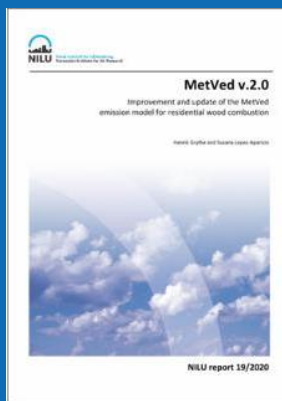


# Variability on emissions from residential vs recreational wood combustion

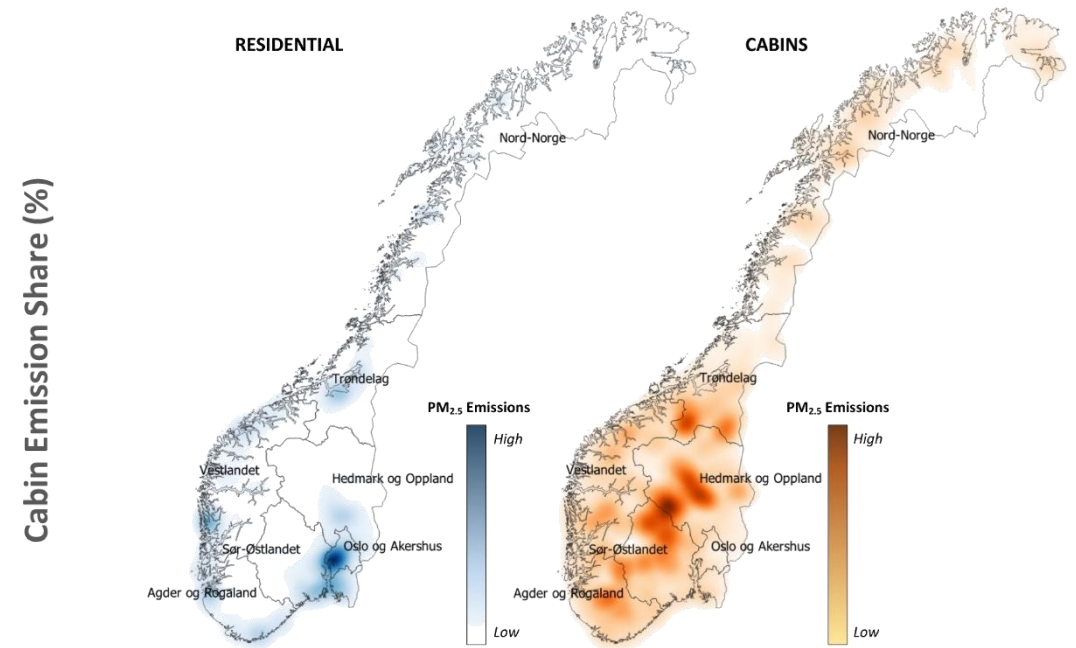
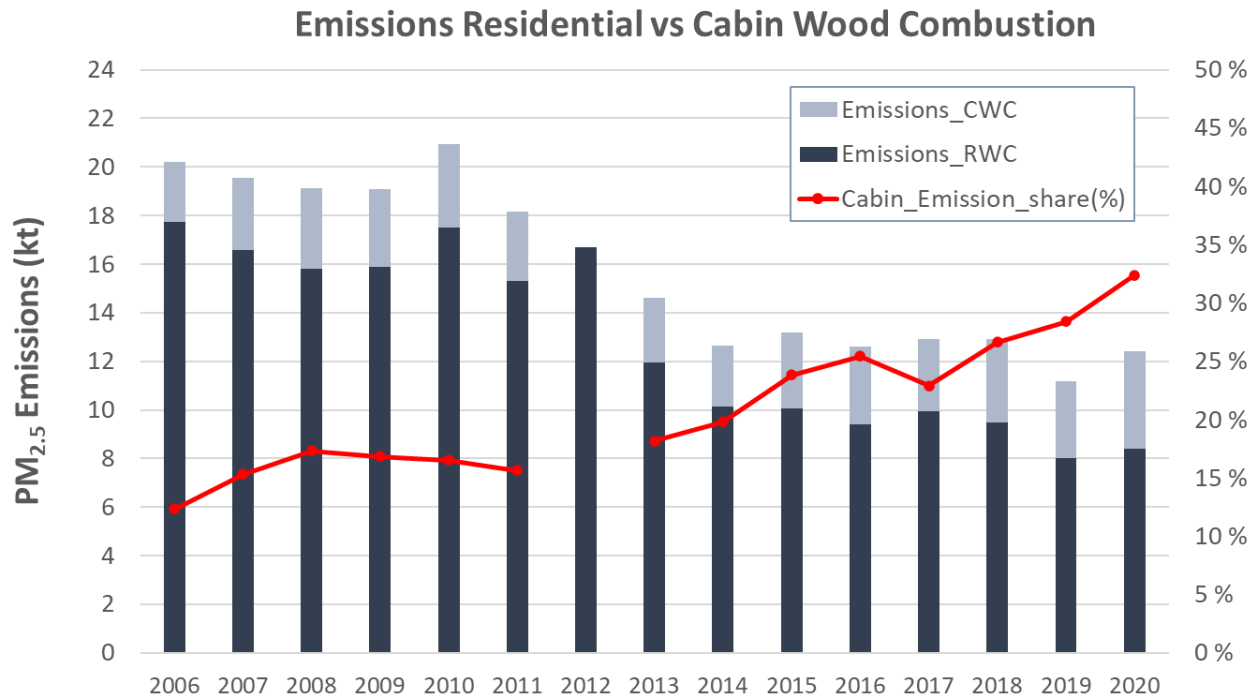
Susana López-Aparicio, NILU – Norwegian Institute for Air Research



<https://nilu.brage.unit.no/nilu-xmlui/handle/11250/2690095>

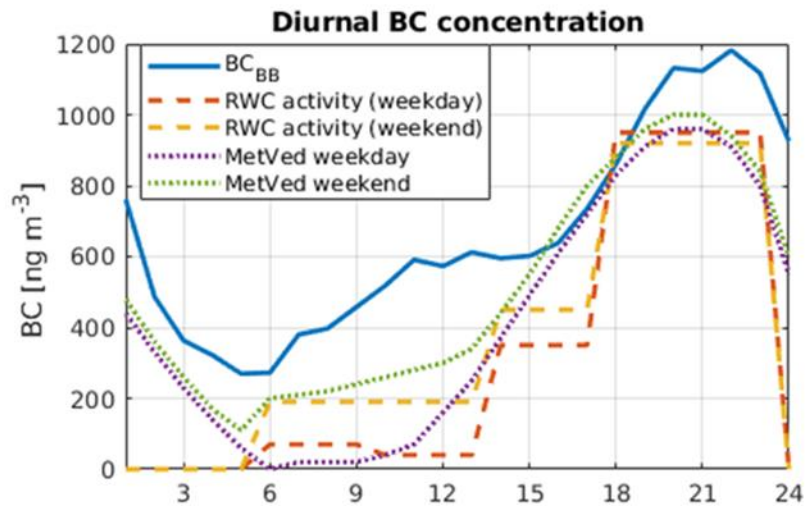
# Background

- Wood combustion is one of the most important PM<sub>2.5</sub> emission sources in Norway
- Wood burning occurs in Residential and Cabin
- High contrast between where and when emission occurs

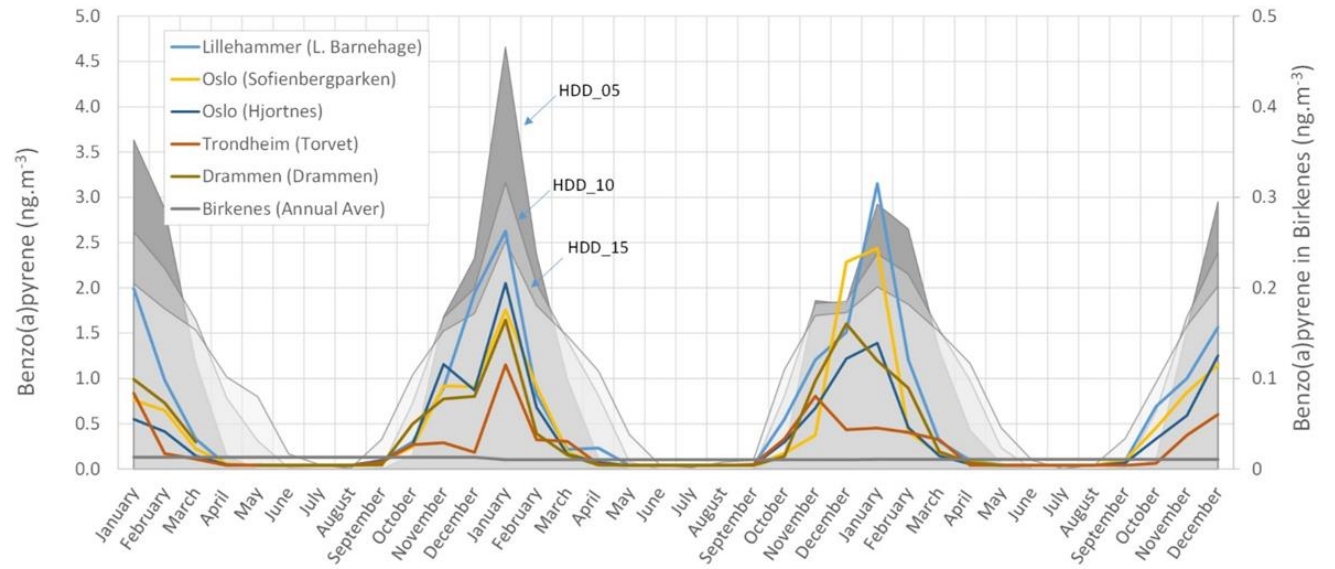


# TV \_ Residential Wood Combustion

- Hourly & week-day activity based on questionnaires from Statistics Norway
- Daily based on HDD (Threshold of 15C)
- TV for Residential Wood Combustion is not applicable to Cabin Wood combustion



Grythe et al., (2019)

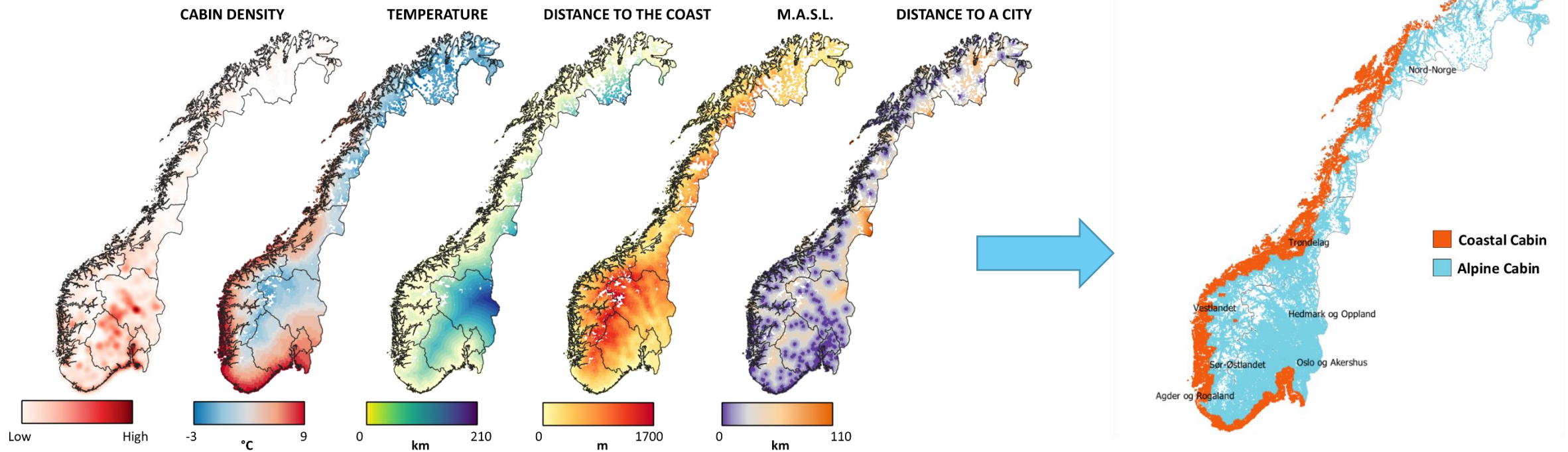


January 2015 - December 2017

Grythe et al., (2019)

# Distinction between summer and winter cabin

- Different activity as a function of the type of cabin, coastal cabin (high usage in summer) and alpine cabin (high usage in winter).



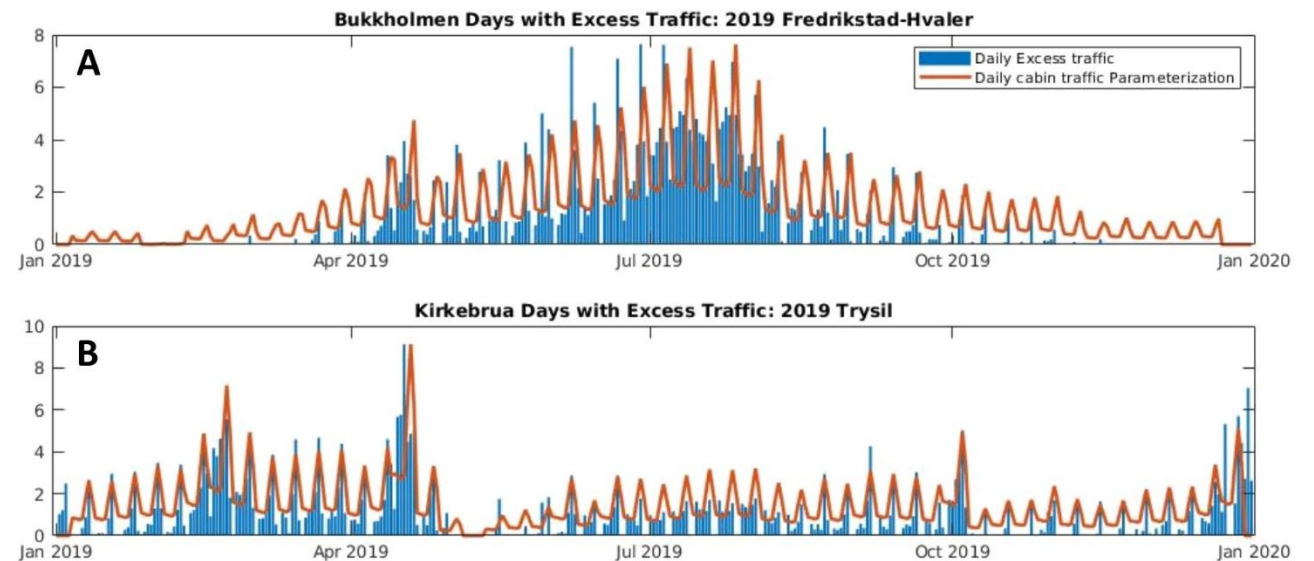
- Alpine cabin:  $> 400$  masl,  $> 15$  km from the coast or grid annual average  $T < 2$  C.

# TV \_ Cabin Wood Combustion / usage

The daily weight is determined as a function of the **cabin occupancy** and **heating demand** from wood

- Heating demand = HDD which is only calculated considering the periods when the **cabin is in use**

- Holiday calendar  
(weekends, autumn/winter/summer, Eastern, Xmas, free days)



Traffic volume increase associated with each holiday day

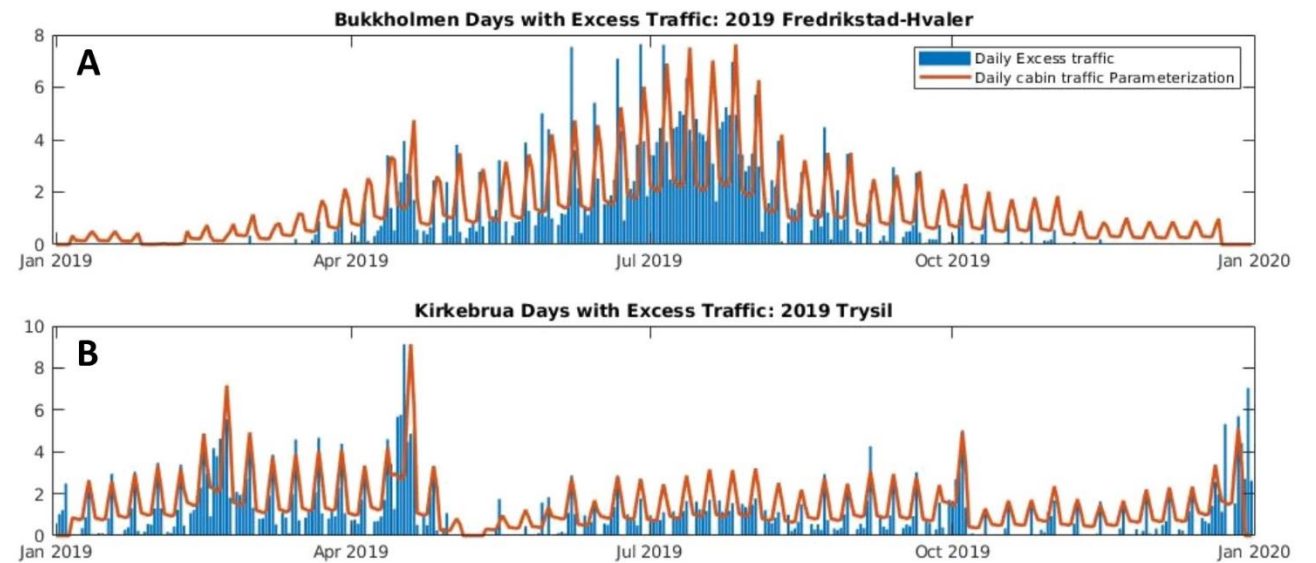
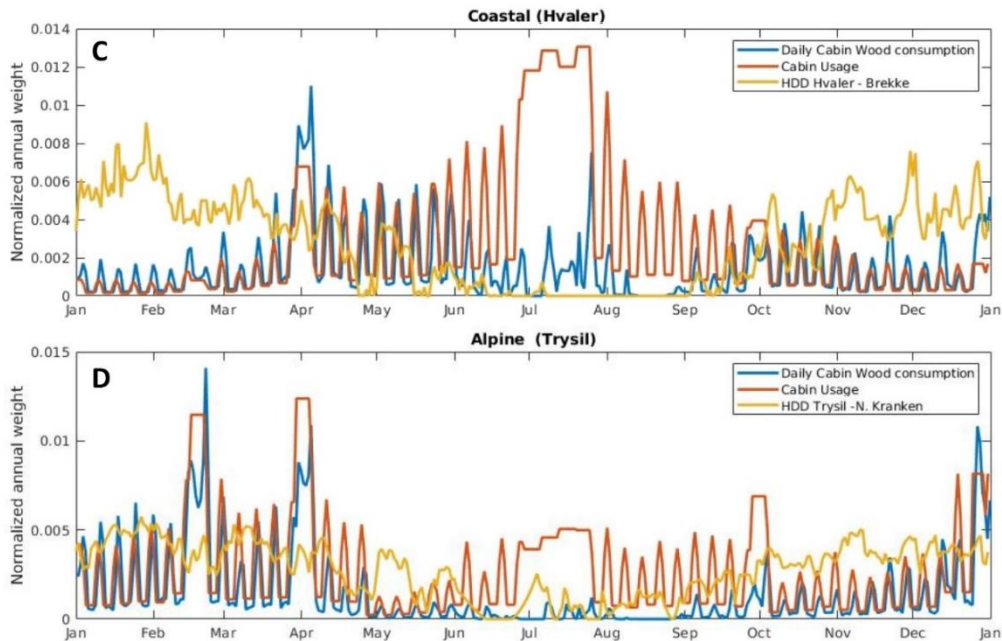


# TV \_ Cabin Wood Combustion / usage

The daily weight is determined as a function of the **cabin occupancy** and **heating demand** from wood

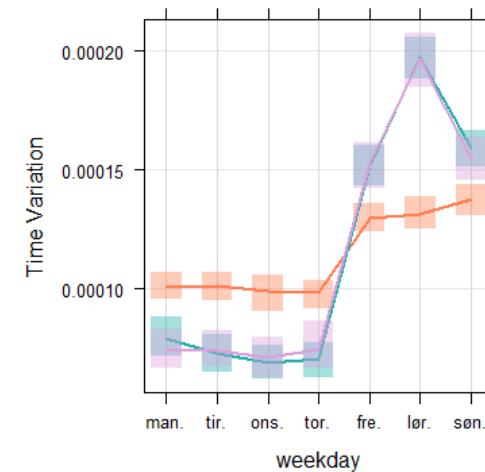
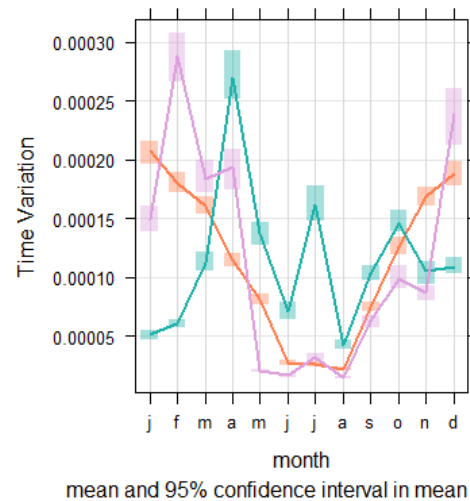
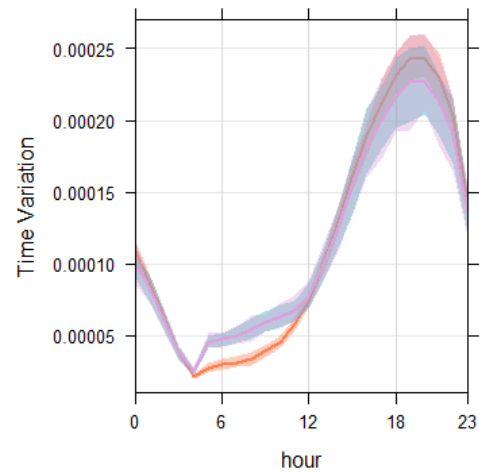
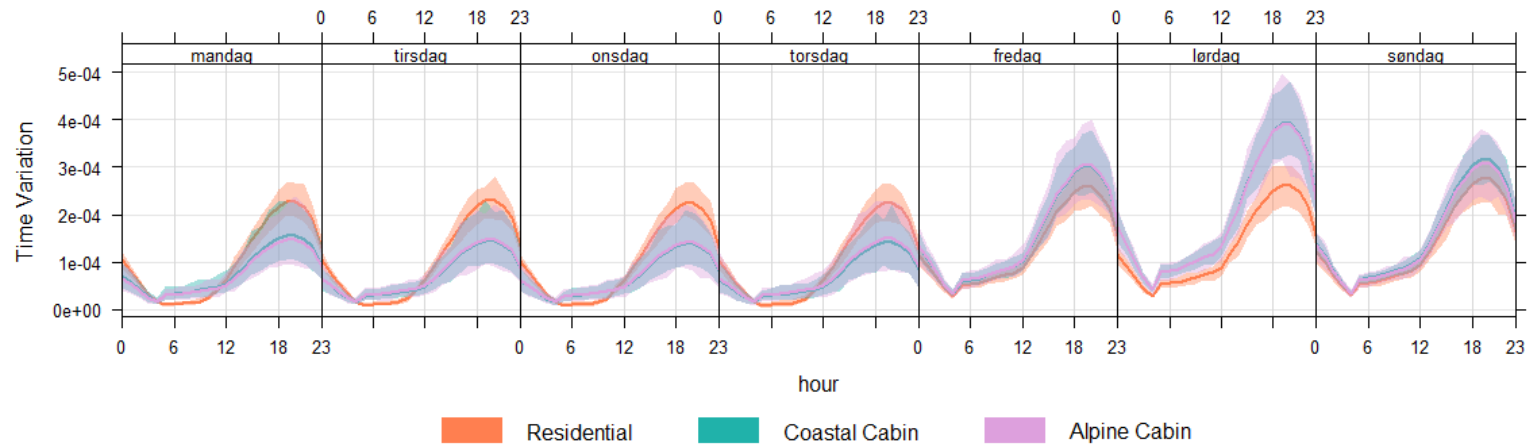
- Heating demand = HDD which is only calculated considering the periods when the **cabin is in use**

- Holiday calendar  
(weekends, autumn/winter/summer, Eastern, Xmas, free days)



Traffic volume increase associated with each holiday day

# TV – Wood Combustion in Norway



# Take home messages

- The share of CWC emissions increases over time;
- Residential wood combustion and cabin wood combustion need to be treated separately as they occur differently on space and time;
- We have not been able yet to evaluate the effects this distinction will have on e.g., regional air quality modelling;





# Thanks!

Susana López-Aparicio, NILU – Norwegian Institute for Air Research

*FAIRMODE Technical Meeting*

*6-8 October 2021*

Joint  
Research  
Centre