

D7.1 Fire Hazard Map tool is in use for everyday operational work

WORK PACKAGE 7

Development of monitoring, information and support system



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Introduction

The new fire hazard map based on FWI calculation and daily publication has been compiled as a tool into operational work of Estonian Environmental Agency, thereby supporting the development of monitoring, information, and support system.

Initially, the algorithm for calculation of the Canadian Forest Weather Index (FWI) was recreated and tested with detailed meteorological information (weather models, precipitation from radar system) during the RITA project (RITA1/02-52 „Kaugseire andmete kasutuselevõtt avalike teenuste väljatöötamisel ja arendamisel“). It was demonstrated that the Canadian FWI index, with more detailed input data, allows the production of the Fire Hazard Map, which better reflects the meteorological situation and provides better spatial resolution.

Description of the results

The solution mentioned above has been implemented into the operational work of the Estonian Environmental Agency (dev/test-environment) and a new fire hazard information system has been created. The system includes a pixel-wise (1x1 km) Fire Hazard Map, representing FWI values calculated for the current day and forecast for 3 days. FWI values are classified into six hazard classes, from very low to extremely dangerous. Also, the Fire Hazard Maps are generalized to the local government level according to the most common hazard class using pixel majority operation. This generalization allows for decision-making by the Rescue Board and local governments.

The renewed tool was functional (available for the project partners but not public) during the season of 2024, the data from 2023 and 2024 was used to tune the scales for fire hazard classes.

The new Fire Hazard Map is interactive, enabling users to switch between different layers, zoom in and out on the map, change view options, etc (see detailed description below).

The Fire Hazard Map is included in the national weather portal (dev/test-environment) together with other additional layers and functionalities:

- NASA FIRMS - thermal anomalies, or possible fires.
- Lightning - operational information within 24 hours.
- Rescue Board restrictions - text and county-by-county label on the map.
- Weather forecasters comment.
- Location search with the ability to view the location-based weather forecast.
- Selection of seasonal fire hazard maps using a calendar.

Fire Hazard Maps and the underlying FWI calculations are archived annually during the season. The public can access information and download files from the open-data platform KAIA.

Appendices

Excerpts from the website (dev/test):

The primary view on the home page.

The screenshot displays the Estonian Environment Agency (Eesti Keskkonnainstituut) website. The main navigation bar includes 'Weather', 'Sea weather', 'Bog', 'Hydrology', 'Climate', 'Know-how', 'Services', 'About us', and 'ILM+'. A green 'No warnings' button is visible in the top right. The 'Forecast' section is active, showing a 'Fire hazard map' with a date selector set to 15.12. The map shows the fire hazard levels across Estonia, with a legend indicating 'Very low', 'Low', 'Moderate', 'High', 'Very high', and 'Extreme'. The map is currently showing 'Very low' hazard levels. Below the map, there is a 'Weather forecaster's comment' section stating 'No fire hazard.', a 'Rescue Board information' section stating 'No restrictions.', and a 'Weather in Europe' link.

It is possible to change the basemap, select borders and turn on settlement names.

Estonian Environment Agency | ILM

Weather Sea weather Bog Hydrology Climate Know-how Services About us ILM+

Forecast

- 4 day forecast
- Locality forecast
- Numerical weather forecast
- Probability of precipitation
- Weathermap
- Warnings
- Fire hazard map**
- Legend

Observations

- Observation data
- Precipitation
- Radar
- Satellite images
- UV-index
- Weather in Europe

Fire hazard map

Home page > Weather > Forecast > Fire hazard map

Select the date from the archive: 14:12 15:12 16:12 17:12 18:12

FIRE HAZARD NASA FIRMS LIGHTNING RESTRICTIONS

- County borders
- Municipality borders
- Settlement names
- Grayscale basemap
- Ortophoto

0% 50% 100%

Time: 15:12 Generalized fire hazard map 58.780252 ; 21.039953

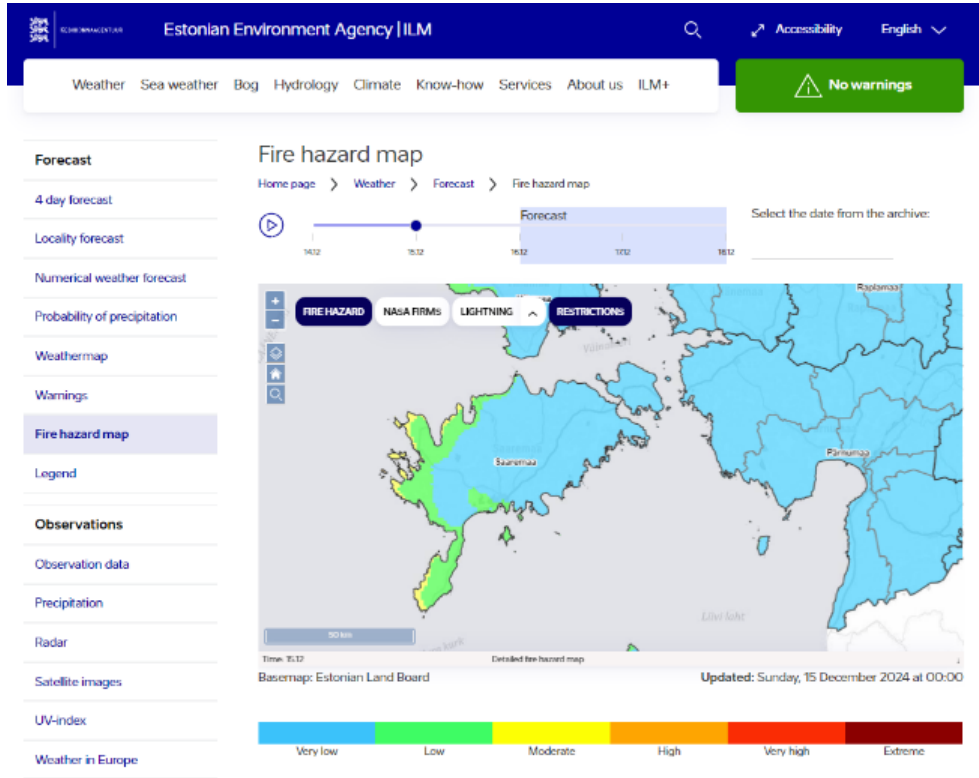
Basemap: Estonian Land Board Updated: Sunday, 15 December 2024 at 00:00

Very low Low Moderate High Very high Extreme

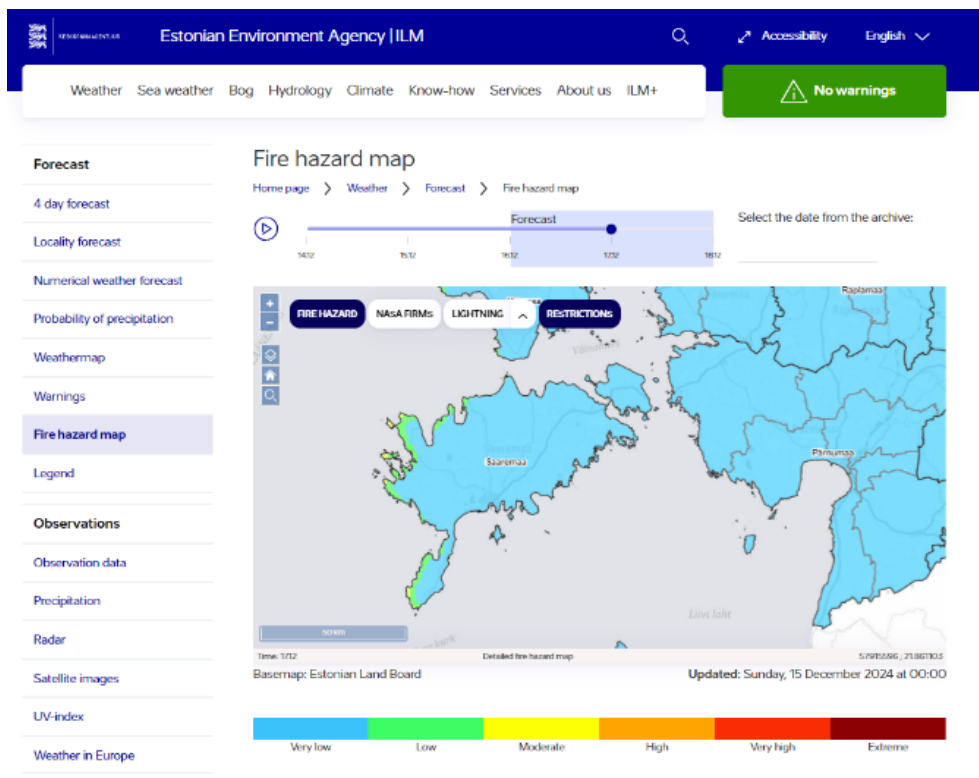
Weather forecaster's comment
No fire hazard.

Rescue Board information
No restrictions.

Zooming in shows a pixel-wise map (analysis Jan 15, 2024).



Fire hazard forecast for January 17 (based on Jan 15,2024).



Location search output– pixel-wise fire hazard and location-based weather forecast.

Estonian Environment Agency | ILM
Accessibility English

Weather Sea weather Bog Hydrology Climate Know-how Services About us ILM+

 No warnings

Forecast

- 4 day forecast
- Locality forecast
- Numerical weather forecast
- Probability of precipitation
- Weathermap
- Warnings
- Fire hazard map
- Legend
- Observations**
- Observation data
- Precipitation
- Radar
- Satellite images
- UV-Index
- Weather in Europe

Fire hazard map

Home page > Weather > Forecast > Fire hazard map

Forecast

Select the date from the archive:

FIRE HAZARD
NASA FIRMS
LIGHTNING
RESTRICTIONS

Time: 15:12 Basemap: Estonian Land Board Updated: Sunday, 15 December 2024 at 00:00

Very low Low Moderate High Very high Extreme

Weather forecaster's comment
No fire hazard.
Rescue Board information
No restrictions.

Saare maakond, Saaremaa vald, Kuressaare linn

	S 15.12	M 16.12	T 17.12	W 18.12
13		-0.8 °C	0 mm	5 mph
14		-0.9 °C	0 mm	4.1 mph
15		-0.7 °C	0 mm	3.5 mph
16		-0.5 °C	0 mm	2.9 mph

Seasonal archive of the fire hazard map.

Estonian Environment Agency | ILM
Accessibility English

Weather Sea weather Bog Hydrology Climate Know-how Services About us ILM+

 No warnings

Forecast

- 4 day forecast
- Locality forecast
- Numerical weather forecast
- Probability of precipitation
- Weathermap
- Warnings
- Fire hazard map
- Legend

Observations

- Observation data
- Precipitation
- Radar
- Satellite images
- UV-index
- Weather in Europe

Fire hazard map

Home page > Weather > Forecast > Fire hazard map

Exit the archive

Select the date from the archive:

27.05.2024

Pick a date

Mai 2024

Mai 2024						
E	T	K	N	R	L	P
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Time: 27:05 Generalized fire hazard map 59.328867; 23.806195
 Basemap: Estonian Land Board Updated: Sunday, 15 December 2024 at 00:00

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