

## Geologic and Geographic problems on the conservation of the historical Buddhist monastery Ajina Tapa, Tajikistan

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Archeological and historical monuments contain many important information on the longevity of construction material under an environmental condition. Also, monuments have information on the ancient technology that was the bases of human society. The conservation works of those historical monuments is one of the biggest way to study the longevity and the ancient technology harmonizing with environmental condition.

The author joined in a UNESCO project for conserving historical Buddhist monastery Ajina Tapa, Tajikistan as the leader of an international experts group organized. This project was conducted during 2005-2008.

Ajina Tapa is locating about 100km south from Dushanbe. The average annual precipitation is about 260mm. A big river named as Wakhsh is running near the site. The area surrounding the site is irrigated by using water of the Wakhsh river.

Ajina Tapa was archeologically excavated during 1960-1975 by Russian archeologists. After the excavation, the site was not conserved, so that, walls of the monastery and Stupa were weathered and collapsed. As the first step of the conservation, the site was precisely mapped using Photogrammetry by Dr. Fujii, Fukada Geological Institute. Then, the decay process was studied for deciding the most proper way of the conservation. Salt weathering was studied by mineral analysis and evaporation measurement. It was found that the rate of evaporation is extremely big just above the ground surface and gradually decreasing with height. The major salt created were calcite and halite. Na and Cl forming halite might be coming from groundwater.

It was concluded that the speed of decay of the walls has been rapid. On the basis of the conclusion, As the most proper conservation way, it was decided to cover the walls by mud brick and plaster. The production of mud bricks and plaster was managed by Dr. Enrico Fodde. As the results, the historical Buddhist monastery was successfully conserved.