Forestry Working Group
Slovenian Meeting

16th and 17th July 2019 Slovenian Forestry Institute

CBM model in the frame of Life ClimatePath2050 project

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Carbon budget model – CBM-CFS3

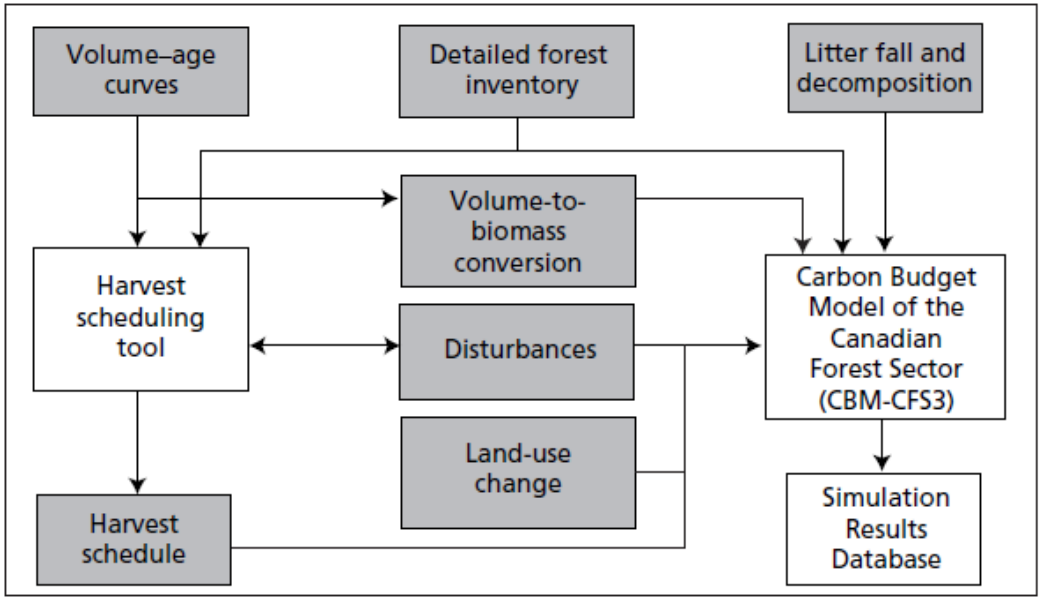
General Description

- Carbon Budget Model of the Canadian Forest Sector
- Inventory-based, yield-data driven stand- and landscape-level forest ecosystem carbon accounting
- In line with the IPCC methodology for carbon accounting
- Simulates the dynamics of all key aspects of forests defined by the Kyoto Protocol:
    - Aboveground biomass
    - Belowground biomass
    - Dead wood
    - Litter
    - Soil organic matter
- Freely available to download from the web site of Natura Resources Canada: https://www.nrcan.gc.ca/forests/topics/climate-change/carbon-accounting/carbon-budget-model/13107

Carbon budget model – CBM-CFS3

Modelling Approach of CBM-CFS3

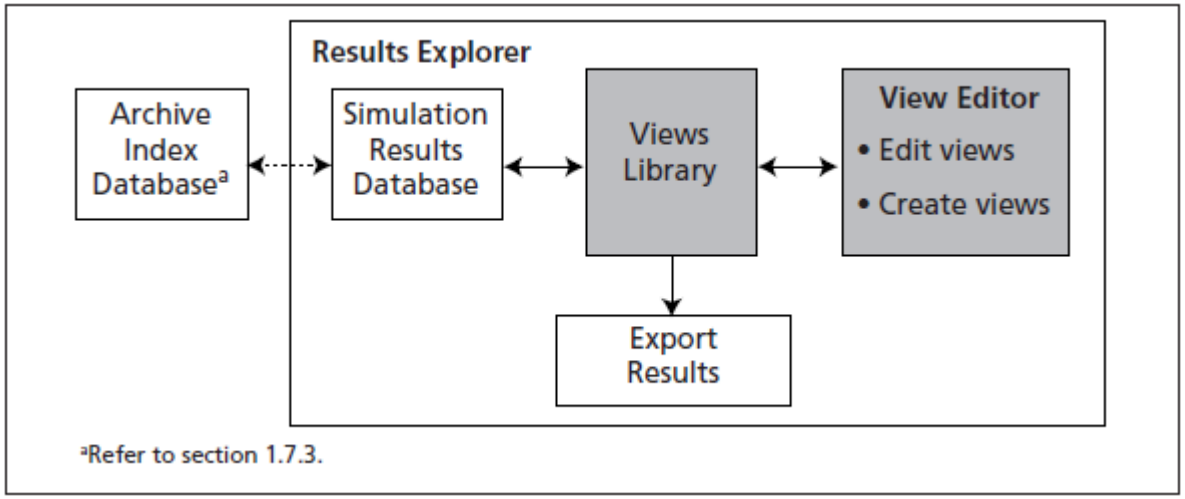
- Input data
  - Modelling categories
  - Forest inventory data (stand/department/modelling categories area with growing stock, species composition)
  - Growth curves for individual forest species (or groups of species)
  - Disturbance matrix
  - Transition rules



Carbon budget model – CBM-CFS3

Modelling Approach of CBM-CFS3

- Ecological parameters are based on the database provided by the Joint Research Centre (JRC, European Commission scientific service): The EU Archive Index Database customised for the Carbon Budget Model (CBM-CFS3)



Carbon budget model – CBM-CFS3

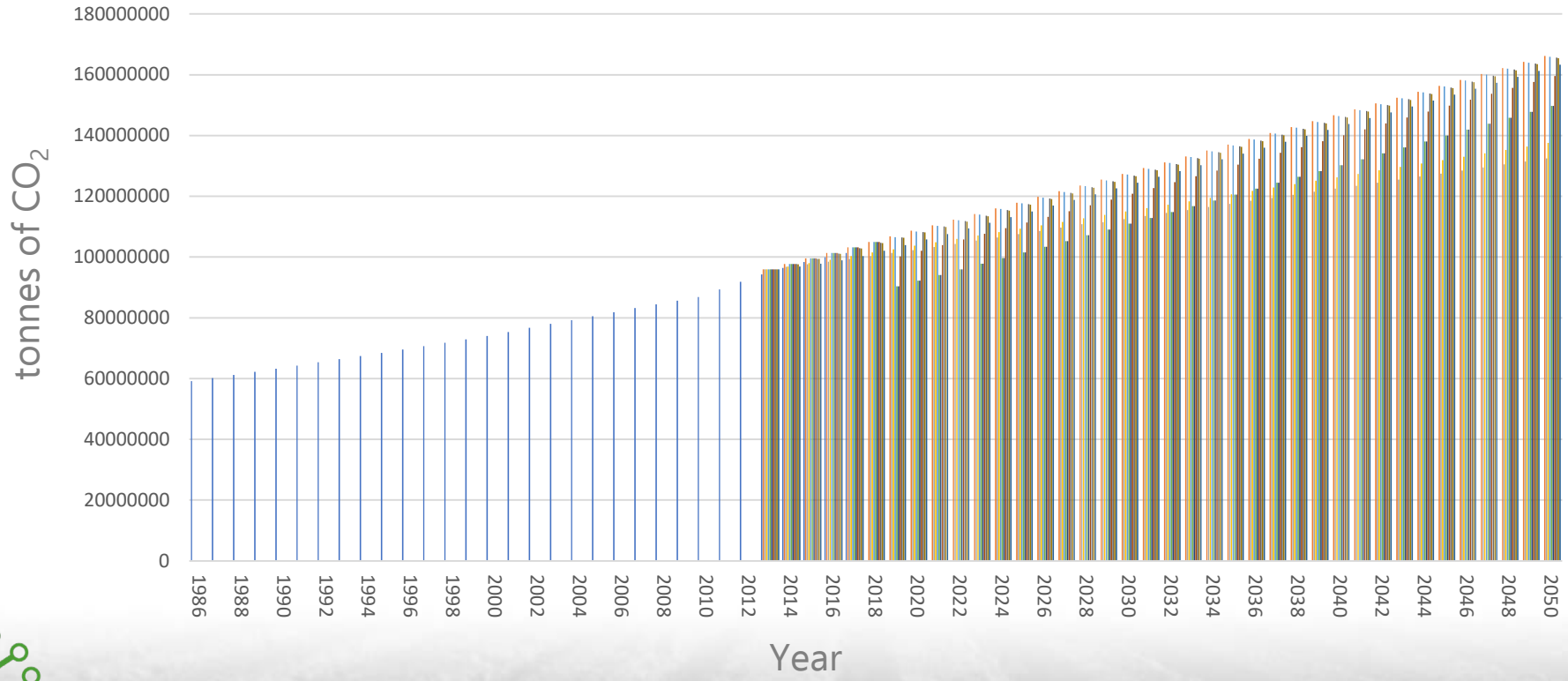
Simulations for Slovenian forests

- Input data
  - Slovenian Forest Service Inventory database 2014
  - Division of forest departments into forest types according to the dominant forest community (Categorization by Kutnar et al., 2012)
  - Growth curves (developed by the Department of Forestry and Renewable Forest Resources, Biotechnical Faculty, Ljubljana)
  - Harvest data of Slovenian Forest Service (2005 – 2014)

- Key steps
  - Transformation of DBH – based data into AGE-classes – based data

Carbon budget model – CBM-CFS3

Multiple Simulations for Slovenian Forests and the reported values by the Ministry of Agriculture and Food



Carbon budget model – CBM-CFS3

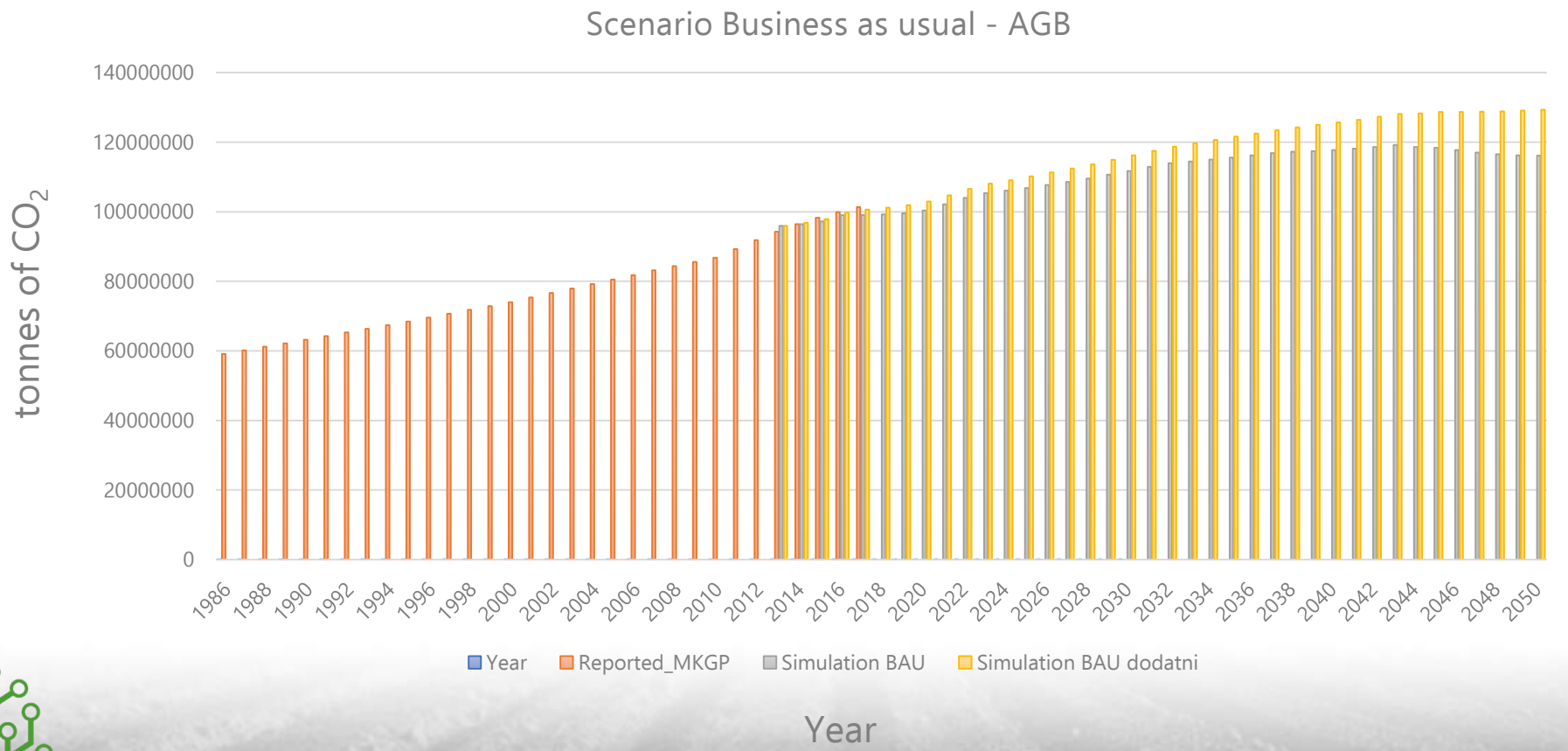
Scenario BAU and the reported values by the Ministry of Agriculture and Food (MKGP)

Year	BAU	BAU +
2014	7902558	5531790
2015	7482425	5237698
2016	7603877	5322714
2017	6211140	4347798
2018	6800000	4760000
2019	6700000	4690000
2020	6600000	4620000
2021	6500000	4550000
2022	6400000	4480000
2023	6300000	4410000
2024	6200000	4340000
2025	6100000	4270000
2026	6000000	4200000
2027	5900000	4130000
2028	5800000	4060000
2029	5700000	3990000
2030	5700000	3990000

Year	BAU	BAU +
2031	5850000	4095000
2032	6000000	4200000
2033	6150000	4305000
2034	6300000	4410000
2035	6450000	4515000
2036	6600000	4620000
2037	6750000	4725000
2038	6900000	4830000
2039	7050000	4935000
2040	7200000	5040000
2041	7350000	5145000
2042	7500000	5250000
2043	7650000	5355000
2044	7800000	5460000
2045	7950000	5565000
2046	8100000	5670000
2047	8250000	5775000
2048	8400000	5880000
2049	8550000	5985000
2050	8700000	6090000

Carbon budget model – CBM-CFS3

Scenario BAU and the reported values by the Ministry of Agriculture and Food (MKGP)



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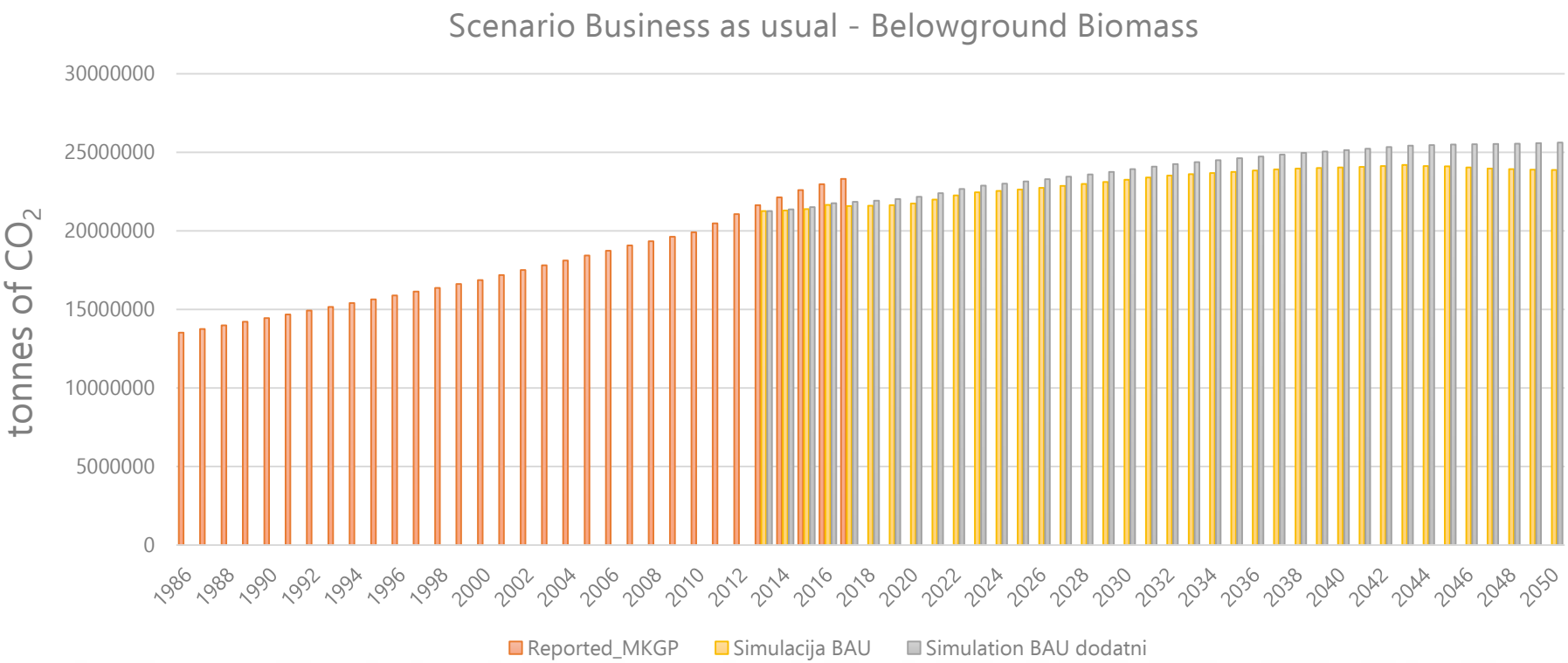

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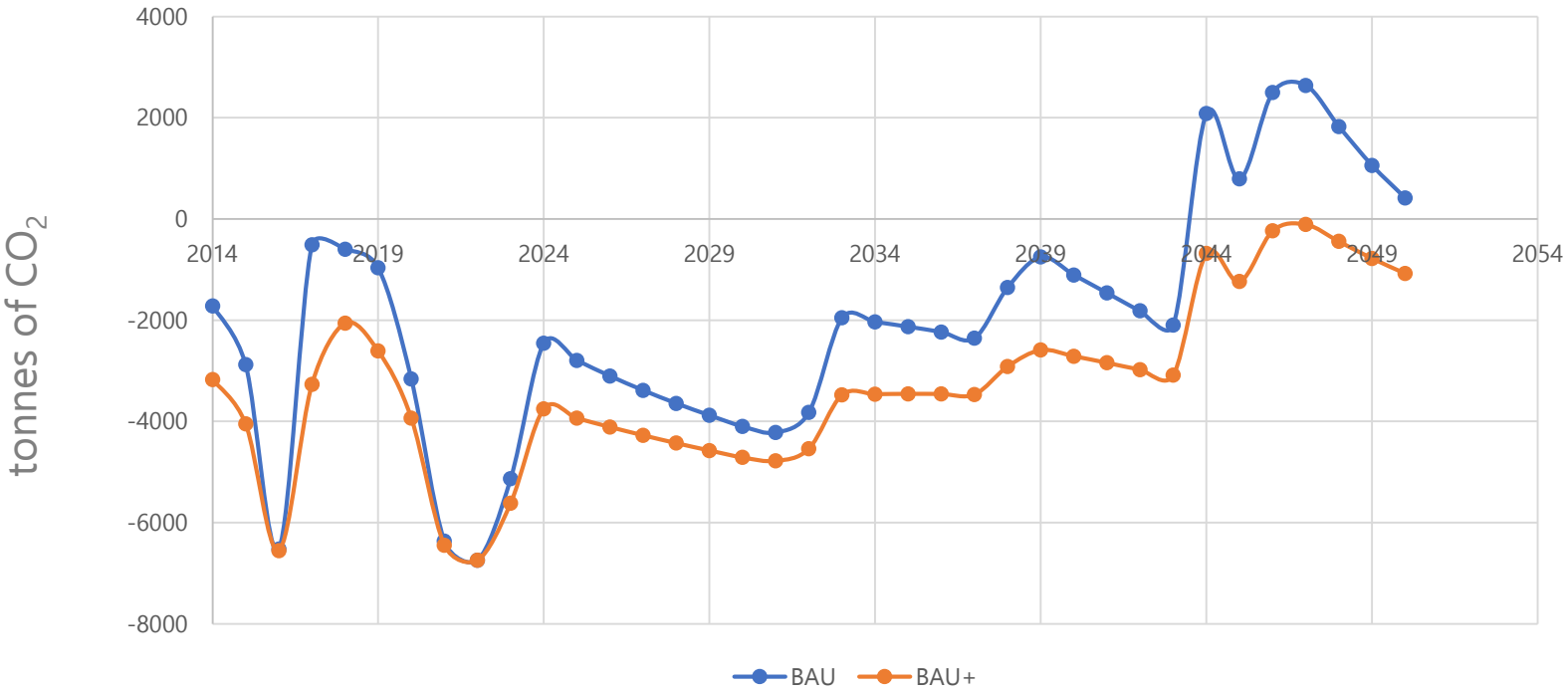

Carbon budget model – CBM-CFS3

References

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- Pilli, R., Kull, S.J., Blujdea, V.N.B., Grassi, G., 2018. The Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3): customization of the Archive Index Database for European Union countries. Annals of Forest Science 75, 71.

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THANK YOU

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