

アンコール遺跡を構成する砂岩ブロックの日射による風化の可能性

Possibility of insolation weathering of sandstone blocks composing Angkor temples, Cambodia

*藁谷 哲也¹

*Tetsuya Waragai¹

1. 日本大学大学院理工学研究科

1. Graduate School of Science and Engineering, Nihon University

Angkor temples such as Angkor Wat and Bayon temples built from 9th to 13th century are mainly composed of sandstone blocks. However, as a result of tree cutting that has been proceeded to protect the temples from rootwedging processes, most of temples are exposed to direct insolation. Possibility of insolation weathering of the sandstone blocks are pointed out, since the sandstone blocks can keep high temperature condition during daytime. Therefore, this study carried out field experiments that expose a sandstone cylindrical specimen in a dry season as a trial experiment using an acoustic emission (AE) method that may detect microcracks in the specimen by temperature changes. The experiment was carried out at the test site of Angkor Wat temple by measuring surface temperatures and AE signals of the specimen in December 2018. As the results, the surface temperatures of the specimen were 51.5 °C in maximum and 20.8 °C in minimum, and diurnal difference was 30.3 °C. In addition, the maximum elevation rate of the temperature was 1.50 °C/min and the minimum descending rate of the temperature was -1.88 °C/min. Although the surface temperature measurement could not synchronize to the AE measurement, an AE signal that is 40% bigger than ordinal value, was detected at the time of 0.43 °C/min of the elevation rate of temperature. This is though that sandstone blocks maybe deteriorate due to temperature changes by insolation.

キーワード：アンコール遺跡、砂岩、日射風化、アコースティックエミッション

Keywords: Angkor temples, sandstone, insolation weathering, acoustic emission