

Direction dependence of hollows formed on sandstone pillars at Angkor Wat temple, Cambodia.

*藁谷 哲也¹、比企 祐介²

*Tetsuya Waragai¹, Yusuke Hiki²

1. 日本大学大学院理工学研究科、2. 水城高校

1. Graduate School of Science and Engineering, Nihon University, 2. Suijo High School

Angkor Wat temple is in a tropical monsoonal climate having seasons of dry and wet, and rocks such as sandstone and laterite forming the temple are mainly deteriorated by wet-dry weathering and salt weathering. In this study, we focus on weathering environments and a hollow formed on the inside sandstone pillar in the first gallery of the temple which is located most outside from the central sanctuary. It is supposed that depth of the hollow is different from due to direction of the pillar and gallery. Therefore, environmental condition which provides the depth of hollow is analysed based on the measurement of the depth of hollow and air temperature-humidity environment in the gallery. As a result, the depth of hollow on pillar facing to the outside which is placed in a highly wet-dry repeat situation is deeper than the inside of pillar about three times. In addition, the depth depends on the direction of the gallery. Namely, the depth is deep at the eastern gallery with a rapid humidity change, is shallow at the northern gallery with high humidity and low air temperature through the year. It is supposed that the hollow formation has been accelerated since the clearing of vegetation at the temple that progresses as a conservation project. Because the clearing of vegetation is possible to decrease thermal buffer function and increase moisture changes for the pillar.

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