Characterization

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FIGURE. 1 – Azores Archipelago location

FIGURE 2 – MODIS Image: Central and Eastern Groups of Azores Archipelago (NASA, 2003)

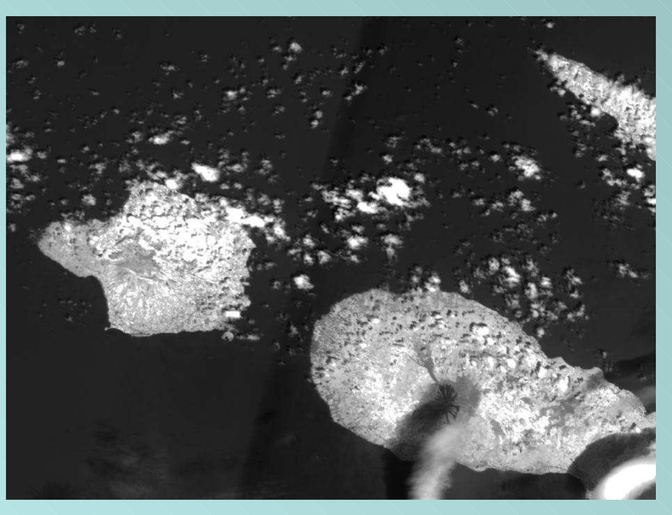

FIGURE 3 – CBERS-2B Image (Band 4): Pico, Faial and S. Jorge Islands (INPE, 2008)

FIGURE 4 – Landsat 7 ETM+ Image (True-Color Composition): S. Miguel Island (EarthSat, 2001)

ABSTRACT

This poster shows the main strategy designed to develop the PhD project started in 2008: "Using Remote Sensing Imagery for Azores Islands Natural Resources Characterization". This research is focused on the use of passive remote sensing imagery to characterize the Azores Islands territory, using several types of Satellite Imagery and classification methods, at four different biophysical levels:

- Land Cover and Biological Resources;
- Geological Resources;
- Hydrological Resources;
- Coastal Zones Dynamics.

This PhD project is funded by the Azores Regional Fund for Science & Technology.

INTRODUCTION

The Azores archipelago, Portuguese autonomous region, is located in the North Atlantic, between 36°55' and 39°43' latitude North and 24°46' and 31°16' longitude West (FIG. 1). Due to its remote location and distance between islands, environmental mapping in Azores has been developed using expensive human and technical resources mostly based on field work approach.

A well-combined use of Satellite Imagery with different temporal, spectral, and spatial characteristics (FIG. 2, 3 and 4) will allow Azores Regional Administration / University of Azores to obtain and update regularly a more cost-effective and accurate set of biophysical/environmental cartography for land planning decision support and environmental monitoring.

MAIN GOALS

⇒ Description and Comparative Analysis of Available Satellite Imagery for Land Characterization

⇒ Description, Critical and Comparative Analysis of Satellite Imagery Processing & Classification Methods for Land Characterization (Land Cover/Biologic Resources, Lithology/Geology, Hidrology, Coastal Zones)

⇒ Description and Comparative Analysis of Methods & Techniques for Integration of Remote Sensing Data with GIS Technology

⇒ Case-Study Development: Using Remote Sensing Imagery for Azores Islands Natural Resources Characterization

EXPECTED RESULTS & PRODUCTS

⇒ Paper/Technical Guide: Available Satellite Imagery for Land Characterization

⇒ Paper/Technical Guide: Satellite Imagery Processing & Classification Methods for Land Characterization

⇒ Paper/Technical Guide: Methods & Techniques for Integration of Remote Sensing Data with GIS Technology

⇒ Azores Islands Natural Resources Cartography: Land Cover, Lithology/Geology, Hidrology, Coastal Zones Dynamics

WORK IN PROGRESS

⇒ Prospection and Requisition of existing Satellite Imagery covering Azores Archipelago

⇒ Image Classification Methods Bibliographical Review

⇒ Paper with Abadi M. (GRIMAAG – University of Antilles/French Guyane): "Texture Descriptors Assessment and Selection for Landsat Panchromatic Images Classification"

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