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Monitoring forests based on Sentinel-2 satellite images and Digital Surface Models

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The recently launched Sentinel-2 satellites provide generally 5-days revisit time for the forests in Hungary. A multi-temporal monitoring methods have been developed based on those available satellite image time-series, on a highly forested test area in Hungary. Digital Surface Models (DSM) derived from image matching techniques based on traditional stereoscopic aerial surveys are also integrated into the monitoring system. The system emphasising the determination of the following three parameters for forested areas: 1) Forest stand type-groups; 2) Average age-class of a forest stand; 3) Average crown closure of a forest stand. The first parameter is derived directly from the satellite image time-series, and the results are compared to a compartment-based forest management data. The second parameter is estimated roughly from the satellite image time-series, and refined based on the Digital Surface Models. The results are compared to a compartment-based forest management data. The third parameter is also estimated from the satellite image time-series, based on our previous work, and the results are assessed and compared to a compartment-based forest management data and the crown closure derived from the Digital Surface Models. Our results show, that this type of integrated monitoring system has more and more significance in the near future. This research is partly supported by the project ‘EFOP-3.6.1-16-2016-00018’.