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Geothermal Training Programme



GEOHERMAL MAPPING IN MIDDALUR FIELD, HENGILL AREA, SW-ICELAND

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October 13, 2015



Outline...

Geology and tectonic of Hengill

Geothermal mapping of Middelalur

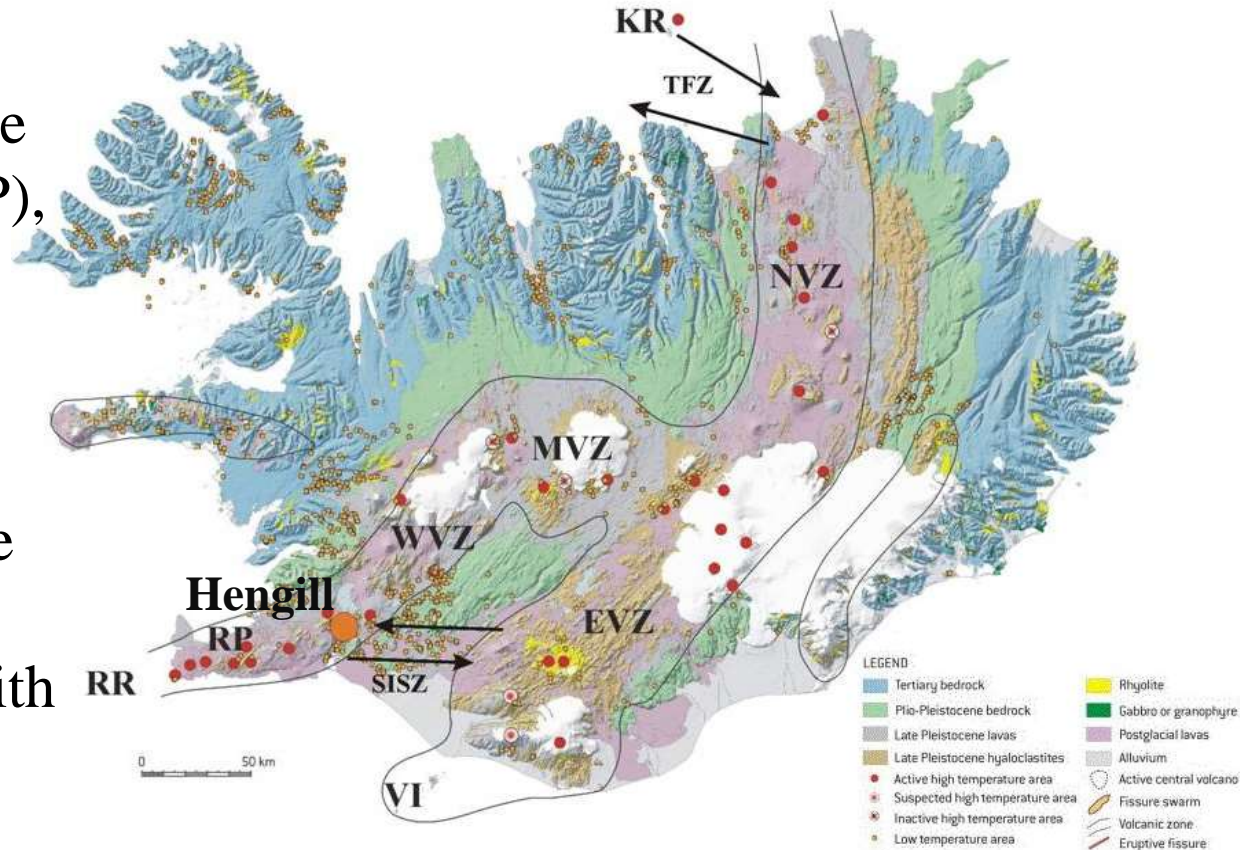
Conceptual model

Conclusions

Geology and tectonic of Hengill

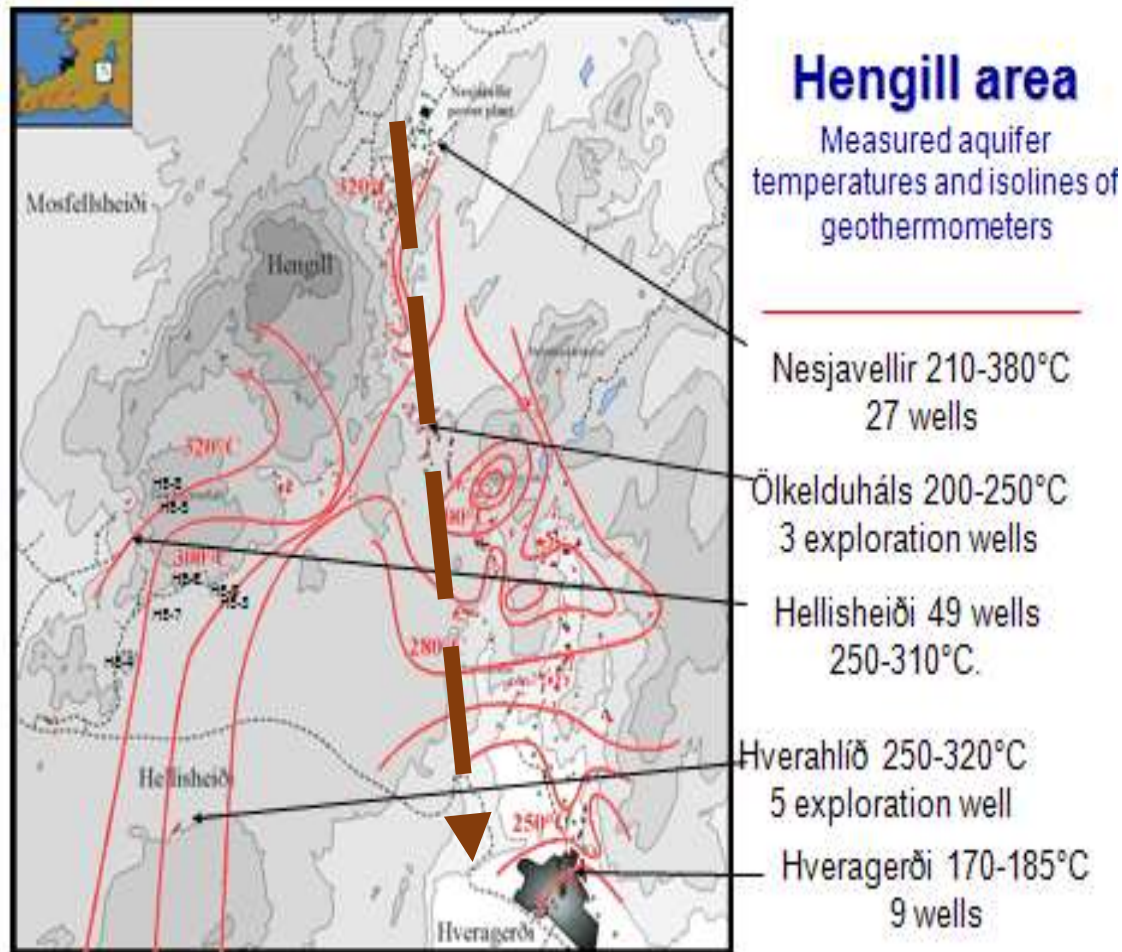
Hengill is at the triple junction of the WVZ, the Reykjanes Peninsula (RP), and the South Iceland Seismic Zone (SISZ)

The main rock types are subglacially formed hyaloclastites together with basaltic lava flows



Hardarson et al., 2010

Geothermal activity of Hengill

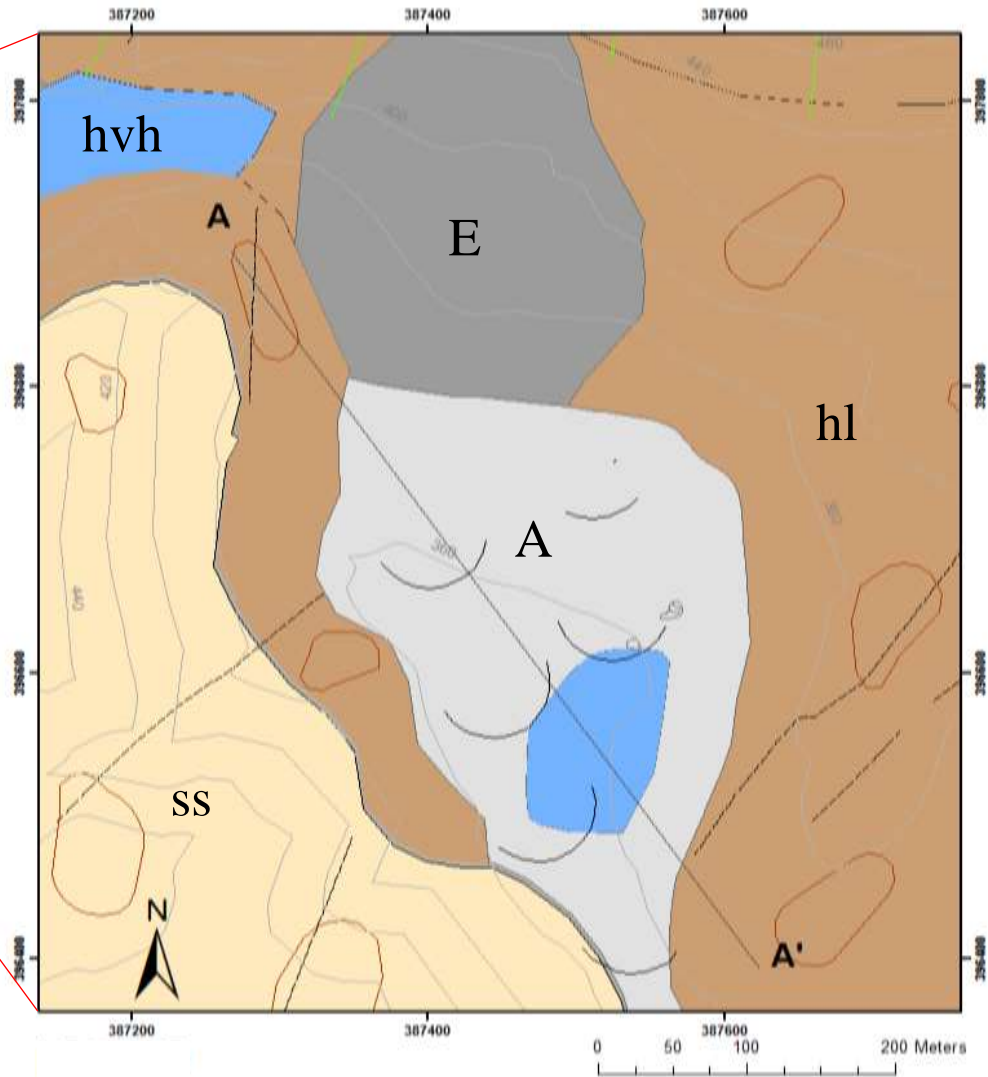
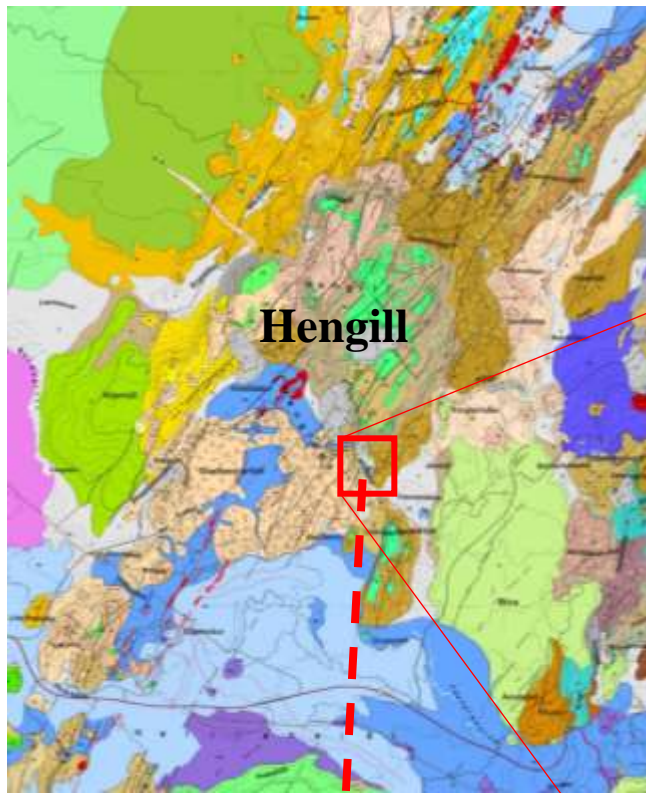


Geothermal manifestations are connected with the volcanic systems

The main heat source is considered to be cooling magma intrusions within the upper crust, while deep circulation of groundwater in highly fractured rocks transports the heat upwards

Modified from Ívarsson, 1998

Geology of Middalur area



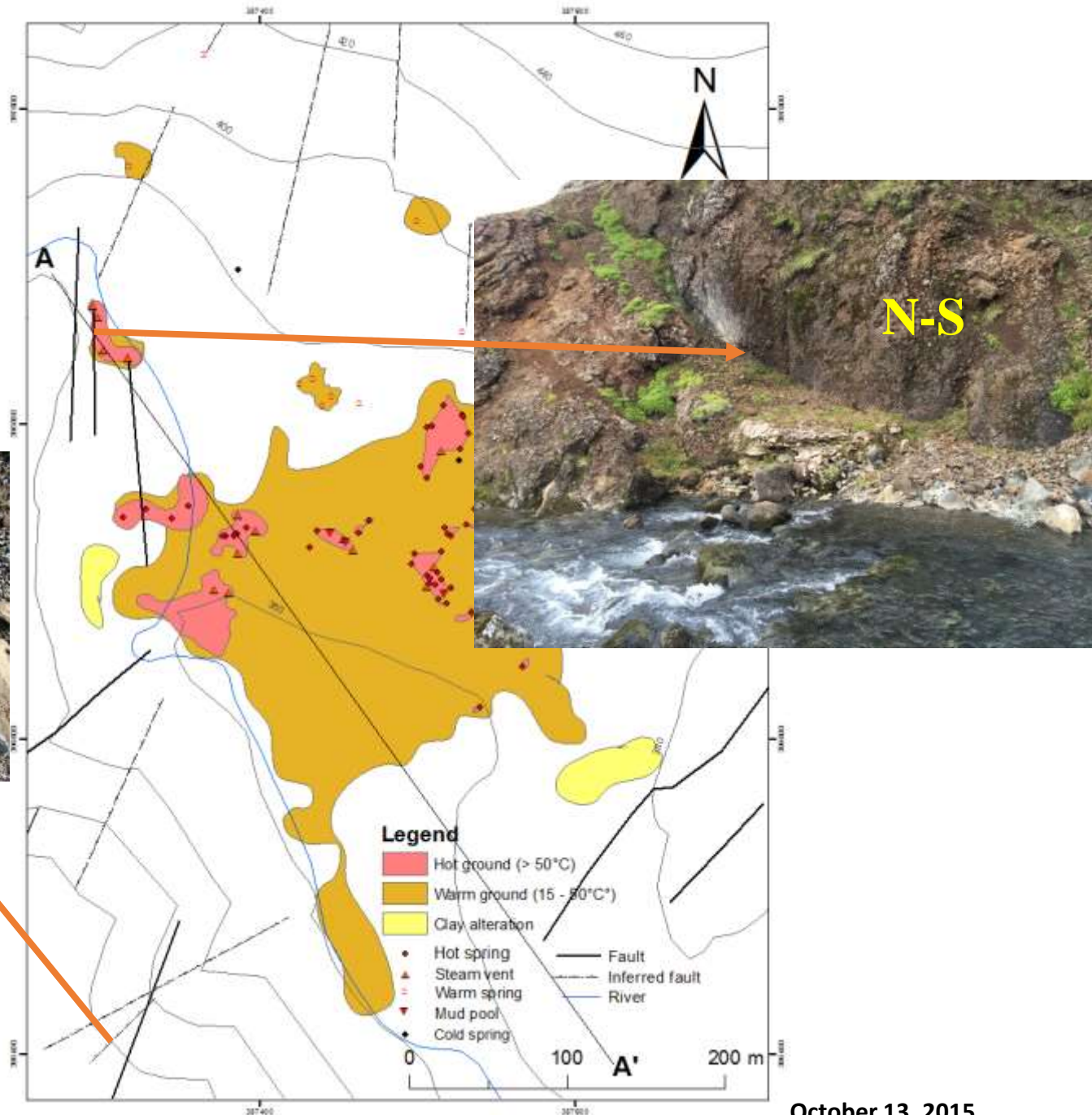
➤ Soil Measurement

*Temperature measurements at 50 cm depth in a 5*20 m grid, covering an area of 2800 m²*

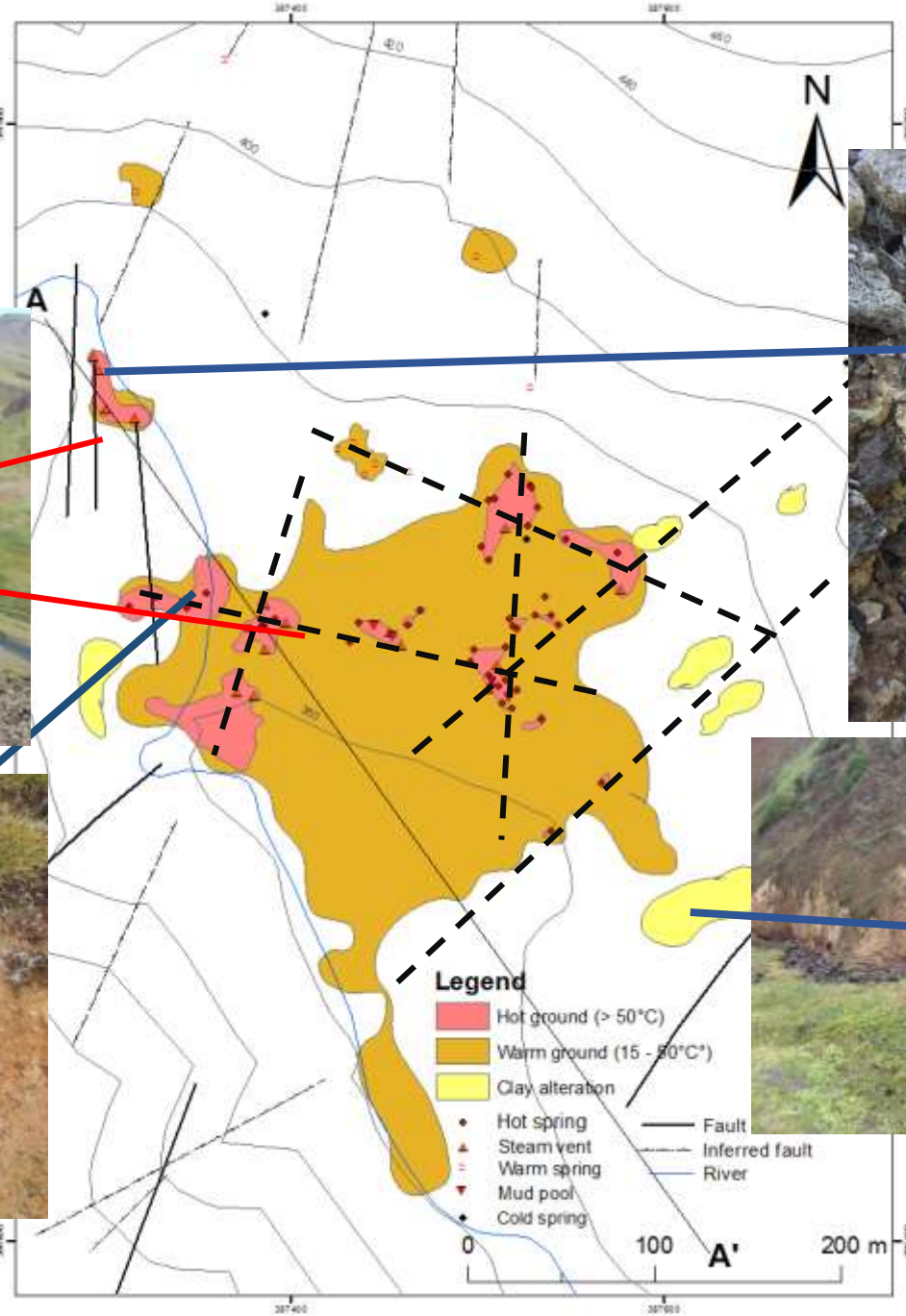
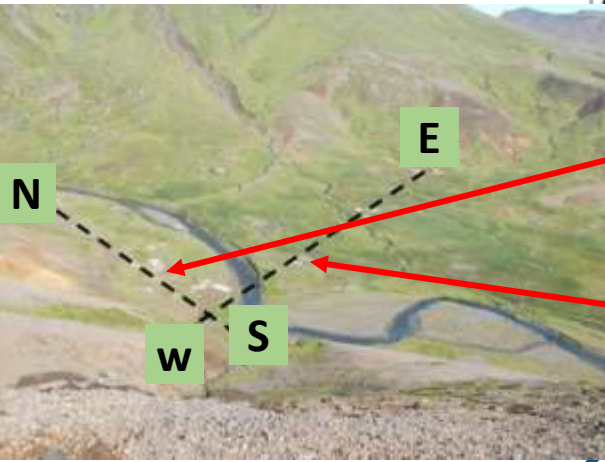
➤ Airphoto analysis



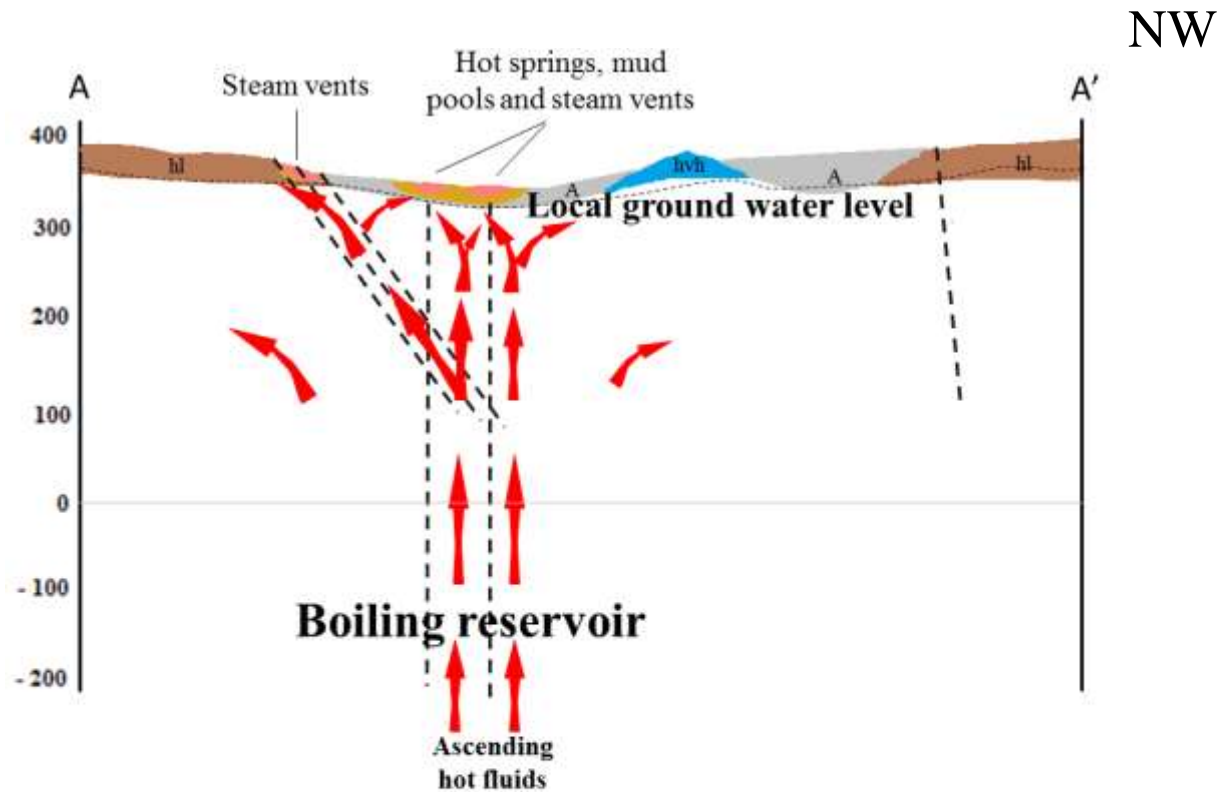
Geothermal mapping of Middalur



Geothermal mapping of Middalur



Conceptual Model



Legend

A	Stream deposits		Hot grounds (> 50°C)
hvh	Hagavikurhraun, Hellisheidahraun B/C. Postglacial lavas		Warm grounds (15-50°C)
hl	Hengill formation Hyaloclastite, pillow lava		Fault/Fracture
			Hot fluid/Steam

NW

Conclusions

Most of the geothermal manifestations are related to structural features like faults indicating that the upflow in the area is mostly controlled by them.

Geothermal manifestations and temperature distribution indicate faults/ fractures trending approx. NE-SW, E-W and N-S.

These are probably faults controlling the movement of the geothermal water of the area. Heat sources are believed to be cooling intrusions underneath the Hengill central volcano.



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Thank You

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