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Simulation research on reinjection temperature field of geothermal well based on FEFLOW

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Aquifer energy utilization has become a new technology with injection and production wells technological development, accurately predicting the effective use of heat energy storage is of great significance. A new concept of flow transfixion is suggested by analyzing the general features of the aquifer. The interaction between flow transfixion and heat transfixion, and its significance to practical engineering are also analyzed. A couple of numerical models of groundwater flow and heat transferring are established based on the basics of water-heat transferring in the aquifer. The numerical analysis of the flow and temperature fields for one Injection and Production Wells System (IPWS) in Xianyang City shows that the formation of flow transfixion is hydraulic gradient; namely, it can be judged quantitatively by whether the flow transfixion takes place or not according to hydraulic gradient. The effect of the injecting and pumping rate (Q) to the flow transfixion shows that the shorter time of flow transfixion, the greater the value of Q, it is easier for flow transfixion to occur, and then lead to the occurrence of thermal breakthrough. When running 120 d, to prevent the thermal breakthrough in Production wells, the reasonable well spacing is 180 m - 200 m. Optimal well spacing is 180 meters.

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A preliminary documentation of the coral reefs from Libya

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Corals studies in Libya are very limited, although they play an important role in the oil exploration as they form excellent reservoirs of coral reef buildups at some oil fields of the Sirt Basin (e.g. Intisar "Idris" and Sahabi Fields). Both fields are produced from Paleocene coral reefs. Meanwhile, in Cyrenaica corals are of less importance as they are not reported in subsurface Tertiary rocks, which probably in the environmental settings of these sediments out of the core of reef as occurred in the surface. Meanwhile, corals are reported from older (Jurassic) subsurface successions as in Concession NC-152, but the cementation digenesis led to blocking and destroying the porosity. This study presents the first surface documentation work of eight scleractinian coral species from the exposed sediments in northern Libya, where six taxa reported from Al Jabal al Akhdar region, these include a) an association of huge colonies of *Caulastrea sp*. and *Stylophora sp*., from the Middle Eocene Darnah Formation at West Darnah roadcut section. The co-existence of the fast *Caulastrea sp.* with the slow *Stylophora sp*. is due to the competition strategy; b) *Antiguastrea? sp*. is reported from the Oligocene Algal Limestone of Al Bayda Formation at Daryanah – Abyar roadcut section; *c) Cyphastrea sp. and Aleveopora sp.* from Oligo-Miocene Al Faidiyah Formation at Al Fatayah cement quarry and d) Tarbellastraea sp. from Middle Miocene Benghazi Formation at Benghazi cement Quarry. In addition to, two species *Astraeaopora sp*. and *Actinacis parorai* are reported from the Upper Miocene sediments of formation "M" in As Sahabi area.

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