

# Raster Products from Lidar for Forest Applications



Adrian Madejczyk

1

15 JULY 2014

RASTER PRODUCTS FROM LIDAR FOR FOREST APPLICATION

**COWI**

# COWI Forestry Team

The team consists of high qualified specialists from:  
Denmark, Finland, Norway, Poland and Sweden

Headquarter: Kongsberg, Norway

Number of people teammembers: 6

Used software:  
ArcGIS 10.2, eCognition 8.64 TerraSolid,

Size of projects developed in years 2010 - 2013:  
4 000 000 ha (~ 10 000 000 acre)



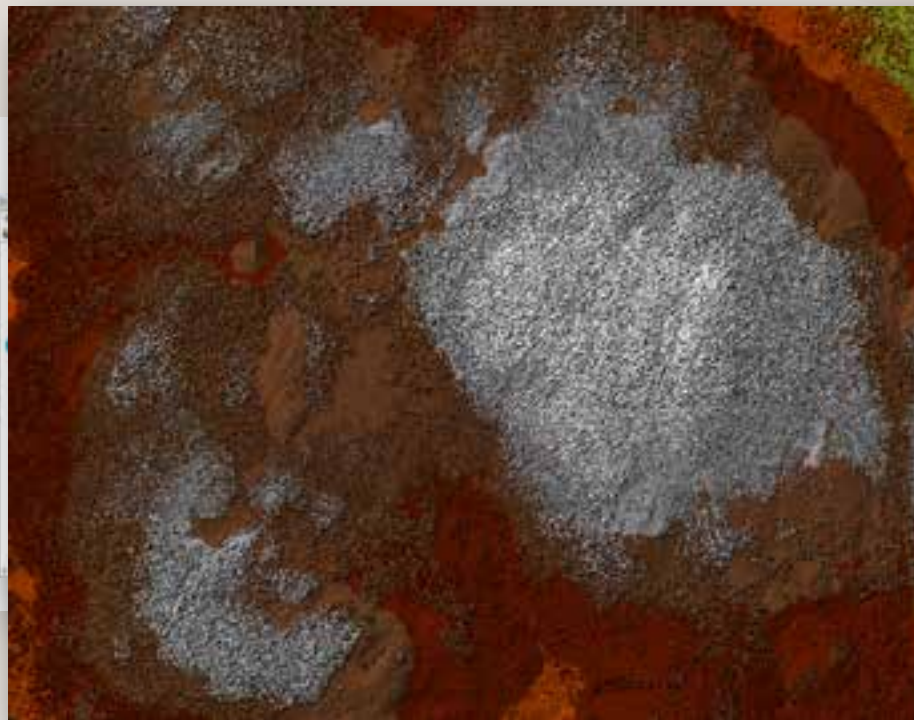
- > Easy Maps for easy use

- > A big amount of data which is surrounding us nowadays give us a lot of opportunities .. but for defined task we need only simple basic information\maps
- > It is very important not to overload reader with unnecessary information



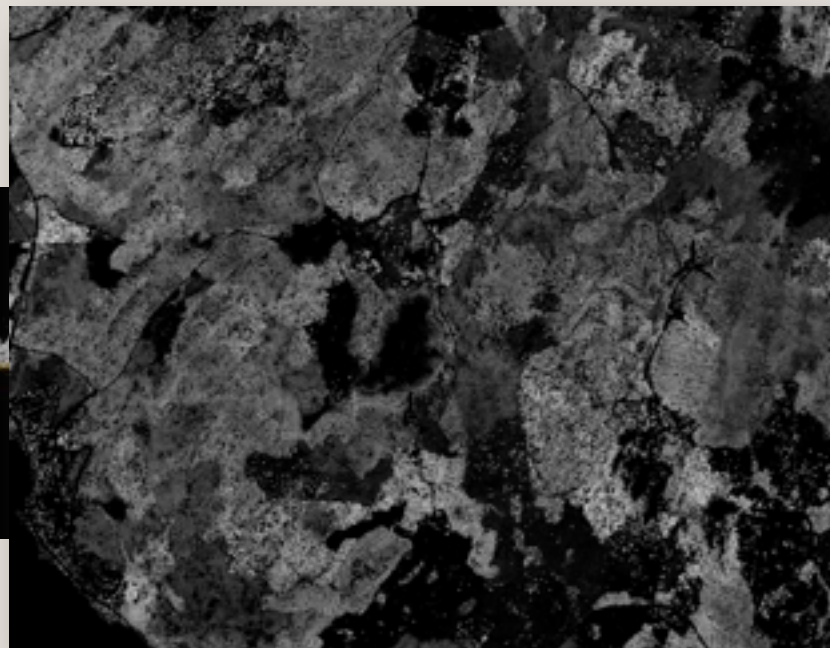
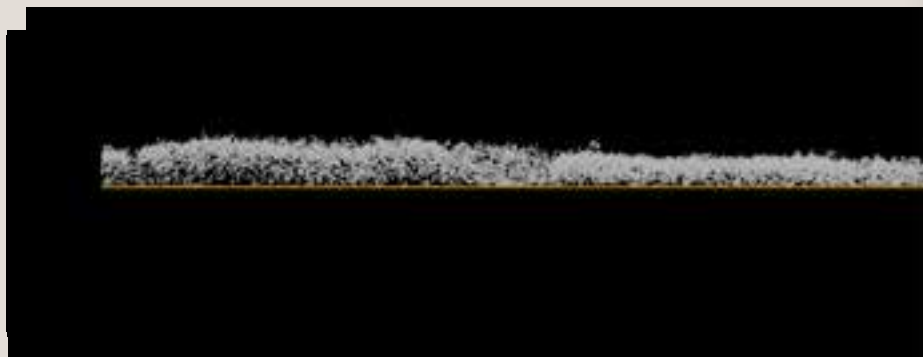
## Basic Raster product

- > LIDAR – DTM
- > All rasters and data come originally from **Airborne Laser Scanning**
- > First step product:
  - > DTM raster
  - > DSM raster



## Basic Raster product

- > DZ – canopy raster - how we make it ?



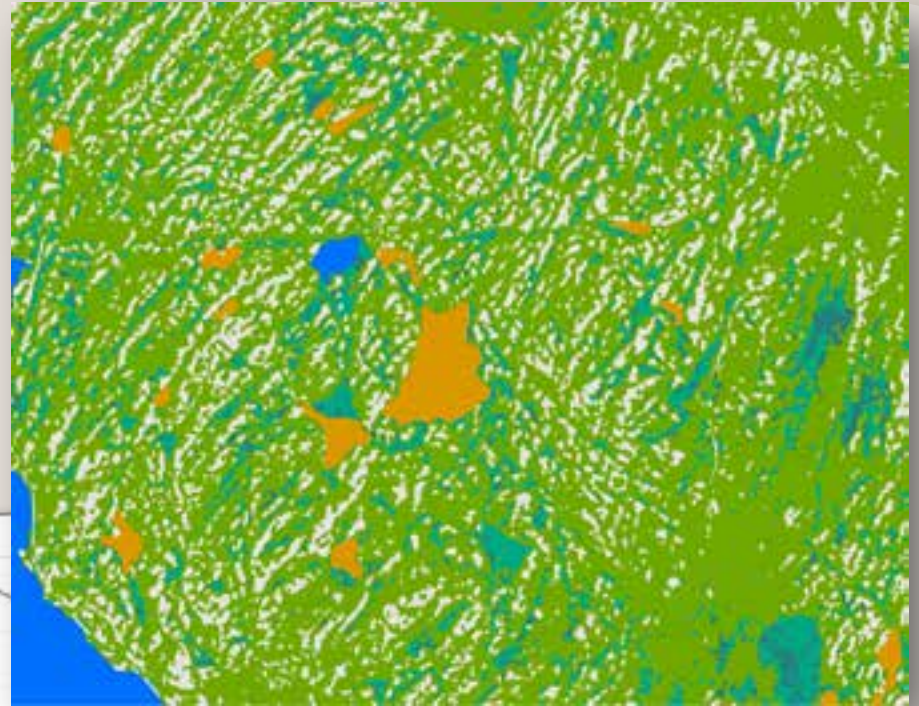
## Other Raster product

- > DTM derived product
  - > Hillshade
  - > Slope raster
    - > classified slope raster
    - > slop classes (vector)
- > Streams – where it comes from ?



# Advanced Raster products

- › WAM – Wet Analysis Map
  - › is based on lidar data and forest registry data. The method combines functionality of ArcGIS extensions (3D Analyst, Hydrology Toolset) and eCognition to describe the distribution of ground- and underground water level. The result is a layer that shows soil moisture and where the water surface is above ground level.



Example profile of DTm

# Raster layout

- > Raster layout – combination of basic and advanced raster products
  - > DZ layout
  - > WAM layout
  - > WAM\Slope\Streams layout



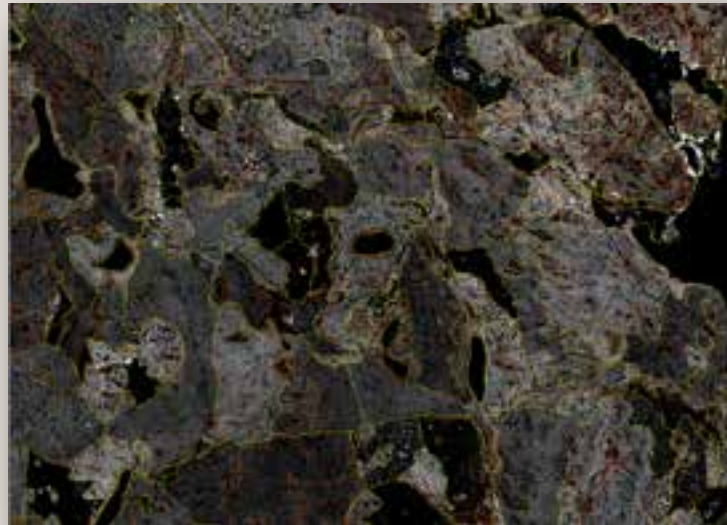




> Direct use – field maps

> Analysis – segmentation

- > thinning index
- > stand delineation
- > lonely trees



We are working on .....

- › New ways to make all information on maps easy to understand (easy resters)
- › New method to describe diversity of forest environment (new functions)
- › New method for modeling and estimating grow processes (models, callculations)
- › Even more use for LIDAR data in forestry (analysis, applications)

Thank You !

Adrian Madejczyk  
GIS consultant

**COWI**