Ressources géothermiques en Algérie

Inspiré du travail de H. Saibi, Kyushu University, Japan

Foulen BEN FALTEN

Ecole Supérieure de la Statistique et de l'Analyse de l'Information, Université de Carthage, Tunisie

foulen-benfalten@essai.rnu.tn — +216 22 22 22 22

Résumé

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Introduction

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Thématique choisie

The geology of Algeria (Figure 1) is divided into two main structural units : the folded Tellian Domain in the North, and the Saharian Platform in the South, separated by the South Atlasic Flexure [**?**].

FIGURE 1 – Major geotectonics units of West Africa modified from Fabre (1976). 1 : Tertiary and Quaternary ; 2 : Alpine molasses ; 3 : Tertiary thrust sheet ; 4 : Secondary tabular ; 5 : Secondary plicative ; 6 : Primary plicative ; 7 : Primary tabular ; 8 : Precambrian and Precorce Cambrian of Sahara ; 9 : Cenozoic magma ; 10 : Megafault.

Description des données

Heat Flow

— Average heat flow values are 82 ± 19 mW/m^2
— Very high heat flow values (90-130 mW/m^2) in South Algeria (Hoggar Precambrian basement).

FIGURE 2 – (A) Temp. vs. depth for different regions (Takherist and Lesquer, 1989). (B) Heat flow map of Algeria (Takherist and Lesquer, 1989). Unit : mW/m^2. 230 oil wells are presented, with depths ranging from 500 to 5500 m.

Geothermal Reservoirs

1. The Tlemcenian dolomites in the NW-Algeria : thermal waters are related to the Plio-Quaternary volcanic rocks ; bicarbonate water type.
2. Carbonate formations in the NE-Algeria : area is 15,000 km^2 ; high flow rates (>100 L/s) ; highest temperature in Algeria (98 °C).
3. Albian sandstone reservoir in the South of Algeria : area is 600,000 km^2 ; depth of aquifer is 2.6 km ; highly mineralized waters.

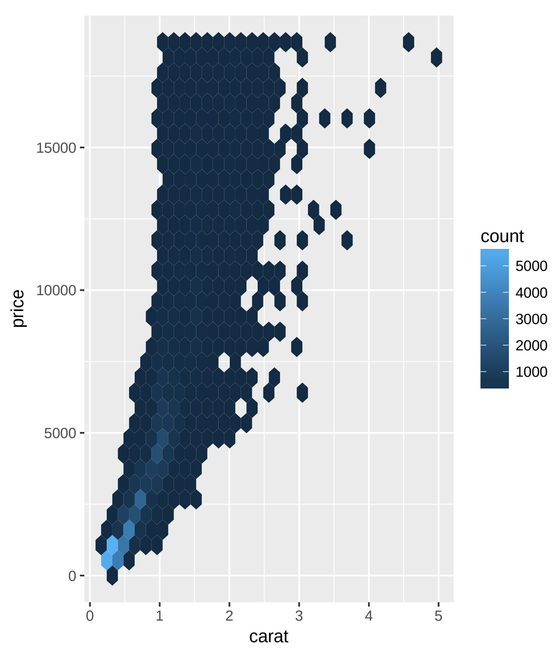

FIGURE 3 – Main Algerian geothermal areas (Fekraoui and Abouriche, 1995)

Hot Springs

FIGURE 4 – Temperatures of the main hot springs of the northern part of Algeria (Kedaid, 2002)

FIGURE 5 – Total Dissolved Solid (TDS) of the main hot springs of the northern part of Algeria (Kedaid, 2002)

FIGURE 6 – (A) Mixing model to illustrate the relative contribution of magmatic, meteoric and crustal sources of gases in NE Algerian geothermal discharges. (B) Photo of the concretions of Hammam Meskhoutine (NE Algeria). The height of the concretions on successive conduits reaches 30 m.

Conclusions

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Perspectives

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