**Title:** Interpretation of gravity data to delineate structural features connected to low-temperature geothermal resources at Northeastern Portugal

**Author(s):** Represas, Patricia <sup>[1,2]</sup>; Santos, F. A. Monteiro <sup>[2]</sup>; Ribeiro, Jose <sup>[2]</sup>; Ribeiro, Joana A. <sup>[2]</sup>; Almeida, Eugenio P. <sup>[2,3]</sup>; Goncalves, Rui <sup>[2,3]</sup>; **Moreira, Mario** <sup>[2,4]</sup>; Mendes-Victor, L. A. <sup>[2]</sup>

Source: Journal of Applied Geophysics Volume: 92 Pages: 30-38 DOI: 10.1016/j.jappgeo.2013.02.011 Published: May 2013

## Document Type: Article

## Language: English

**Abstract:** A great number of low-temperature geothermal fields occur in Northern-Portugal related to fractured rocks. The most important superficial manifestations of these hydrothermal systems appear in pull-apart tectonic basins and are strongly conditioned by the orientation of the main fault systems in the region. This work presents the interpretation of gravity gradient maps and 3D inversion model produced from a regional gravity survey. The horizontal gradients reveal a complex fault system. The obtained 3D model of density contrast puts into evidence the main fault zone in the region and the depth distribution of the granitic bodies. Their relationship with the hydrothermal systems supports the conceptual models elaborated from hydrochemical and isotopic water analyses. This work emphasizes the importance of the role of the gravity method and analysis to better understand the connection between hydrothermal systems and the fractured rock pattern and surrounding geology. (c) 2013 Elsevier B.V. All rights reserved.

Author Keywords: Gravity data; Bouguer anomaly; Gravity derivative; 3D inversion; Hydrothermal system; Portugal

KeyWords Plus: Field NE Portugal; Model; Inversion

Reprint Address: Represas, P (reprint author) - Lab Nacl Energia & Geol, Amadora, Portugal.

## Addresses:

[1] Lab Nacl Energia & Geol, Amadora, Portugal

[2] Univ Lisbon, IDL, P-1699 Lisbon, Portugal

- [3] Inst Politecn Tomar, Tomar, Portugal
- [4] Inst Super Engn Lisboa, Lisbon, Portugal

E-mail Addresses: prepresas@fc.ul.pt

## Funding:

Funding Agency	Grant Number
Portuguese Foundation for Science and Technology (FCT)	SFRH/BD/16003/2004
FEDER EU funds	PTDC/CTE-GIX/098538/2008

Publisher: Elsevier Science BV

Publisher Address: Po Box 211, 1000 AE Amsterdam, Netherlands ISSN: 0926-9851

**Citation**: REPRESAS, Patricia; SANTOS, F. A. Monteiro; RIBEIRO, Jose; RIBEIRO, Joana A.; ALMEIDA, Eugenio P.; GONCALVES, Rui; MOREIRO, Mario; MENDES-VICTORi, L. A. - Interpretation of gravity data to delineate structural features connected to low-temperature geothermal resources at Northeastern Portugal. Journal of <u>Applied Geophysics</u>. ISSN 0926-9851. Vol. 92 (2013), p. 30-38.