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# Regional Flow and Vertical Heat Transport in Groundwater. Numerical Solution for the Study of Temperature Profiles

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***Abstract*** **–** In this work, temperature patterns and profiles have been obtained in large 2-D groundwater scenarios, with constant and horizontal regional flow and thermal conditions that reproduce approximately real cases, such as the daily or seasonal variation of the soil surface temperature. For this purpose, a numerical model based on the network simulation method has been designed and applied to real scenarios to determine the correlation between derived temperature profiles and groundwater flow. The results of this first work allow to see more closely the possibility of addressing a much more complex problem, such as the determination of the regional velocity field from temperature profiles read from in situ wells.

***Keywords*****:** Porous media; groundwater flow; heat transport; temperature profiles.