

Norconsult 

Introducing IceRiskForecast 2.0

Managing icing related risks at wind farms with
nowcasts and ensemble forecasts



Photo credit:
André Hatleset, Zephyr

Wind Energy in Icing Climate



- ▶ «The main goal is to create a robust system for **icing forecasting** which can be used to reduce the ice throw risk in a cost-effective way and to make the relevant information easily available for all users of the wind farm areas.»

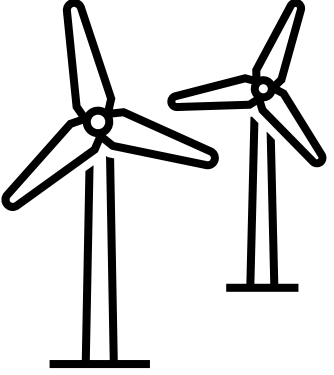
- ▶ 2020 - 2022



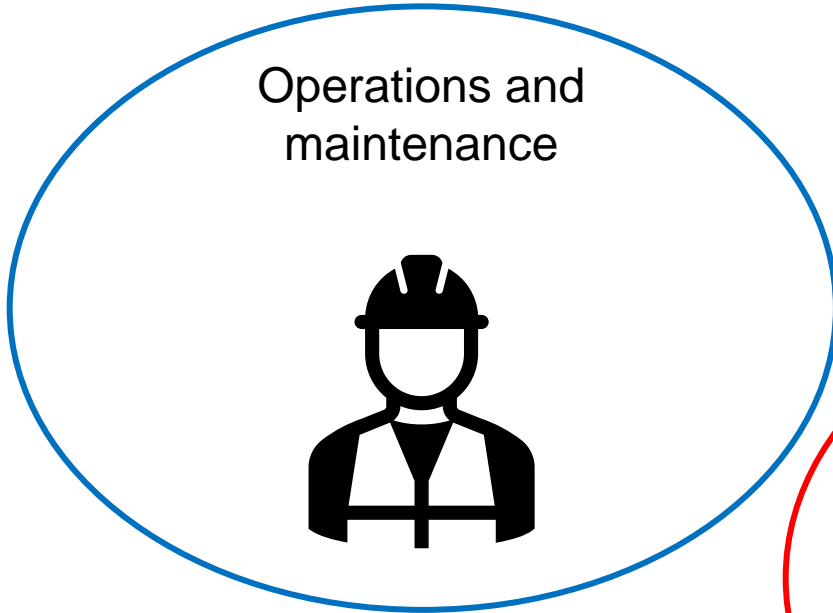
IceRiskForecast 2.0



Production loss



Operations and maintenance



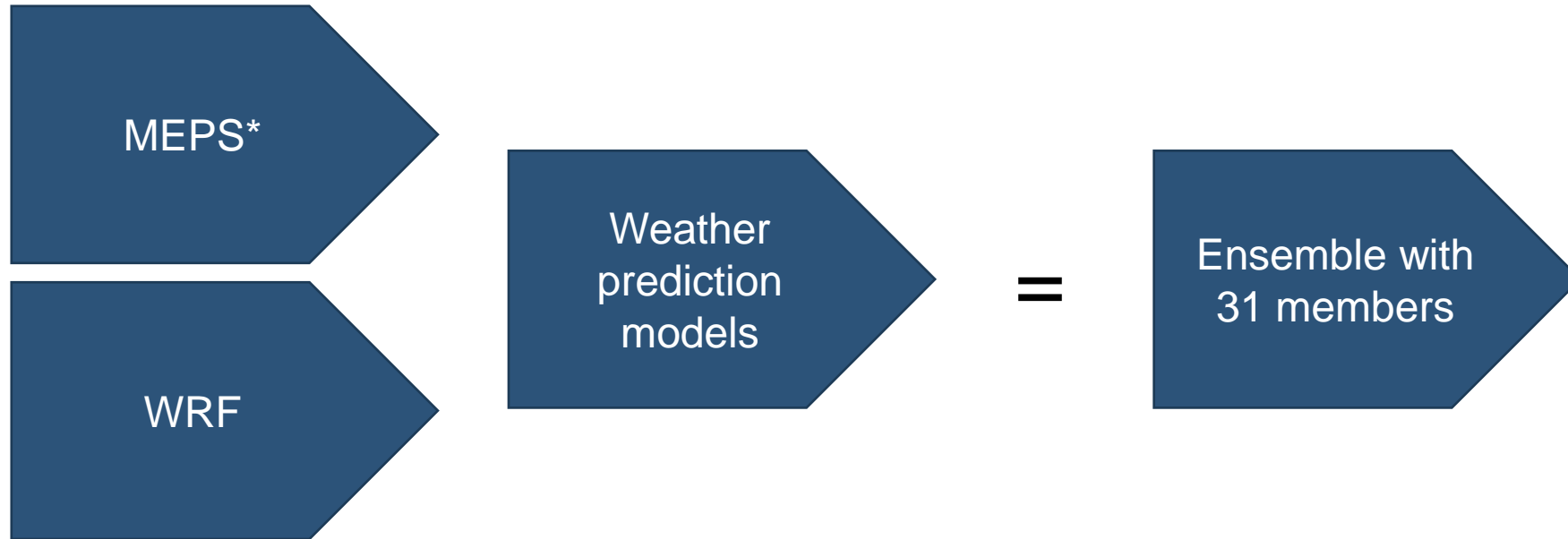
Recreational use



IceLossForecast 1.0

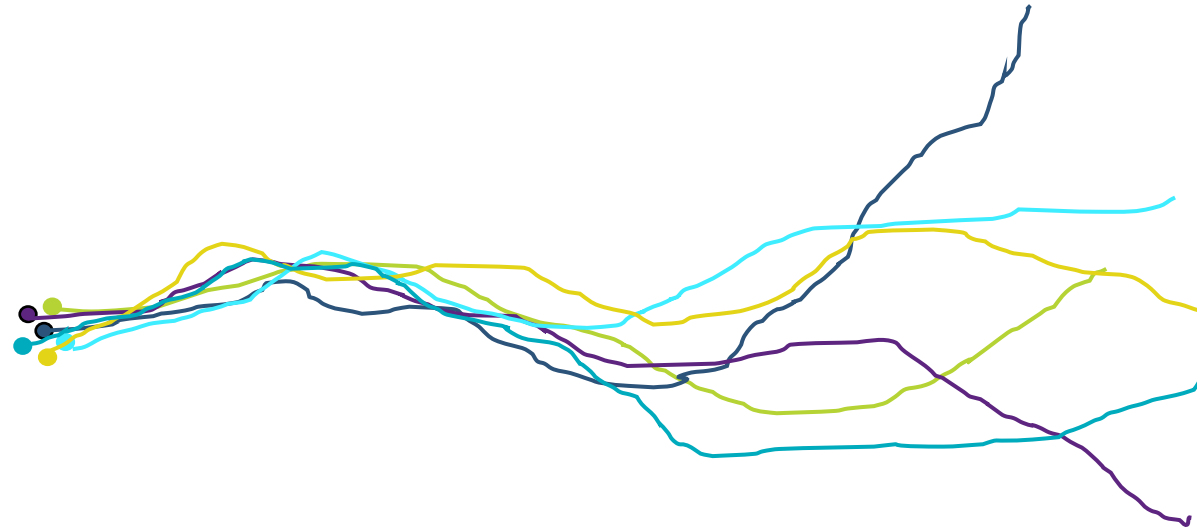
Weather prediction models

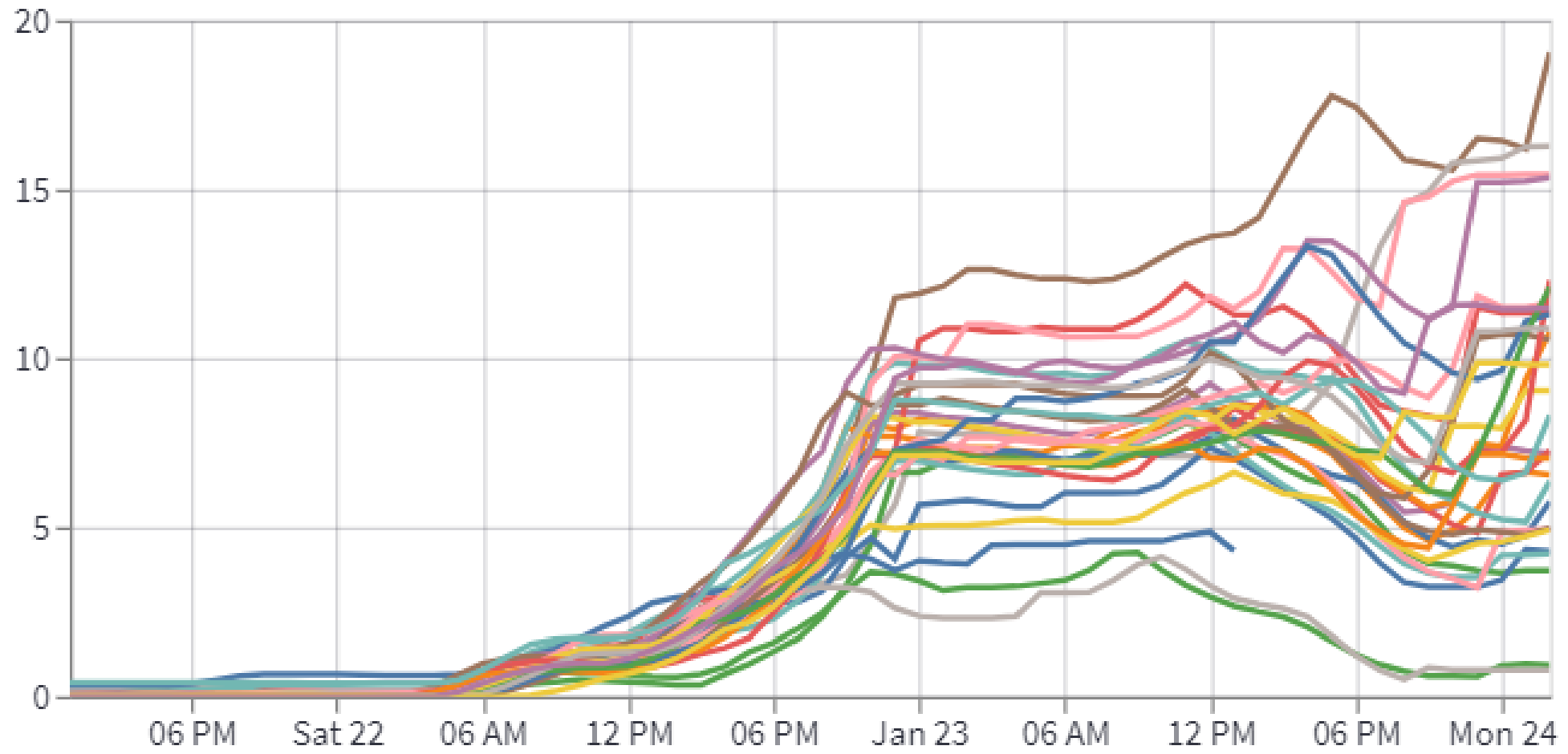


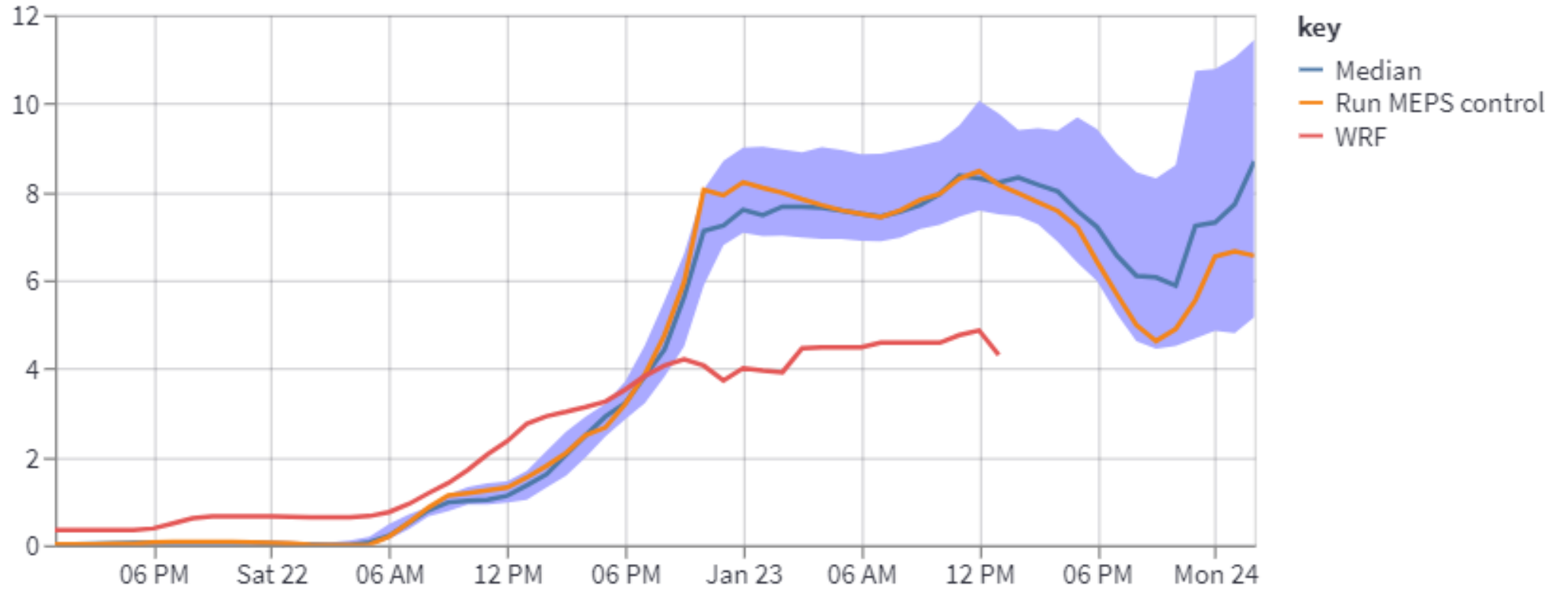


* MetCoop Ensemble Prediction System (MET, FMI, SMHI)

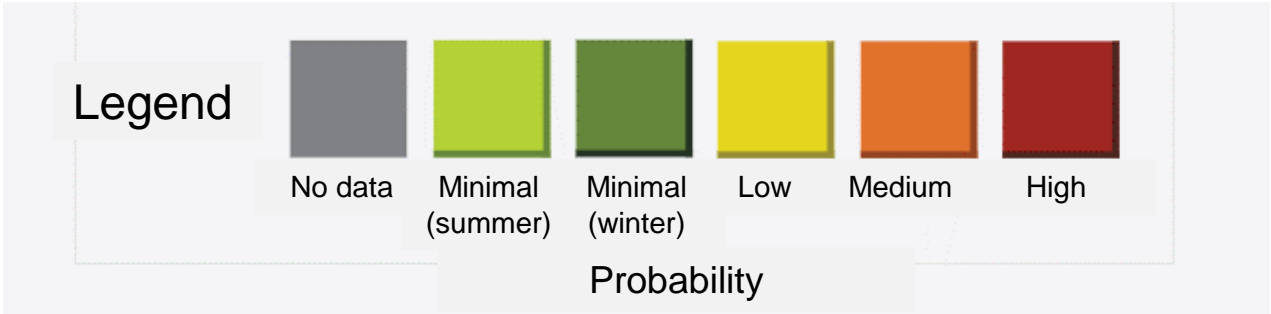
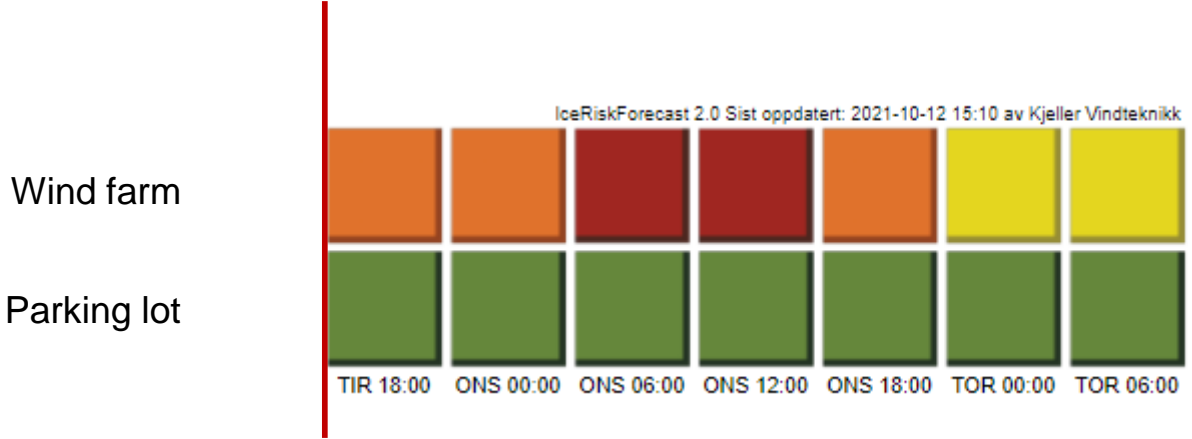
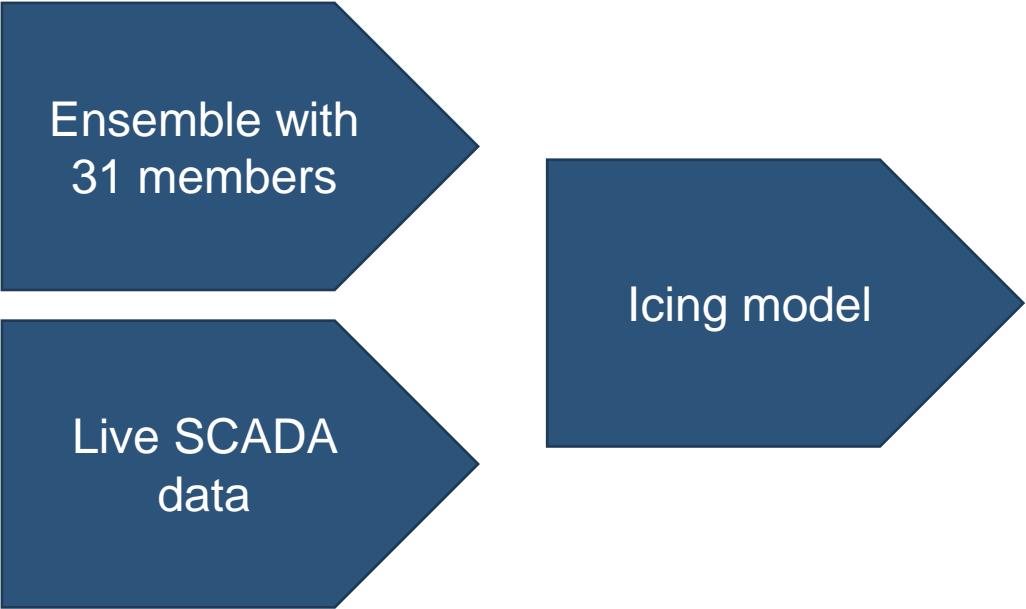
Ensemble with
31 members



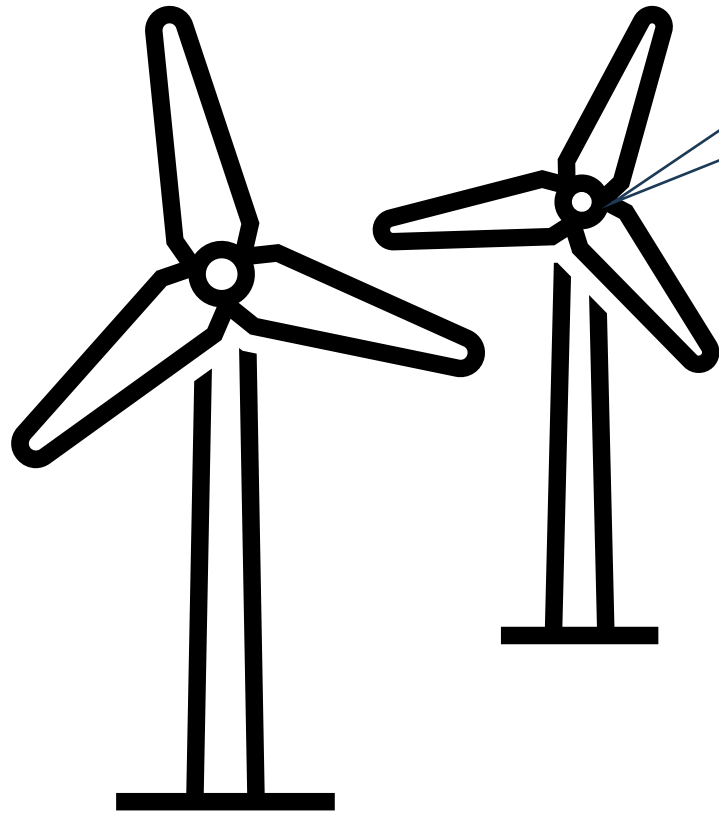




19 wind farms, almost all wind farms with severe icing



Live SCADA data



I have ice
on the
blades!



Photo credit: Egil Ragnar Hagen, Norconsult

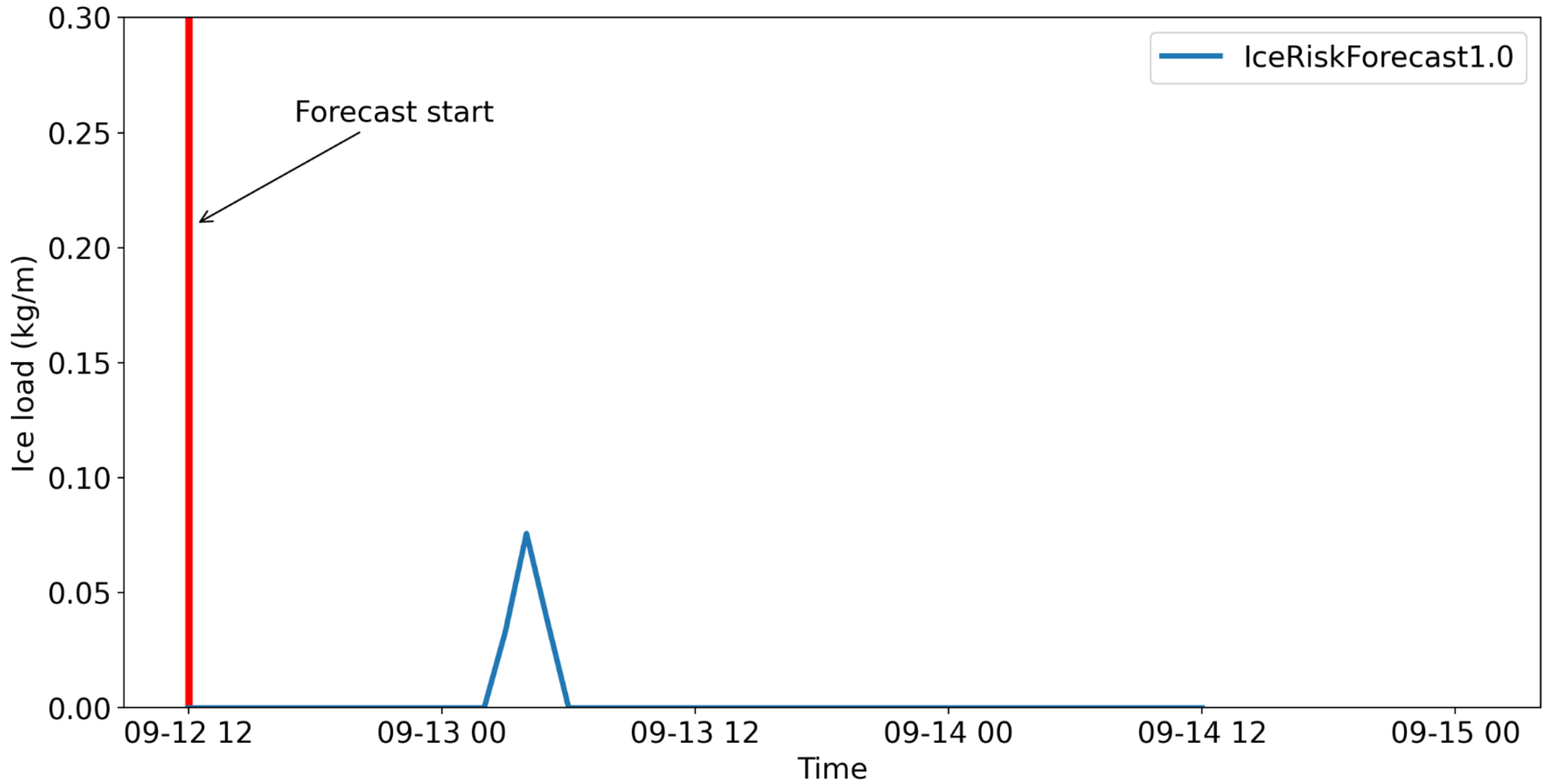


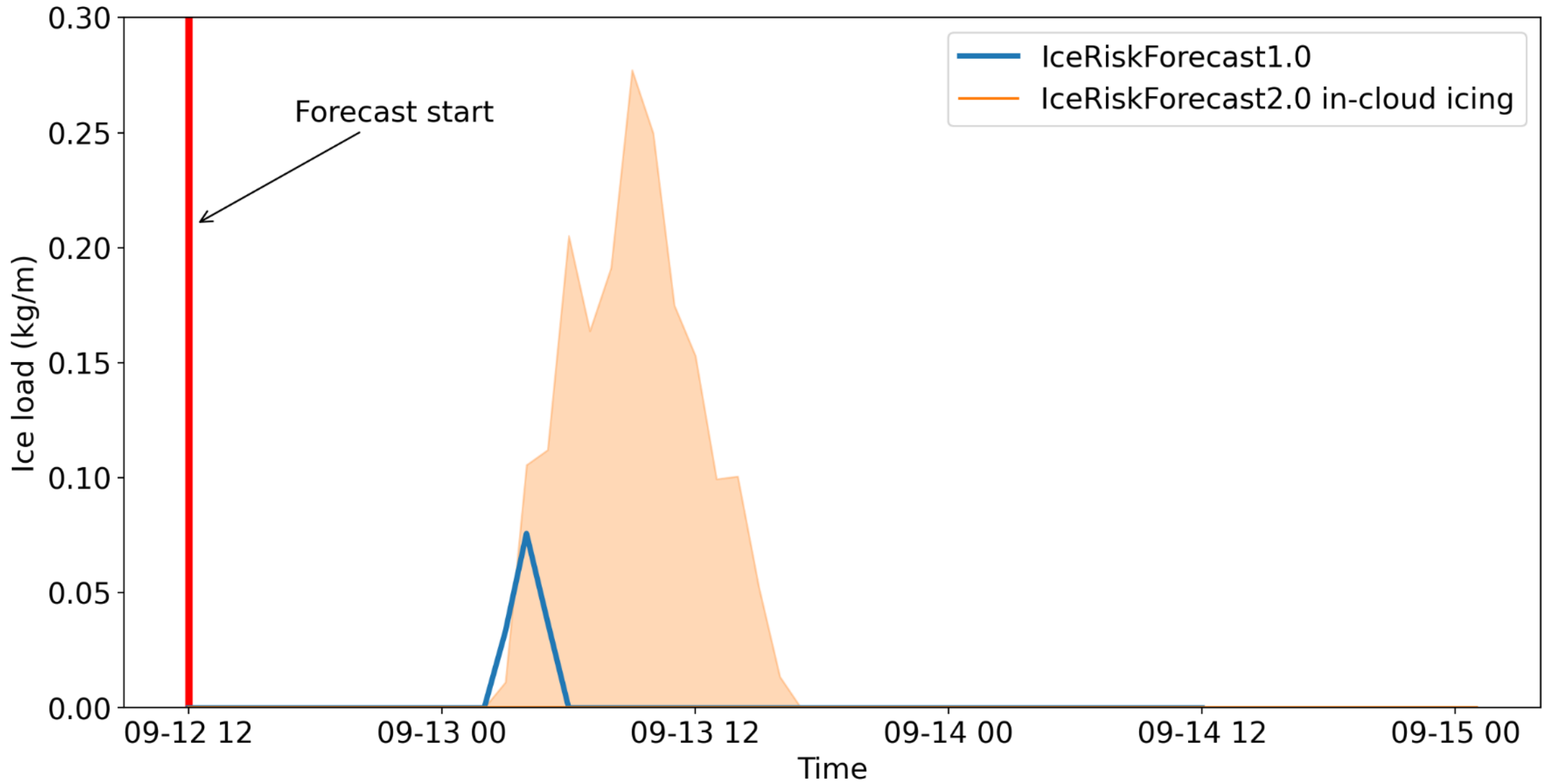
Photo credit: Magnus Baltscheffsky,
WeatherTech Scandinavia

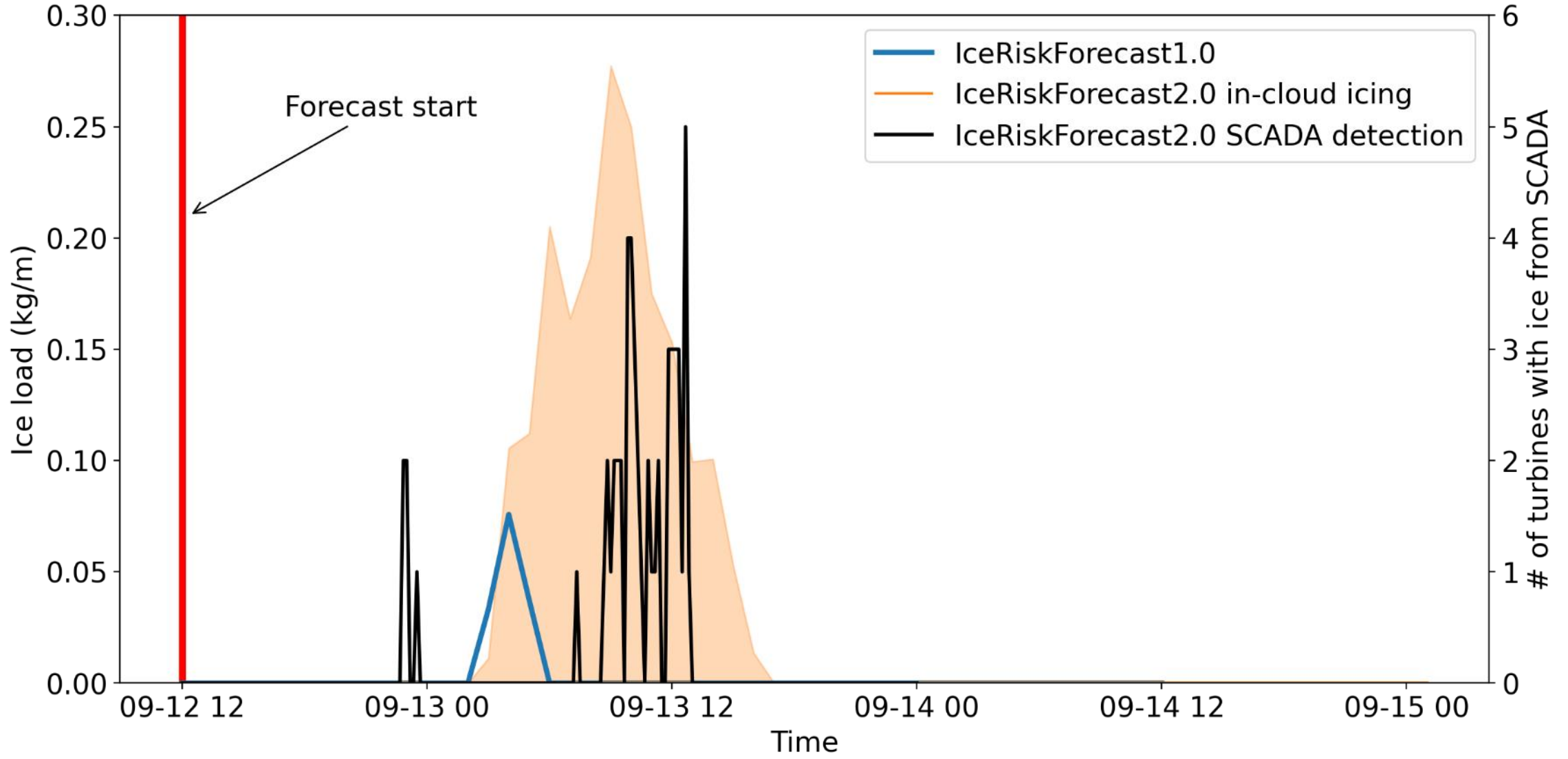


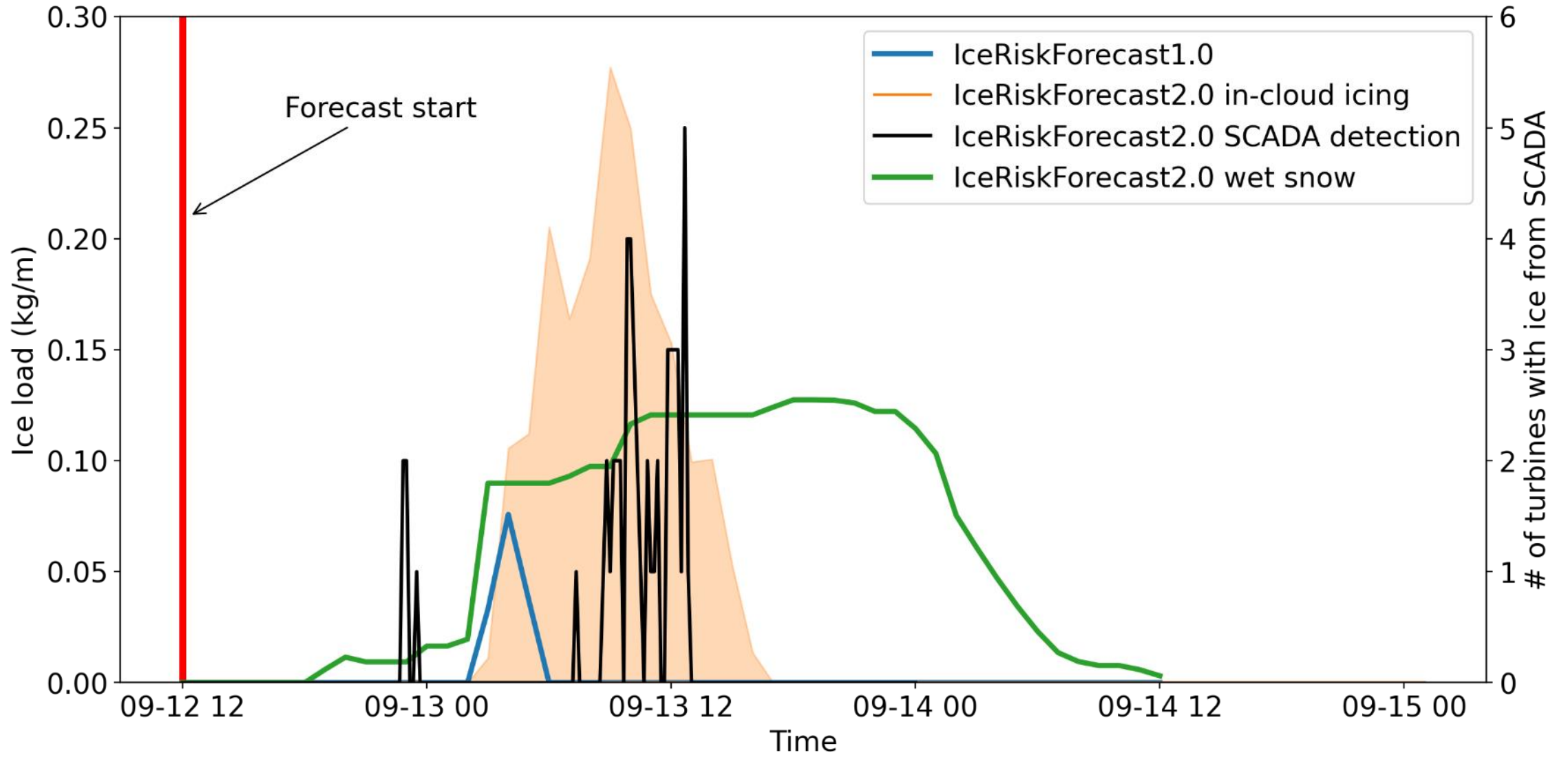
Photo credit: Storheia wind farm – Norwegian
Research Council R&D project: “Wind energy in cold
climate”

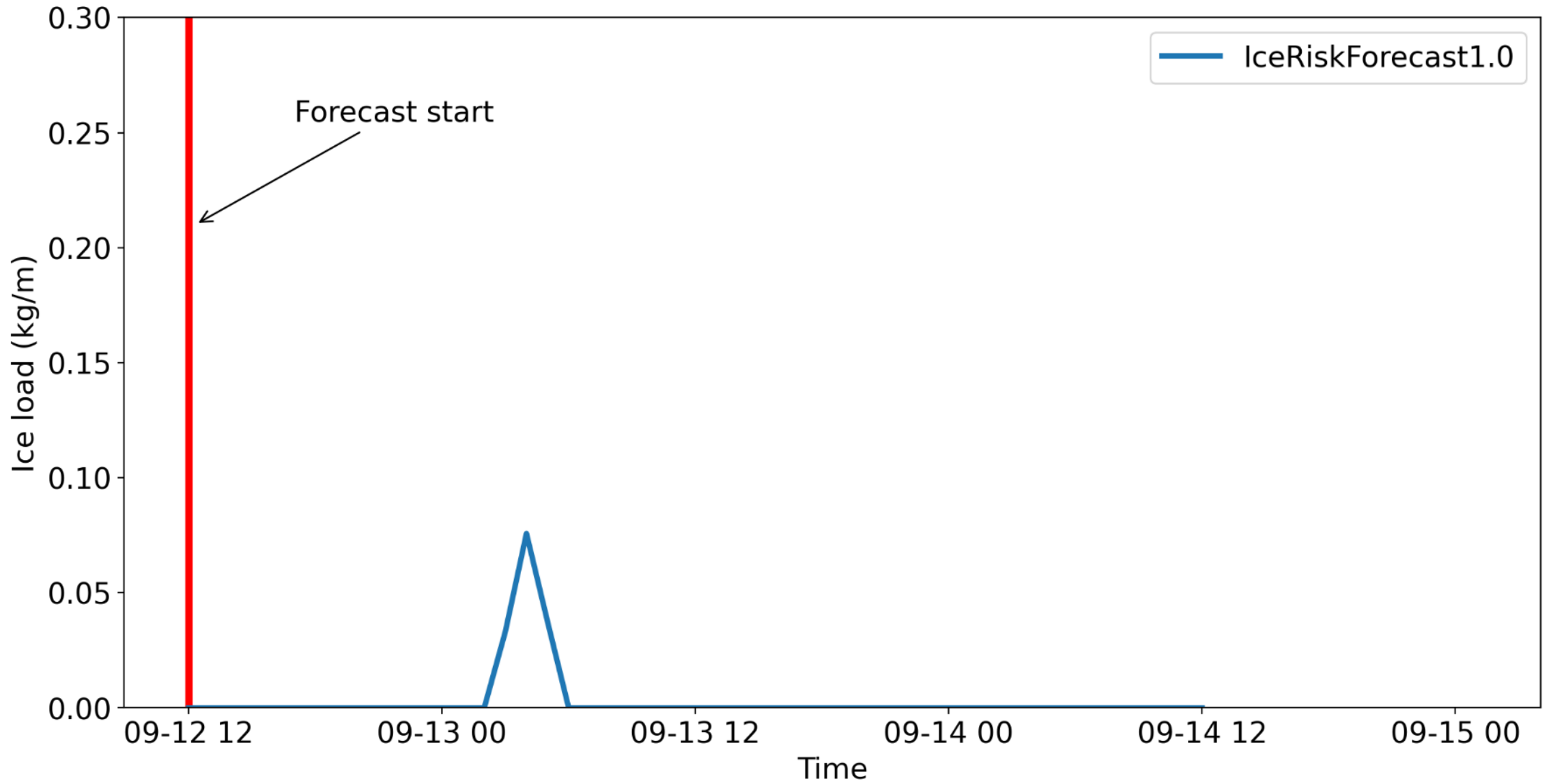
Example
IceRiskForecast 1.0
vs
IceRiskForecast 2.0

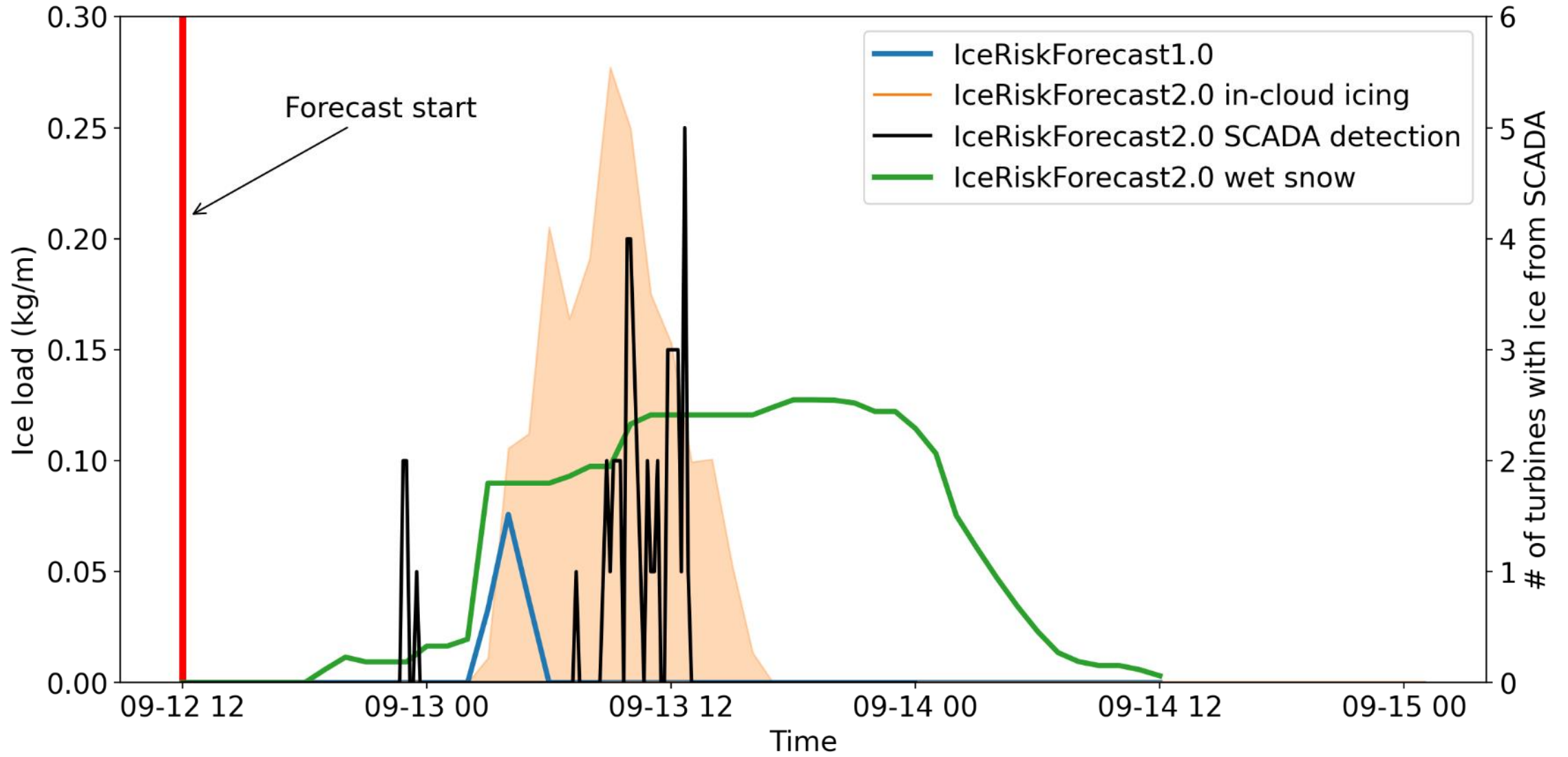






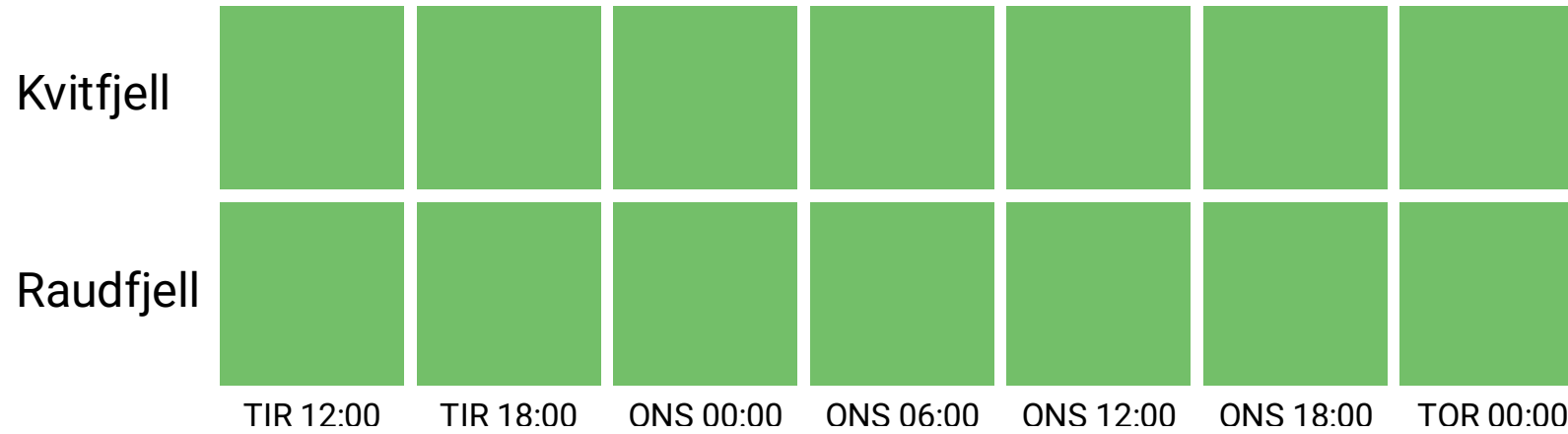






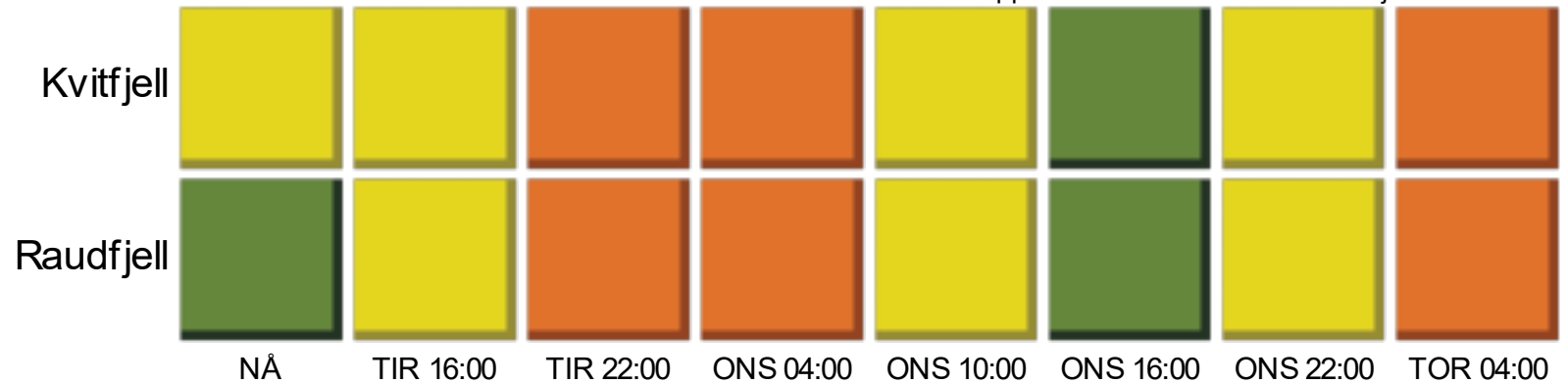
IceRiskForecast 1.0

Sist oppdatert: 2021-10-26 12:40 av Kjeller Vindteknikk



IceRiskForecast 2.0

IceRiskForecast 2.0 Sist oppdatert: 2021-10-26 12:50 av Kjeller Vindteknikk



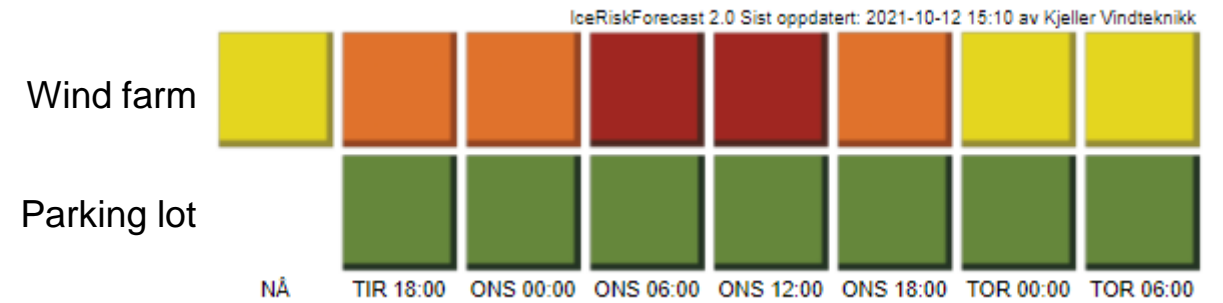
IceRiskForecast 2.0



Ensemble with
31 members

Icing model

Live SCADA
data



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Hver dag forbedrer vi hverdagen