



## **The Geothermal Field Camp: Capacity building for geothermal energy systems in Indonesia**

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In July 2011, the first geothermal field camp was held on Java/Indonesia near the city Bandung south of the volcanic field Tangkuban Perahu. The course was organized by the Institut Teknologi Bandung (ITB) and International Centre for Geothermal Research (ICGR) of the German Centre of Geosciences (GFZ). The purpose of the Geothermal Field Camp is to combine both field based work and laboratory analysis to ultimately better understand the data collected in field and to integrate data gained by various disciplines. The training belongs to a capacity building program for geothermal energy systems in Indonesia and initially aims to train the trainers. In a later stage, the educational personal trained by the Geothermal Field Camp shall be able to hold their individual Geothermal Field Camp. This is of special interest for Indonesia where the multitude of islands hindered a broad uniform education in geothermal energy systems. However, Indonesia hold the largest geothermal potential worldwide and educated personal is necessary to successfully develop this huge potential scattered over region in future. The interdisciplinary and integrative approach combined with field based and laboratory methodologies is the guiding principle of the Geothermal Field Camp.

Tangkuban Perahu was selected because this field allows the integration of field based structural geological analysis, observation and sampling of geothermal manifestations as hot springs and sinters and ultimately of structural geology and surface geochemistry. This innovative training introduces in methods used in exploration geology to study both, fault and fracture systems and fluid chemistry to better understand the selective fluid flow along certain fractures and faults. Field geology covered the systematic measurement of faults and fractures, fault plane and fracture population analysis. In addition, field hydro-geochemistry focused on sampling techniques and field measurements onsite. Subsequent data analysis of the collected data with statistical techniques allowed a reliable interpretation and application of the related software.

The course starts with a lecture day reviewing on geothermal exploration, introduction into structural geology, geochemistry and applied volcanology (1st day) and continues with practical work in the Tangkuban Perahu volcano field and surrounding area (2nd – 5th days, from morning until late afternoon). The collected field data are processed and analyzed daily after field work. On the last day, each group of participants gives a presentation related to their field and laboratory investigations and to evidence the lessons learned. In particular, the participants learn practical work in field and laboratory, and theoretical data analysis. Sampling and analysis of self-collected data are fundamental for any interpretation and assessment of reservoir potential.

The success of the first Geothermal Field Camp 2011 speaks for a continuation and extension of the training program in 2012 and the following years. Future activity will integrate more collaboration partners and will cover a larger diversity of educational topics and geological-geothermal setting.