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# Survey of the Pompeii (IT) archaeological Regions with the multispectral thermal airborne TASI data

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Thermal remote sensing, as a tool for analyzing environmental variables with regards to archaeological prospecting, has been growing ever mainly because airborne surveys allow to provide to archaeologists images at meter scale. The importance of this study lies in the evaluation of TIR imagery in view of the use of unmanned aerial vehicles (UAVs) imagery, for the Conservation of Cultural Heritage, that should provide at low cost very high spatial resolution thermal imaging.
The research aims at analyzing the potential of the thermal imaging [1] on some selected areas of the Pompeii archaeological park. To this purpose, on December the 7th, 2015, a TASI-600, an [2] airborne multispectral thermal imagery (32 channels from 8 to 11.5 nm with a spectral resolution of 100nm and a spatial resolution of 1m/pixel) has surveyed the archaeological Pompeii Regions. Thermal images have been corrected, calibrated in order to obtain land surface temperatures (LST) and emissivity data set to be applied for the further analysis. The thermal data pre-processing has included: ii) radiometric calibration of the raw data and the correction of the blinking pixel; ii) atmospheric correction performed by using MODTRAN; iii) Temperature Emissivity Separation (TES) to obtain emissivity and LST maps [3].
Our objective is to shows the major results of the IR survey, the pre-processing of the multispectral thermal imagery. LST and emissivity maps have been analysed to describe the thermal/emissivity pattern of the different Regions as function of the presence, in first subsurface, of archaeological features.
The obtained preliminary results are encouraging, even though, the vegetation cover, covering the different Pompeii Regions, is one of the major issues affecting the usefulness of the TIR sensing.
Of course, LST anomalies and emissivity maps need to be further integrated with the classical geophysical investigation techniques to have a complete validation and to better evaluate the usefulness of the IR sensing
References
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