



## **Lessons learned from the international benchmarking of terrestrial laser scanning for forest inventories**

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Terrestrial laser scanning (TLS) is an automated and effective technique for acquiring detailed tree attributes in forest plots, leading to more sustainable development in silviculture and savings for forest owners and industry. The last two decades have witnessed tremendous efforts put into research to develop methods for tree attributes estimation and best practices of plot-level forest observations from TLS. Impressive results have been reported in recent years. However, there is still a lack of proper understanding the performance of TLS, especially in forests with varying structure and in development stages.

To understand the current status of TLS in forest inventories, an international benchmark study was launched in 2014 by European Spatial Data Research Organization (EuroSDR). Eighteen research groups participated the project and extracted the standardized plot- and tree-level attributes through both single- and multiscan TLS data using their own methods, including the digital terrain model, tree positions, tree height, diameter at the breast height and stem curve. And the results were evaluated with standardized data and evaluation method. The results indicate the impacts of the measurement setup, reconstruction method and forest conditions. The work reviews lessons learned from the international benchmarking.