

Global analysis of slope of forest land

SND-ID: snd1296-1. **Version:** 1. **DOI:** <https://doi.org/10.5878/e7e8-rz29>

Download data

Global analysis of the slope of forest land - PNG files.zip (10.35 MB)

Global analysis of the slope of forest land - TIF files.zip (1.12 GB)

Download all files

snd1296-1-1.zip (~1.13 GB)

Citation

Lundbäck, M. (2020) Global analysis of slope of forest land (Version 1) [Data set]. Swedish University of Agricultural Sciences. Available at: <https://doi.org/10.5878/e7e8-rz29>

Creator/Principal investigator(s)

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Research principal

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Principal's reference number

SLU.sbt.2020.3.2.1-13

Description

Forests of the world constitute one third of the total land area and are critical for e.g. carbon balance, biodiversity, water supply, and as source for bio-based products. Although the terrain within forest land has a great impact on accessibility, there is a lack of knowledge about the distribution of its variation in slope. The aim was to address that knowledge gap and create a globally consistent dataset of the distribution and area of forest land within different slope classes. A Geographic Information System (GIS) analysis was performed using the open source QGIS, GDAL, and R software. The core of the analysis was a digital elevation model and a forest cover mask, both with a final resolution of 90 metres. The total forest area according to the forest mask was 4.15 billion hectares whereof 82% was on slope less than 15°. The remaining 18% was distributed over the following slope classes, with 6% on a 15-20° slope, 8% on a 20-30° slope, and 4% on a slope >30°. Out of the major forestry countries, China had the largest proportion of forest steeper than 15° followed by Chile and India. A sensitivity analysis with 20 metres resolution resulted in increased steep areas by 1 percent point in flat Sweden and by 11 percent points in steep Austria. In addition to country-specific and aggregated results of slope distribution and forest area, a global raster dataset is also made freely available, to cover user-specific areas that are not necessarily demarcated by country borders. Apart from predicting the regional possibilities for different harvesting equipment, which was the original idea behind this study, the results can be used to relate geographical forest variables to slope. The results could also be used in strategic forest fire fighting and large scale planning of forest conservation and management.

Raster dataset in GeoTIFF format. The data is unprojected (EPSG: 4326) and the resolution is 90 m at

most, however the map-unit is degrees.

Five files in total where the number in the filename indicates the proximity to the equator. File with number 1 covers the area from 0 to 49 degrees latitude, both north and south, number 2N covers latitude 50-59° north, number 2S covers latitude 50-59° south, number 3 covers latitude 60-69° north and number 4 covers latitude 70-79° north.

The GeoTIFF files are in high resolution and are intended to be used with GIS software. We also provide PNG versions of the raster datasets, with XML geographic metadata, generated using GDAL in low resolution, to enable quick preview with a standard picture viewer.

Data contains personal data

No

Language

[English](#)

Time period(s) investigated

2000 - 2013

Data format / data structure

[Geospatial](#)

Geographic spread

Geographic location: [Australia](#), [North America](#), [Asia](#), [Africa](#), [Europe](#), [South America](#), [Oceania](#)

Geographic description: Global, except from Antarctica, Greenland and other smaller areas without forests.

Responsible department/unit

Department of Forest Biomaterials and Technology

Funding

- Funding agency: Department of Forest Biomaterials and Technology

Research area

[Earth and related environmental sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Geosciences, multidisciplinary](#) (Standard för svensk indelning av forskningsämnen 2011)

[Natural sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Remote sensing](#) (Standard för svensk indelning av forskningsämnen 2011)

[Agriculture, forestry and fisheries](#) (Standard för svensk indelning av forskningsämnen 2011)

[Forest science](#) (Standard för svensk indelning av forskningsämnen 2011)

[Soil science](#) (Standard för svensk indelning av forskningsämnen 2011)

[Environmental sciences related to agriculture and land-use](#) (Standard för svensk indelning av forskningsämnen 2011)

[Boundaries](#) (INSPIRE topic categories)

[Farming](#) (INSPIRE topic categories)

[Biota](#) (INSPIRE topic categories)

[Geoscientific information](#) (INSPIRE topic categories)

[Elevation](#) (INSPIRE topic categories)

Keywords

[Cutting \(forestry\)](#), [Forestry](#), [Forested land](#), [Sustainable forestry](#), [Administrative units](#), [Elevation](#), [Geology](#), [Land cover](#), [Soil](#)

Publications

Lundbäck, M., Persson, H., Häggström, C. & Nordfjell, T. (2021). Global analysis of the slope of forest land. *Forestry: An International Journal Of Forest Research*. 94(1), 54-69.

<https://doi.org/10.1093/forestry/cpaa021>

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Polygon (Lon/Lat)

-165.92952380555, 84.882468434007

-165.92952380555, -59.175928249271

191.25375350327, -59.175928249271

191.25375350327, 84.882468434007

-165.92952380555, 84.882468434007

Accessibility level

Access to data through SND

Data are freely accessible

Use of data

[Things to consider when using data shared through SND](#)

License

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Versions

Version 1. 2020-06-17

Contact for questions about the data

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Download metadata

[DataCite](#)

[DDI 2.5](#)

[DDI 3.3](#)

[DCAT-AP-SE 2.0](#)

[JSON-LD](#)

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[Citation \(CSL\)](#)

[File overview \(CSV\)](#)

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