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Quality management for DTM production

Airborne Laser Scanning (ALS) is a technique which can be applied for the generation of Digital Terrain Models (DTM). While the technique and the methodologies of data acquisition with ALS have been extensively described in literature, the number of publications on the experience and the methodologies of managing the quality of ALS data are rather limited. The management of quality is considered affected by two main factors: the technical quality descriptions and guidelines directly related to the ALS technology, and the quality management capacity of the organizations using or relying on the data. The former can often be found in guidelines, handbooks, standards and test results, while the latter is often case based, and organization- or contract-specific. Both aspects however pose a problem for those organizations which are new to the technology, and which have to rely on external contractors to conduct the spatial data acquisition. The Vietnam Ministry of Natural Resource and Environment is such an organization (MoNRE).

Given this problem, this paper will explore both aspects of quality management of ALS data from the perspective of MoNRE. Based on international experiences – notably in the Netherlands, Germany and Switzerland - the quality management practices of ALS are reviewed and compared for the characteristics of quality work flows, quality control, quality assurance and quality management. Such a comparison leads to a general (theory-based) framework for quality management of ALS data. Parallel to this theoretical analysis, we are assessing the quality practices, the resource capacity and organizational quality culture within MoNRE using an organizational theory surrounding subcontracting. This leads to the conditions and characteristics for which the theoretical guidelines of quality management must be adapted.

The results of both reviews are combined to generate a guideline for MoNRE. It is aimed that this guideline is not only for use within MoNRE, but can also be used to support further theory making of quality management of external spatial data acquisition