



Imaging and structural analysis of the Geyser field, Iceland, from underwater and drone based photogrammetry

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The Haukadalur thermal area, southwestern Iceland, is composed of a large number of individual thermal springs, geysers and hot pots that are roughly elongated in a north-south direction. The Haukadalur field is located on the eastern slope of a hill, that is structurally delimited by fissures associated with the Western Volcanic Zone. A detailed analysis on the spatial distribution, structural relations and permeability in the Haukadalur thermal area remained to be carried out. By use of high resolution unmanned aerial vehicle (UAV) based optical and radiometric infrared cameras, we are able to identify over 350 distinct thermal spots distributed in distinct areas. Close analysis of their arrangement yields a preferred direction that is found to be consistent with the assumed tectonic trend in the area. Furthermore by using thermal isolated deep underwater cameras we are able to obtain images from the two largest geysers. Geysir, name giving for all geysers in the world, and Strokkur at depths exceeding 20 m. Near to the surface, the conduit of the geysers are near circular, but at a depth the shape changes into a crack-like elongated fissure. In this presentation we discuss the structural relationship of the deeper and shallower parts of these geysers and elaborate on the conditions of geyser and hot pot formations, with general relevance also for other thermal fields elsewhere.