



Nordic Forest Research

Network no: N2016-06

Send the report to SNS@slu.se and efinord@efi.int

REPORT NETWORK ACTIVITY (meeting, conference etc.)

Please notice that the size of text sections in the form can be adjusted if needed.

The length of the final report should not exceed 3 pages. Supplementary information can be attached.

1. Aktivitestens titel		
2. Activity title	1) Meeting of the EFINORD-SNS network “Large scale 3D LiDAR data for wall-to-wall assessment of forest structures and resources”. Nødebo, Denmark June 8th – 9th, 2016 2) Meeting of the EFINORD-SNS network “Large scale 3D LiDAR data for wall-to-wall assessment of forest structures and resources”. Ås, Norway September 26th – 28th, 2016	
3. Coordinator /contact person (name, address, telephone, telefax. e-mail)	Thomas Nord-Larsen Rolighedsvej 23 DK 1958 Frederiksberg C Denmark Phone +45 35331758 e-mail: tnl@ign.ku.dk	
4. Duration	1) The activity started 8 /6 2016 and ended 9/6 2016 2) The activity started 28 /9 2016 and ended 28/9 2016	
5. Cost	SNS-grant: DKK 127,376	Total activity cost: DKK 75,449

<p>6. Description of activity (incl. objectives, results, conclusions)</p>	<p><i>Aim</i> Aim of the network is to strengthen research on the utilization of large scale laser scanning data for assessment of forest structures, functions and resources.</p> <p>1) Meeting of the EFINORD-SNS network “Large scale 3D LiDAR data for wall-to-wall assessment of forest structures and resources”. Nødebo, Denmark June 8th – 9th, 2016</p> <p>The objectives of the meeting in Nødebo was to identify large scale LiDAR mapping projects currently or recently being undertaken among the participating countries, to inform participants on technical details of these surveys and to identify common research needs and possibilities arising from the large scale LiDAR datasets.</p> <p><i>Results</i> Wall-to-wall 3D LiDAR surveys have been undertaken in Sweden, Finland and Denmark and are currently being done in Norway. The surveys provide a hitherto unseen amount of detail on the forest resources. In most cases the potential of these data are far from fully exploited.</p> <p>At the meeting, Mats Nilsson presented the Swedish work with forest resource maps and their dissemination to stakeholders via free, downloadable maps and web facilities. Other presentations included:</p> <ul style="list-style-type: none"> - National/institutional outline on current status, development and research needs were presented by Norway, Sweden, Finland, Estonia, Lithuania and Denmark (PowerPoint presentations attached). - Thematic presentation on green LiDAR / by Martin Rudbeck - Thematic presentation on the possibilities of repeated laser scanning surveys / by Erik Næsset - Thematic presentation of TLA for obtaining ground truth / by Håkan Olsson <p><i>Conclusion</i> Proposals or topics for future studies include:</p> <ul style="list-style-type: none"> - Analysis of change with repeated laser scanning surveys - Distinguishing between managed and unmanaged forests - There is a lack of information on vertical distribution of biomass - Identifying non-native or invasive tree species <p>Agreed to make an effort to develop a joint research statement/platform National funding efforts should keep Nordic partners in mind whenever relevant</p>
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2) Meeting of the EFINORD-SNS network “Large scale 3D LiDAR data for wall-to-wall assessment of forest structures and resources”. Ås, Norway September 26th – 28th, 2016 (meeting was held back-to-back with the CARISMA network)

The objectives of the meeting was to pin-point common research needs and discuss future possibilities for Nordic/Baltic funding of projects related to the utilisation of large-scale LiDAR data.

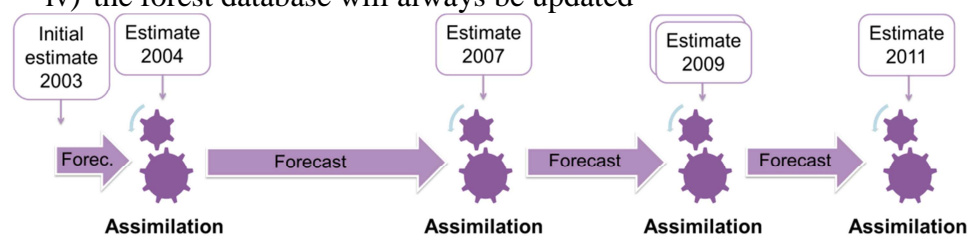
Result

A survey among different sources of funding, identified very few possibilities. Further, the observation of the meeting was that the overlap with the CARISMA network was so large that the interests of the Large Scale 3D LiDAR network are well covered for the future. Consequently, there was no interest in continuing the network activities.

Although there was no interest in continuing the activities of the Large Scale 3D LiDAR network, there was a general interest in joint future work. Thus, it was proposed to form a platform for future research within the area of the network.

Data assimilation was identified as a possible common platform for future network activities.

- i) Big Data, we will have a huge flow of data from different sensors (optical, radar, lidar, ground ...)
- ii) With different forestry relevant information content
- iii) From different timepoints
- b) Data assimilation provide:
 - i) better estimates
 - ii) insensitivity to bad observations
 - iii) areas with missing new sensor data will be forecasted
 - iv) the forest database will always be updated



Conclusion

Although there was no interest in continuing the activities of the Large Scale 3D LiDAR network, there was a general interest in joint future work. During the meeting a new instrument for Nordic university cooperation was identified to be launched late 2016. Late 2016, NordForsk will launch a new instrument for Nordic university co-operation with a call for proposals open to Nordic universities and university colleges that perform research. The overall goal of the new funding instrument is to strengthen international competitiveness and facilitate the development of world leading research environments in the Nordic region.

<https://www.nordforsk.org/en/funding/calls-for-proposal>. It was agreed that the partners of the network will submit a research proposal once a call has been issued.

<p>7. Evt. publication/ communication</p>	<p>The following publications were suggested and are at present under preparation with many of the participants as authors:</p> <ol style="list-style-type: none"> 1) A review article on the Nordic development within ALS. Erik Næsset will provide a draft outline. 2) Forest data acquisition in Nordic countries – roadmap for the future. Annika Kangas has produced a draft outline of the article: <ol style="list-style-type: none"> a) To describe the current practises of forest data acquisition in Nordic countries b) To identify potential benefits of improved forest information for the different users of the data c) To identify the characteristics of forest information needed to obtain these benefits d) To discuss the possibilities of the current data acquisition systems to produce information meeting the requirements e) To identify possible avenues to improve the current systems to better meet the requirements
<p>8. Activity summary (about 1/3 page) for possible use in the News & Views section of Scandinavian Journal of Forest Research</p>	<p>In recent years, national scale laser scanning inventories have been conducted in Sweden, Finland, Denmark and Norway for the development of terrain models and/or to aid forest inventories. The abundant data from such inventories represent a unique source of information about the forests and forest resources. The aim of the network was to strengthen research on the utilization of large scale laser scanning data for assessment of forest structures, functions and resources. Leading scientists were brought together to facilitate collaboration on future research projects and applications for funding.</p> <p>Two meetings were held in Nødebo, Denmark and Ås, Norway. At the meetings, several subjects for future research on large scale laser surveys were identified, including:</p> <ul style="list-style-type: none"> - Analysis of change with repeated laser scanning surveys - Temporal combination of various surveys with sensors using data assimilation for better and continuously updated forest data - Distinguishing between managed and unmanaged forests - There is a lack of information on vertical distribution of biomass - Identifying non-native or invasive tree species <p>Future work on remote sensing in general and LiDAR in particular may be focused on these subjects. Although activities within the EFINORD-SNS network “Large scale 3D LiDAR data for wall-to-wall assessment of forest structures and resources” have ended, activities are carried on in the Center of Advanced Research for the innovative use of 3D remote sensing in mapping of forest and landscape attributes based on national forest inventories (CARISMA).</p>
<p>9. Date and signature</p>	<p>Date: 23/1- 2017</p> <p style="text-align: right;">Signature of project leader/coordinator:</p> 