

## ThamLuang Cave Systems in the view of Hydrogeology and related issues

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ThamLuang Cave system in Chiang Rai Province, Thailand, is located in the very thick carbonate rocks, mainly consists of limestone and some parts of marble, which created unique aquifers and accommodating complex hydrogeological conditions in 3 different cave systems; dry caves, stream caves and phreatic caves in the same area. Besides, it is the 4<sup>th</sup> longest caves in Thailand with a total length of about 10.3 km. Rainfall pattern in this area is the main factor controlling changes of water levels in the main cave and causes flooding passages during the rainy season. Another factor is the complexity of the cave system, especially the variety of cave passages in term of dimensions and elevations. On June 23, 2018, the heavy rainfall caused flooding that trapped a soccer team of 12 boys and their coach inside the cave. To rescue the team, the author and staffs from the Department of Mineral Resources, together with the experts from the Royal Irrigation Department, Department of National Parks, Wildlife and Plant Conservation, Thai Royal Army and several hundreds of local people were collaborating to search for locations of stream sinks where water from streams flow into the upper part of the cave system. Also, they constructed small weirs to divert water from the northern and southern parts of the main cave. These actions led significant water-level decline, therefore the decision maker began the unbelievable rescue operation that successfully saved the football team out from the cave. ThamLuang cave area is the outstanding place and attractive for adventure tourism because of its astonishing karst features. In addition, there are pieces of hydrogeological evidence that we can investigate and further study such as Karst Biodiversity, Paleontology, Paleo-climate, Carbon sink and Neo-tectonic.