Harvester Seasons

Web app on trafficability conditions supporting forestry industry

Overview

C3S Harvester Seasons by FMI, Finnish Meteorological Institute and subcontractor Metsäteho aims to develop a web application on favorable conditions for harvesting in Finland.

https://harvesterseasons.com/

This web application runs as well on mobile phones as on laptops to get information for planning forestry operations. It is co-designed with forestry industry stakeholders like Metsäteho and Metsä Group. Direct feedback by users is a key function to assure guidance to tailor the service.

Trafficability information is derived by combining hydrological HOPS model forecasts of soil parameters with lidar based static surface classification datasets. The innovative aspect of this service is that it enables foresight on trafficability of forest ground for heavy machines on many timescales for current analysis to months ahead by using C3S seasonal and FMI weather forecasts. Information for planning longer ahead than 10 days is a novelty.

Data

For this service forcing variables for the HOPS model are mainly meteorological parameters from Copernicus climate change C3S seasonal forecasts. These include ensembles of 51 model run forecasts. With HOPS they are used to provide a probability distribution of soil conditions used to highlight good or bad trafficability conditions for forestry.

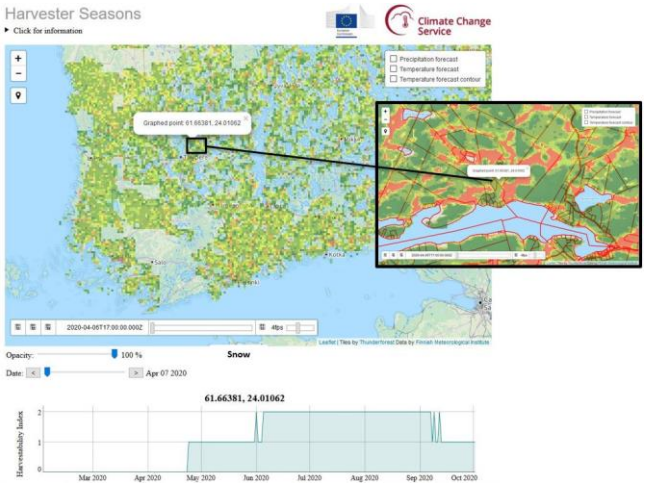
The described Harvester Seasons service is a novel highly tailored downstream service demonstration within the Copernicus program.

DIAS usage

The computing infrastructure of the service depends on WEkEO, one of the Copernicus DIAS services. Both HOPS production and the web application are processed on WEkEO virtual machines. WEkEO has server capacities in the ECMWF computing center and fast access to C3S data is being leveraged for Harvester Seasons.

Key aspects

- Easy guidance on harvesting machinery trafficability via web application
- Seasonal forecast up to 7 months
- Complex soil and snow condition model output translated into simple trafficability information
- Service tailored to harvesting industries needs
- Developed in co-design with the industry



Users

Modern Bio-economy produces energy and many forms of materials for value added products. The main raw material is round wood harvested from boreal zone forests. This involves the operation of heavy machines in forests - precious nature (as illustrated below) and accompanied logistics.

Timber harvesting and transport logistics in Finland involves over a thousand mostly small enterprises. They are highly dependent on the mobility of forest machinery and timber trucks on forest roads and in terrain. Climate change is reducing the very favorable winter conditions and introduces new risks.

Harvester Seasons will help to manage soil bearing capacity risks and opportunities in the warming climate of boreal forests.