

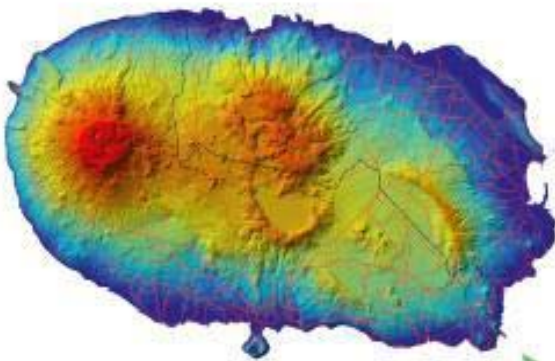
# INCREASING THE PENETRATION OF RENEWABLE ENERGY SOURCES IN THE AZOREAN ENERGY SYSTEM

R. Martins<sup>1</sup>, G. Krajacic<sup>2</sup>, N. Duic<sup>1</sup>, L.M. Alves<sup>1</sup>, M.G. Carvalho<sup>1</sup>

<sup>1</sup> Instituto Superior Técnico – Av. Rovisco Pais, 1049-001, Lisbon, Portugal

<sup>2</sup> Power Engineering Department, Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, Zagreb, Croatia

## TERCEIRA ISLAND



## PROBLEM

- \* 60 000 inhabitants.
- \* 99% of fossil fuel dependency for electricity production.
- \* Need of new and renewable energy sources in the Power System.

## H2RES METHODOLOGY

- \* Is based on hourly time series analysis.
- \* Formed by the compilation of several Modules
- \* In this specific project were mainly used:
  - \* Wind Module.
  - \* Reversible Hydro Module.
  - \* Geothermal Module.

## RESULTS

- \* In Business As Usual (BAU) the fossil fuel dependency is still very close to 50%.
- \* In scenario 2 appears the possibility to reduce the Fossil Fuel dependency to 6%.
- \* Scenario 3 shows the possibility to produce hydrogen for transports using geothermal energy.
- \* Reversible Hydro Storage allows to store large amounts of energy that would be lost without a storage system.
- \* Geothermal energy as potential to fully cover all the base load.

