Interactive comment on "On morphology and amplitude of 2D and 3D thermal anomalies induced by buoyancy-driven flow within and around fault zones" *by* Laurent Guillou-Frottier et al.

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This paper deals with the sub-surface geometry of potential geothermal zones in fracture zones and surrounding rocks, the "geothermal zones" being the results of thermal anomalies in the crust due to hydrothermal convection. Numerical models in 2D and 3D of thermal convection in a fractured/porous medium are developed to characterize the shape, size, and temperature of the anomalies. The paper starts with a series of 2D models to benchmark the numerical code (in COMSOL) developed by the authors, then 3D models are shown, and finally a discussion to replace the models in the

context of geothermal systems is proposed. This is a very good paper, well-written, which highlights original flow geometries (although a lot of them have been described by other studies, but not replaced in a geothermal context as in the present paper). The study can also help guiding potential exploitation of geothermal energy. I encourage publication of the paper after minor revisions. I have enclosed comments/questions in the original manuscript, and I attached my commented pdf version of the ms. Regards,

Fabrice J. Fontaine

PS. I attach the commented pdf plus a figure showing "plume splitting" following one of my comment.

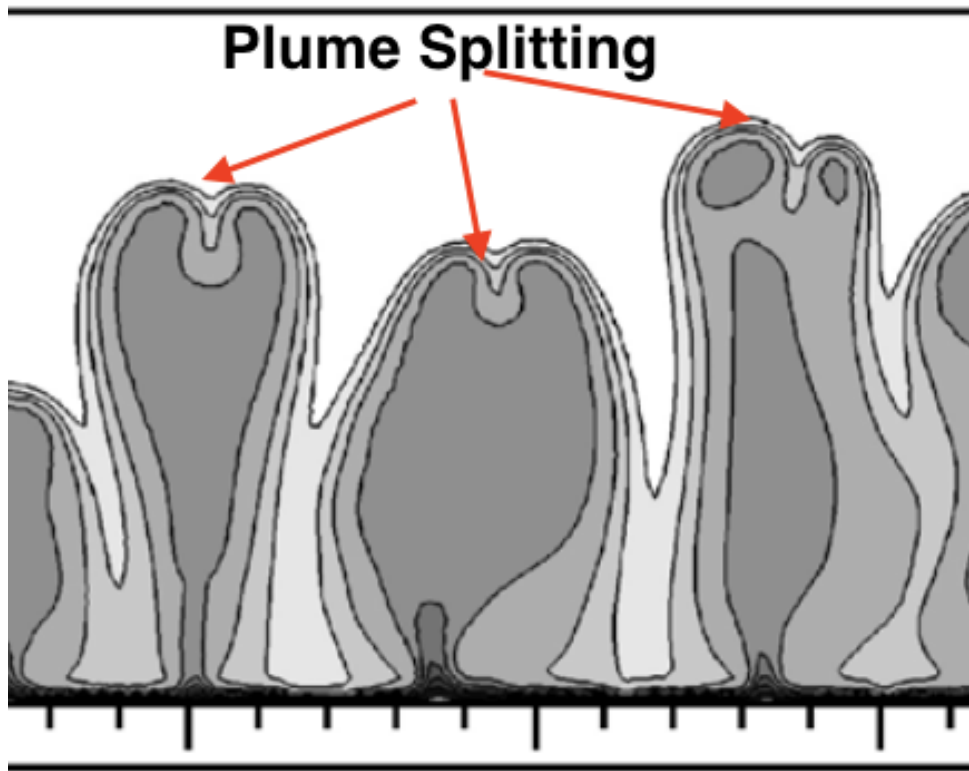
Please also note the supplement to this comment:
https://se.copernicus.org/preprints/se-2020-48/se-2020-48-RC2-supplement.pdf

Plume Splitting

Fig. 1. Plume splitting after Coumou et al 2006