

ENVICHANGE

4D Information Products for the Monitoring of Environmental Changes Based on LiDAR- and Satellitedata

The project ENVICHANGE as proposed here intends i) to identify the possibilities of analysing spatial features for monitoring land cover and essential infrastructure facilities based on high-resolution satellite and LiDAR data and ii) to implement methods for its operational generation. The possibility of fully or partially automated information extraction is evaluated based on user requirements of corresponding federal authorities and infrastructure operators. The essential benefit is considered to be the inclusion of LiDAR derived elevation data, which is a further and inherent information layer besides conventional analysis products, which have been mainly evolved from traditional remote sensing data so far.

The pivotal advantage of the integral, combined interpretation proposed here is that LiDAR as active remote sensing technology precludes drawbacks from shadowing and thus, complements optical satellite data in case of ambiguity. Land cover or infrastructure which could not be interpreted reliably from optical satellite data due to topographical shadows can now clearly be identified and interpreted. The three-dimensional mapping of rock slopes including derived products like rock fall endangered zones or exact location of protective structures are examples for the utilization of data of that kind. The delimitation of forestal areas (protective forests or forest cultivation) or rock slopes as well as the correct positioning of protective structures are in the field of responsibility of the project's user group (Federal State of Vorarlberg, ÖBB Group).

Beneath non recurring analyses the focus is on the multi-temporal evaluation of data of two kinds, satellite and LiDAR data. The recurring combination of the data facilitates the recognition of qualitative as well as quantitative changes. In collaboration with the project user 'Land Vorarlberg' a comprehensively recurring LiDAR dataset is available, which is considered to reveal qualitative and quantitative testimony on changes in river sections, which were affected by the 2005 flooding. Further recurring coverage is to be expected for most parts of Austria in the near future.

The objective of the project is the evaluation of available satellite and LiDAR data with respect to the joined interpretation as well as the development of methods, which render efficient non recurring and recurring analysis products.

Infobox

Project duration:

1 March 2009 – 30 November 2010

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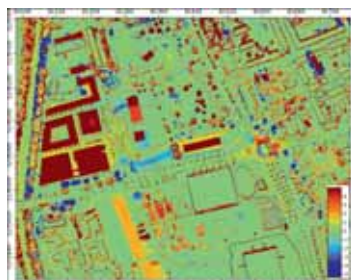
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Innsbruck Tivoli quarter 2006,
ALS altitudes – airplane



Innsbruck Tivoli quarter 2009,
ALS altitudes – helicopter



Innsbruck Tivoli quarter –
urban development
between 2006 and 2009