

Detection of surface changes in sandstone blocks by weathering in a coastal environment using TLS

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Compared to the traditional measurement method, i.e., point to point, or cross-sectional measurements using scale bars, recent advantageous measurements using terrestrial laser scanning (TLS) enables more efficient and accurate measurements of the amount of weathering on the surface of vulnerable materials in coastal areas. We carried out multi-temporal TLS measurements to monitor the changes in the surficial morphology of sandstone blocks used for masonry piers of a bridge on a shore platform at Aoshima, Miyazaki Prefecture in western Japan. While the blocks have suffered from salt weathering above the sea level since the construction of the bridge in 1951, the weathering-induced depressions are still developing in the spray zone. The multiple measurements of the detailed morphology reveal the contemporary weathering rates.

Keywords: weathering, sandstone, terrestrial laser scanning, rock strength