LIFE OrgBalt 7th Steering group meeting Summary of modelling activity

02/03/2023

MS Team's connection

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LIFE OrgBalt, LIFE18 CCM/LV/001158

EU LIFE Programme project
"Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland"

Contents

- Main tasks of the activity
- Current status of tasks
- Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils
- Calculation tool/spreadsheet for estimation of GHG emissions
- Next steps

Tasks of the activity

- Development of mathematical tools for elaboration of projections of GHG emissions under different climatic conditions
- and activity data for accounting & projections of GHG emissions from organic soils
- and upgrading SUSI-simulator for estimation of carbon stock changes in drained organic forest soils, as defined in the project goals and targets.
- SUSI upgrade continues
- *First version of calculation tool to estimate GHG emissions from organic soils in other (thnak forest) land uses is prepared*
- *Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils is prepared*

Projections of GHG emissions with climate scenarios

- SUSI model – GHG emissions from drained organic forest soils. Model tested with national weather data, able to reproduce groundwater level fluctuation pattern. Model developed for pine, spruce and birch stands on drained organic soils.
    - National stand data (according to the forest stands in demo sites of the project) – growth curves prepared
- Calculation tool/spreadsheet with temperature sensitive national EFs. Calculation tool has been developed by Silava, needs update with country/region specific EF's – results from demo sites in OrgBalt.
- Projected climate data prepared. Official CORDEX database projections interpolated to daily values to have daily projections dataset.

Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils

Updated SUSI peatland simulator was tested with national historic climate data and forest stand data, results provided in the report.

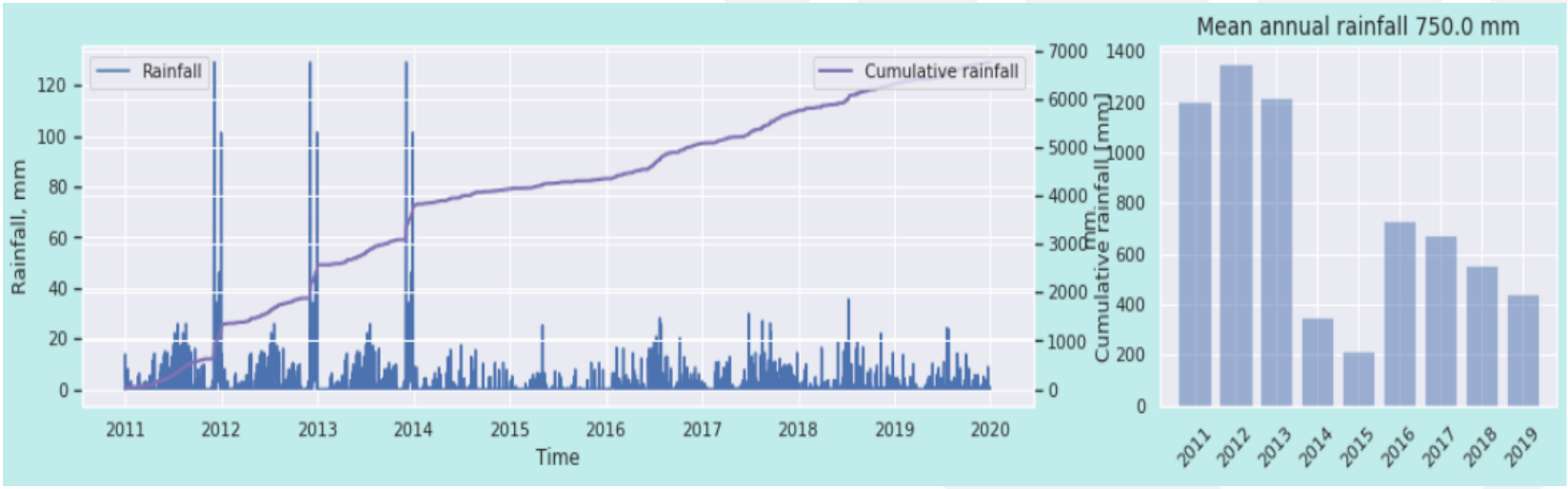

Figure 1. Historical weather data from Lithuanian weather station, covering 2011 – 2020

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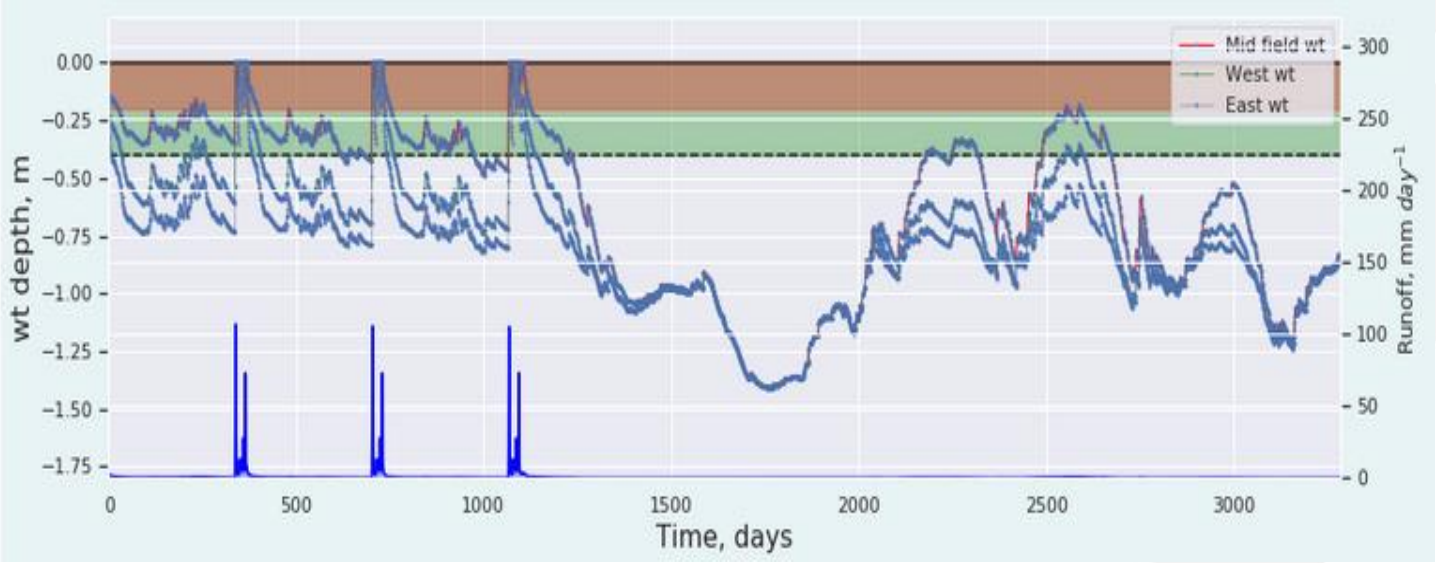

Figure 2. Model outcome – ground water depth - with historical weather and stand data from Lithuania

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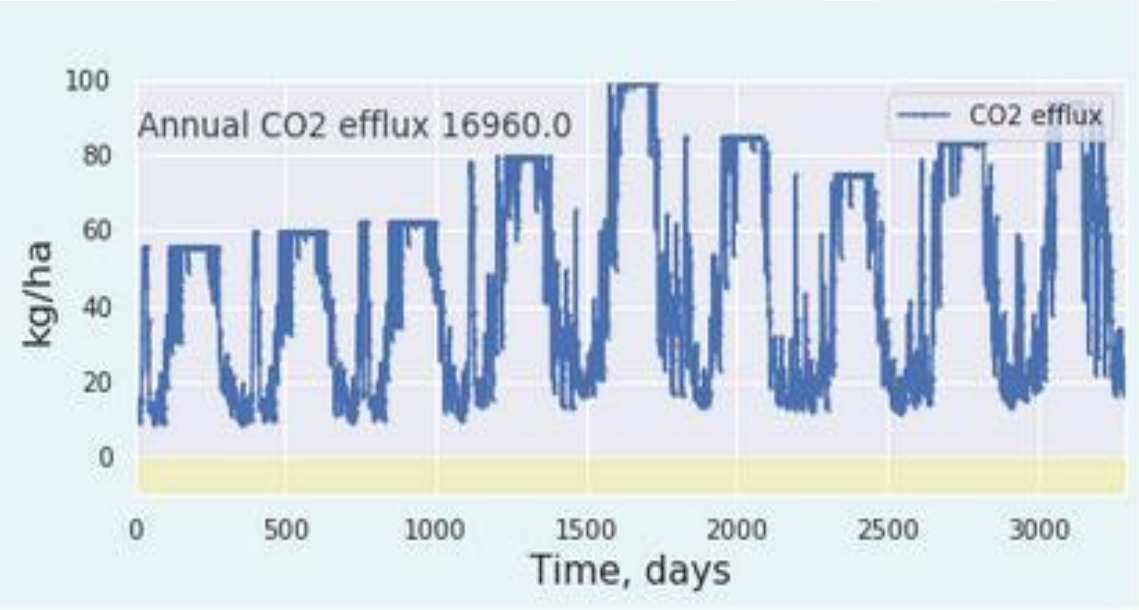

Figure 3. Model outcome – CO_2 efflux in stand - with historical weather and stand data from Lithuania uploaded.

Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils

Baltic countries are reporting GHG emissions from organic soils differently:

- Latvia has currently implemented several national emission factors from previous research projects, replacing default emission factors provided in the 2013 IPCC Wetlands Supplement;
- Lithuania is still using default emission factors for drained organic soils provided in 2006 IPCC Guidance due to the 2013 Wetlands Supplement not being mandatory;
- Estonia is using Swedish emission factors for drained organic forest, cropland, grassland and wetlands (areas for peat extraction) soils, since default IPCC 2006 EFs would likely cause underestimation of emissions (according to the recommendation after IPCC review).

Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils

Projections of GHG emissions from wet and drained organic soils were prepared applying national projected land use areas and area changes until 2050 and emission factors developed during previously implemented research projects – **LIFE REstore and SNS-120**.

Land use and land use change areas were projected taking into account GHG emission reduction and enhancing removal potential policies and measures already applied in the LULUCF sector. Projections of areas prepared taking into account official land use area projections as provided in the most recent **Policies and Measures And Projections of Greenhouse Gas Emissions report of the countries under the requirement of Regulation EU 2018/1999 (submitted to UNFCCC by 2021)**.

Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils

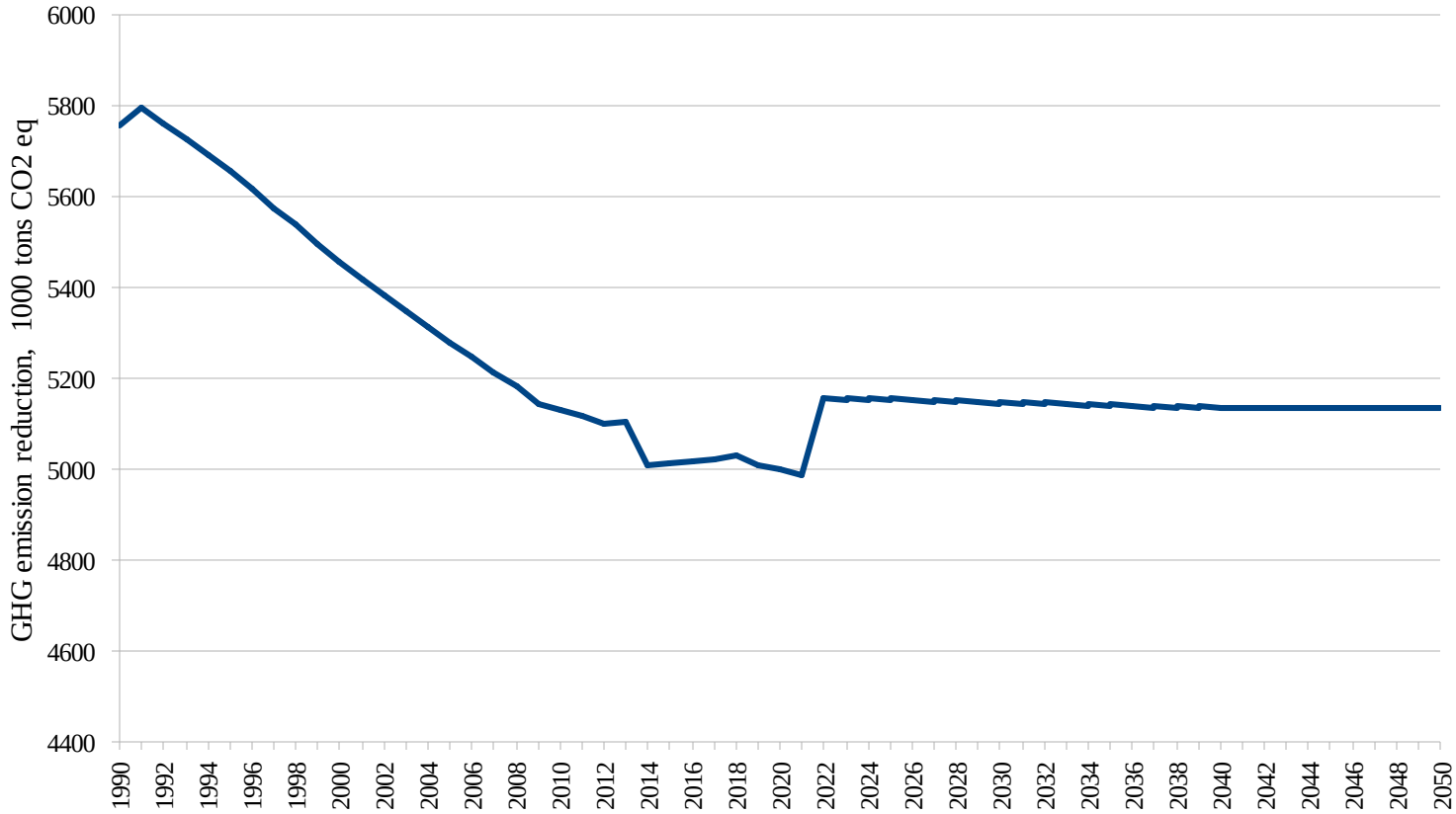

Figure 4. Potential reduction of GHG emissions from organic soils in reported land use categories in Latvia after national EFs applied instead of 2013 Wetlands Supplement.

Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils

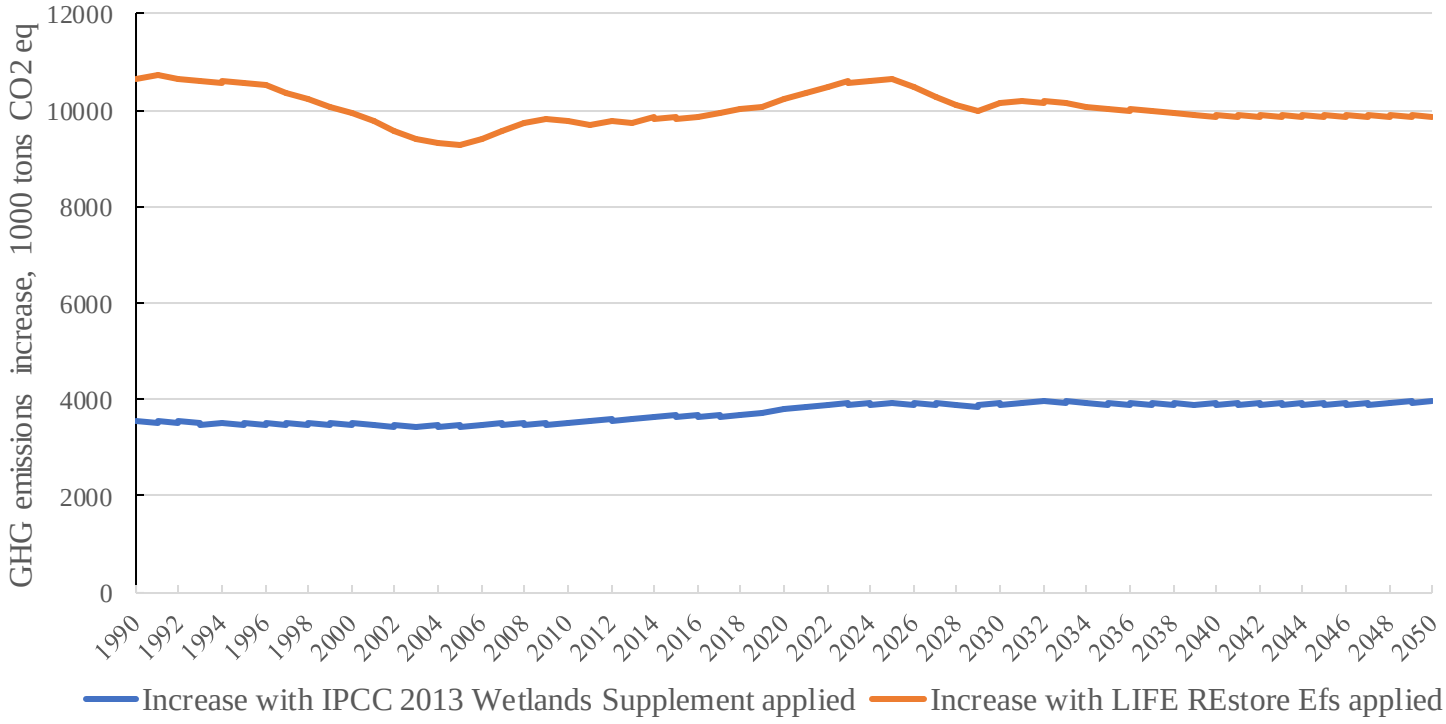

Figure 5. Potential increase of GHG emissions from organic soils in reported land use categories in Lithuania after LIFE REstore and 2013 Wetlands Supplement EFs applied instead of EFs from 2006 IPCC Guidelines

Initial draft report on integration of climate scenarios and projections of GHG emissions from organic soils

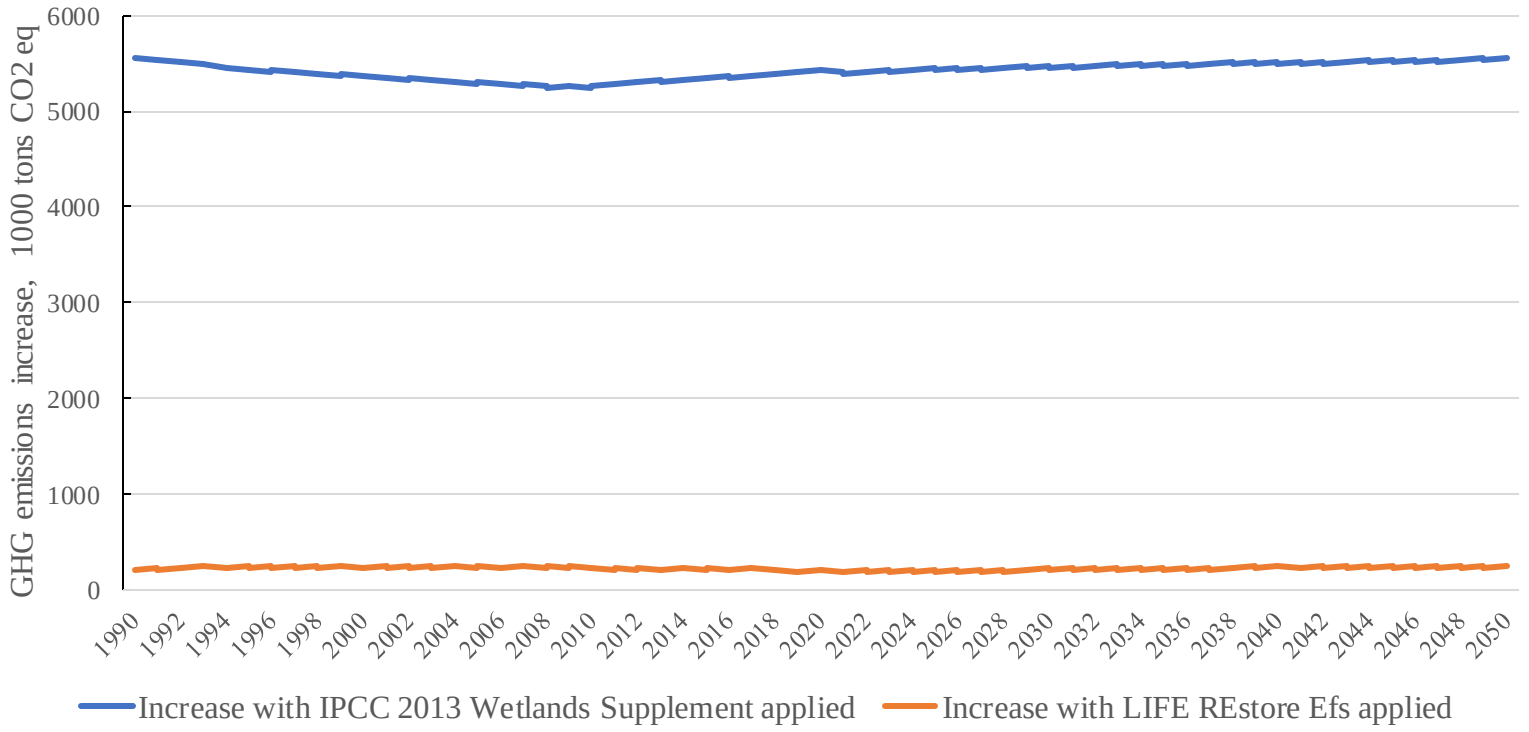

Figure 6. Potential increase of GHG emissions from organic soils in reported land use categories in Lithuania after LIFE REstore and 2013 Wetlands Supplement EFs applied instead of EFs from 2006 IPCC Guidelines

Calculation tool/spreadsheet with temperature sensitive national Efs from previous research projects

Land use categories included:

- Peat extraction field
- Abandoned peatland, bare ground
- Abandoned peatland, vegetated
- Grassland
- Cropland, cereals
- Cropland, vegetables
- Pine stand
- Birch stand
- Raised bog
- Transitional bog
- Blueberry plantation
- Cranberry plantation
- Paludiculture, reeds

GHGs covered:

- CO_2 – temperature sensitive,
- CH_4 – fixed value (not correlating with climate data)
- N_2O – fixed value (not correlating with climate data)

Emissions calculated on monthly basis.

Tasks for nearest future

- **Continue modellers meetings to apply projected climate data and stand data to SUSI model**
- **Try and test GHG estimation tool** prepared by Silava to estimate GHG emissions from various land uses (including non-forest land), applying functions of climate conditions (temperature at the moment) sensitive EFs from LIFE REstore project for all Baltic states.
- **Prepare land use areas to use for projections of GHG emissions** applying GHG estimation tool (taking into account potential land use changes regarding EU climate policy, Nature Restoration Law, etc.).


LIFE OrgBalt
Thank you!
Aitäh!
Kiitos!
Aciu!
Paldies!
Vielen Dank
LIFE OrgBalt