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Multiscale, multispectral and multitemporal satellite data to identify archaeological remains in the archaeological area of Tiwanaku (Bolivia)

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The aim of this paper is to investigate the cultural landscape of the archaeological area of Tiwanaku (Bolivia) using multiscale, multispectral and multitemporal satellite data. Geospatial analysis techniques were applied to the satellite data sets in order to enhance and map traces of past human activities and perform a spatial characterization of environmental and cultural patterns.
In particular, in the Tiwanaku area, the approach based on local indicators of spatial autocorrelation (LISA) applied to ASTER data allowed us to identify traces of a possible ancient hydrographic network with a clear spatial relation with the well-known moat surrounding the core of the monumental area. The same approach applied to QuickBird data, allowed us to identify numerous traces of archaeological interest, in Mollo Kontu mound, less investigated than the monumental area. Some of these traces were in perfect accordance with the results of independent studies, other were completely unknown. As a whole, the detected features, composing a geometric pattern with roughly North–South orientation, closely match those of the other residential contexts at Tiwanaku.
These new insights, captured from multitemporal ASTER and QuickBird data processing, suggested new questions on the ancient landscape and provided important information for planning future field surveys and archaeogeophyical investigations.

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