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## Climate forecast enabled knowledge services

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CLARA webinar

*Can short term forecasts on water availability  
for hydro power production in Europe, ease  
decision making for energy traders and  
hydro power producers?*

Helen Ivars Grape SMHI

# SMHI

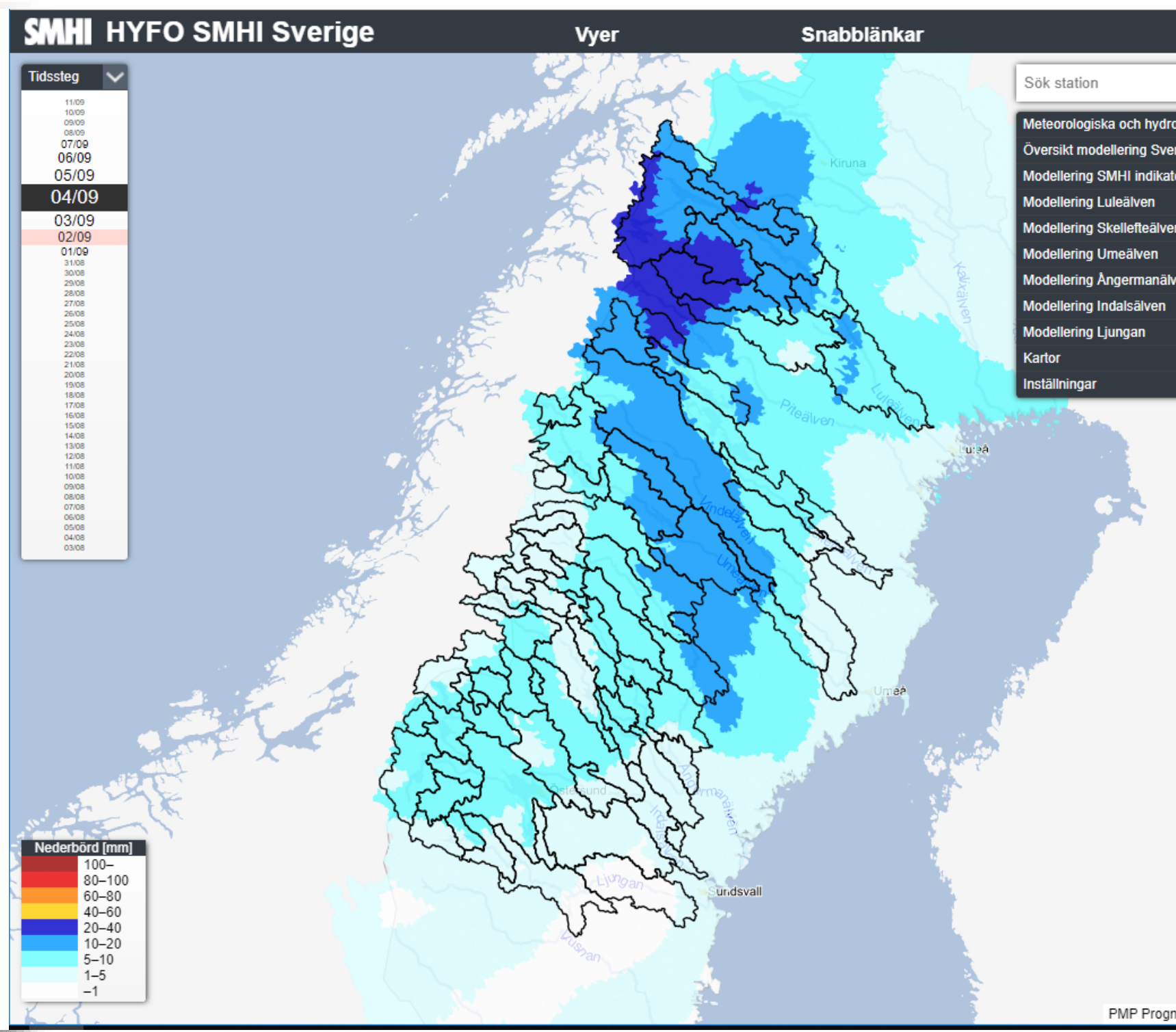
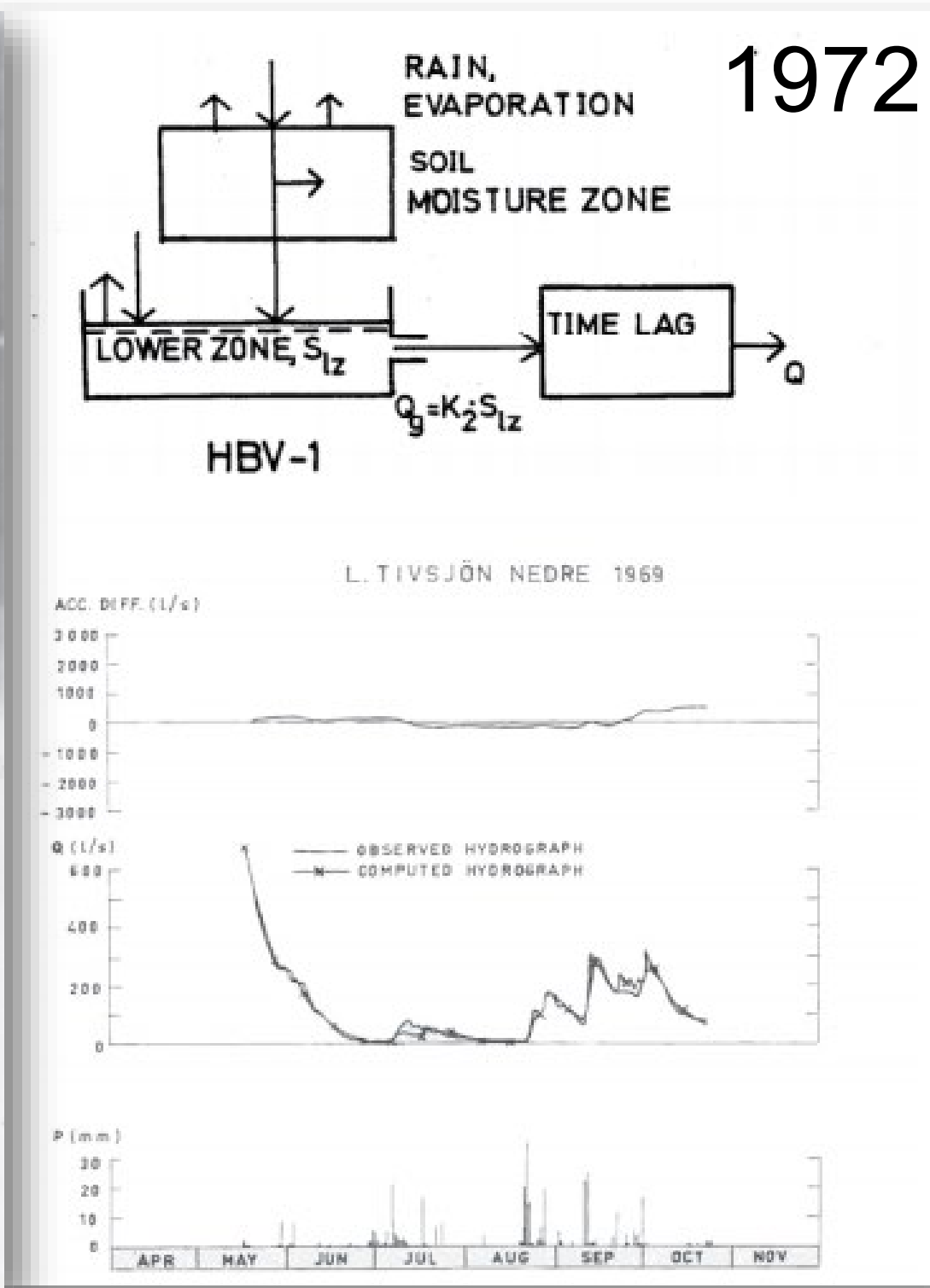
## SMHI Hydro GWh – European Inflow forecasts for Energy Traders



CLARA GRANT AGREEMENT N° 730482



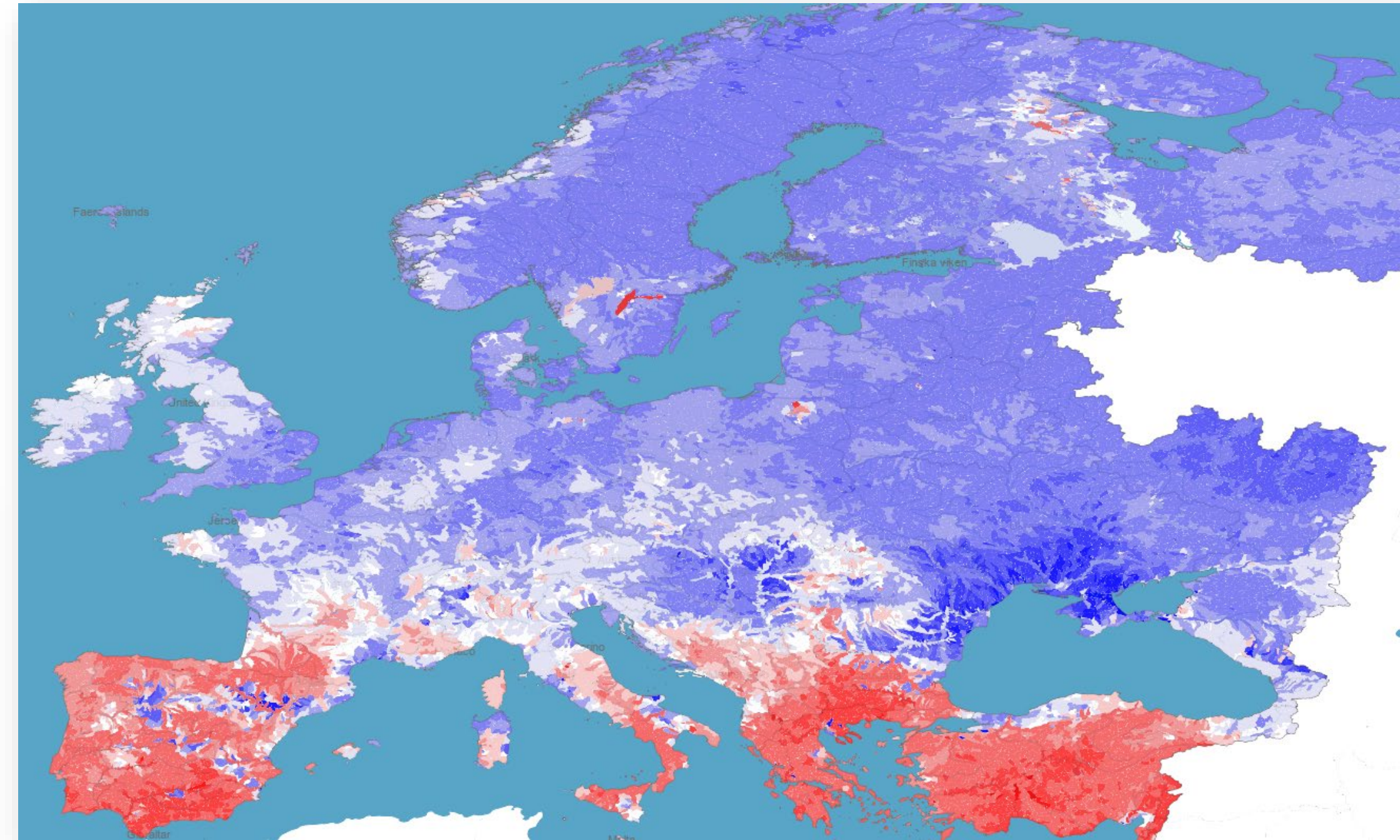
# SMHI and Hydro Power Hydrology





# SMHI and Hydro Power Hydrology

- HYPE model concept
- Inflow forecast in GWh for Energy Traders





# SMHI Hydro GWh – The service

- Daily and weekly forecasts (15 days) in GWh of inflow, precipitation, snow, soil water and hydrological balance for Sweden and Norway (and their electricity price areas) within Clara project.
- Daily and weekly forecasts (15 days) in GWh of inflow, precipitation, snow, soil water and hydrological balance for 19 european countries.
- Visualization of historical and forecast data in graphs and tables together with all other relevant trading data on the EQ web page <https://www.energyquantified.com/>.
- Addressed to hydropower producers and energy traders active on the Nord Pool power market.
- Based on the hydrological E-HYPE model.
- Co-developed with EQ and Uniper with feedback from Fortum and Statkraft

Aim:

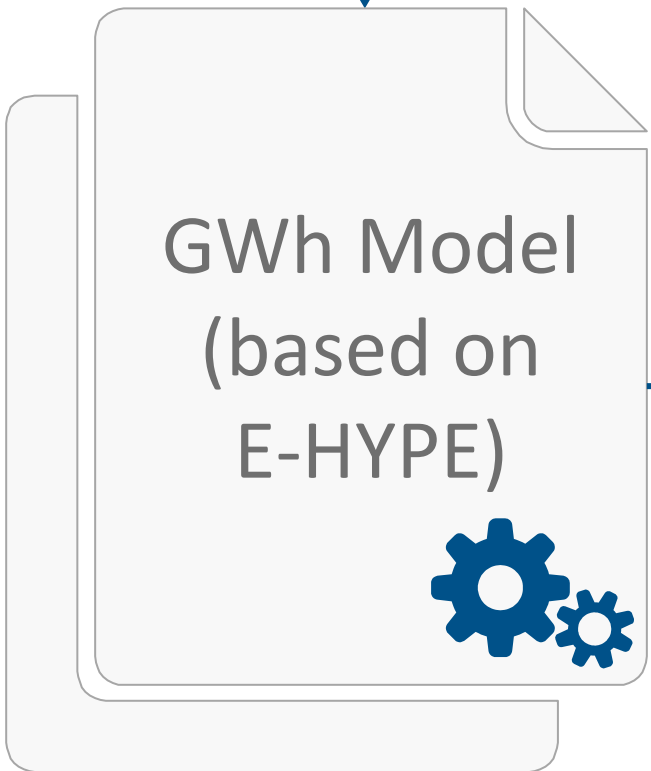
- Support energy traders and hydropower producers in their decision making.



# SMHI Hydro GWh - Workflow and system structure

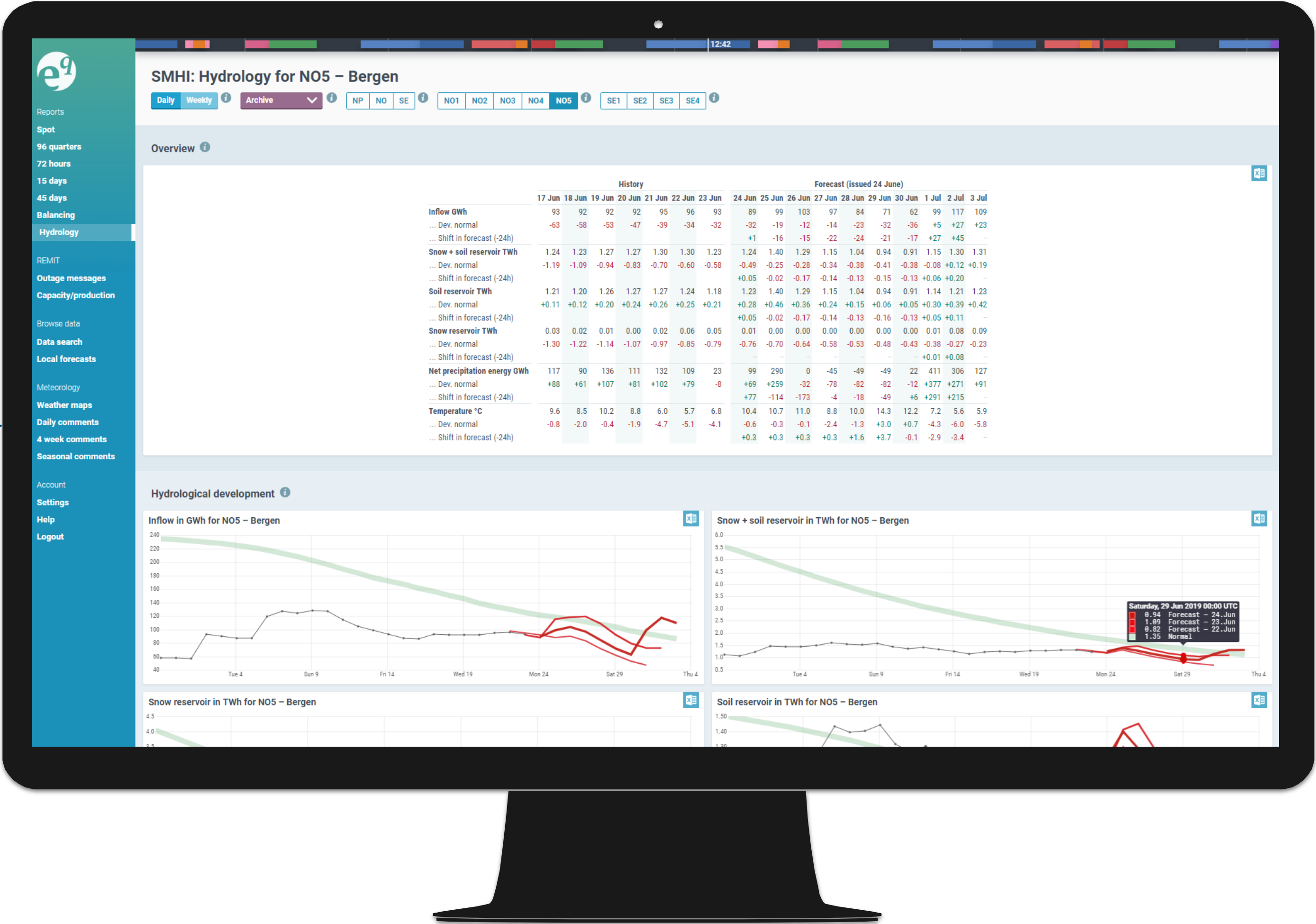


15 day ECENS forecasts



Files to EQ

Hydro Power Production Observations





# SMHI Hydro GWh – Presentation



Reports

Spot

96 quarters

72 hours

15 days

45 days

Balancing

Hydrology

REMIT

Active messages

Capacity/production

River Temp

Browse data

Data search

Local forecasts

Meteorology by SMHI

Weather maps

Daily comments

4 week comments

Seasonal comments

Account

Settings

Help

Logout

Forecasts

SMHI HYPE

This page shows SMHI HYPE model output

SMHI HYPE model output for NO3 – Trondheim

Daily

Weekly

Archive

Choose area

DE

AT

BE

CH

FR

CZ

HU

PL

SK

EE

LT

LV

NP

DK

DK1

DK2

FI

NO

NO1

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SE

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DK2

EE

LT

LV

UK

ES

PT

IT

IT-NORD

IT-CNOR

IT-CSUD

IT-SUD

IT-SICI

IT-SARD

AL

BA

BG

GR

HR

ME

MK

RS

SI

RO

TR

Overview

Inflow GWh

... Dev. normal

... Shift in forecast (-24h)

Soil reservoir TWh

... Dev. normal

... Shift in forecast (-24h)

Snow reservoir TWh

... Dev. normal

... Shift in forecast (-24h)

Net precipitation energy GWh

... Dev. normal

... Shift in forecast (-24h)

Temperature °C

... Dev. normal

... Shift in forecast (-24h)

Fundamentals- and weather update schedule ±12 hours.

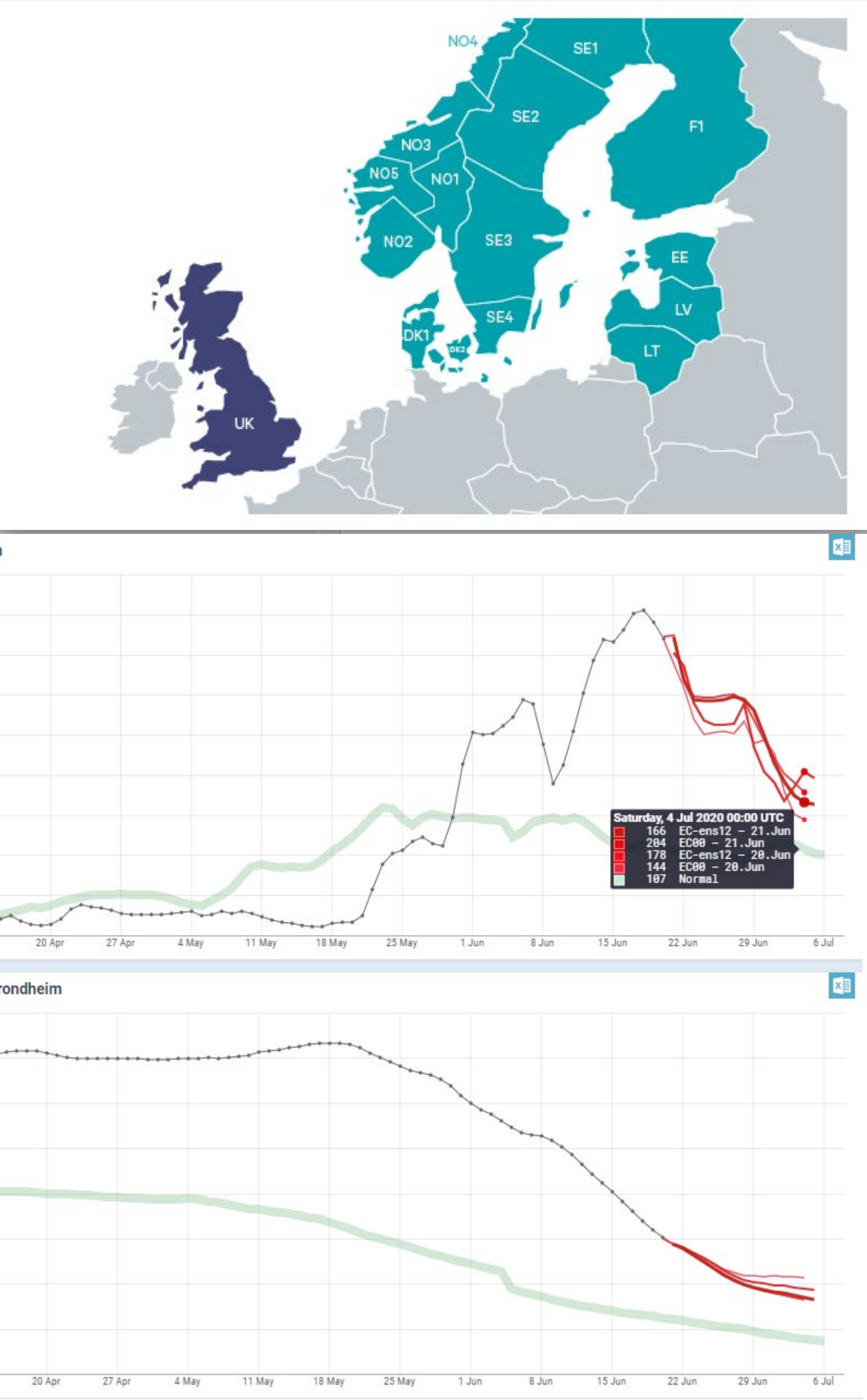
Current time is 10:26

Arome 06 ongoing (09:30 – 10:30)

A short-term weather forecast model covering the Nordics and the Baltics with a lead-time of 66 hours. Provided by SMHI.

Next up: GFS 06 in about an hour

Latest completed: EC-ens 00 for about an hour ago



# SMHI Hydro GWh – present and future

## Completed Tasks Sep 2017- Dec 2019

User Engagement

Service Specification

Data Collection

Development of GWh inflow short term ensemble forecast (15 days) models for 19 countries: Austria, Bosnia, Bulgaria, Croatia, Finland, France, Germany, Greece, Italy, Macedonia, Montenegro, Norway, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Switzerland on a country level and Italy, Norway, Sweden also for each electric price forecast area.

System implementation

Operational service

## Ongoing and future tasks 2020 and forward

Promotion activities on the European market

Work with user feedbacks

Change indata update from monthly to daily

Recalibration of E-HYPE is ongoing and then all GWh-models will be recalibrated

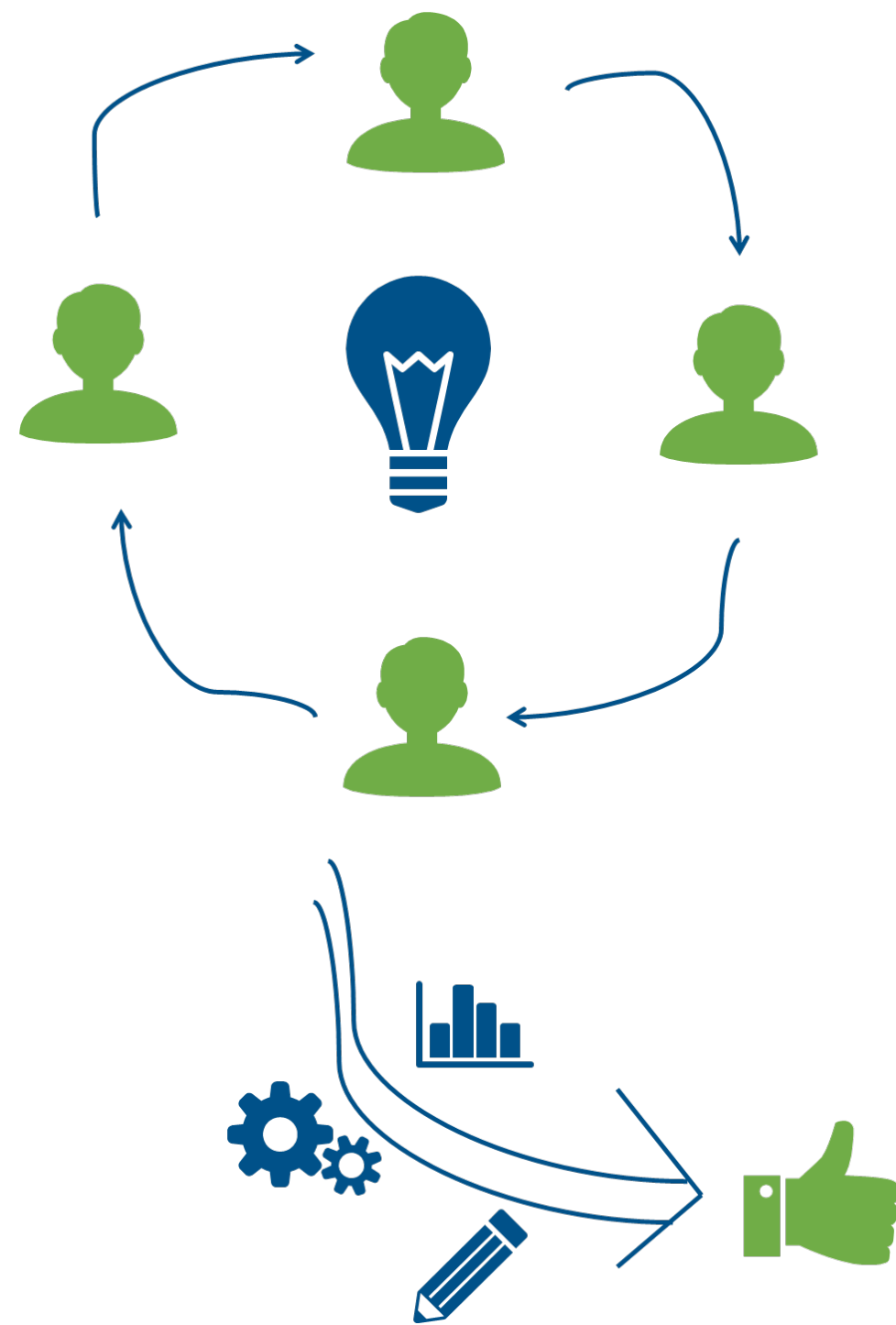
GWh models for more countries

Seasonal forecasts (45 days)



# How can climate services *help* energy traders and hydro power production planners?

**SMHI**



- Increase awareness of the current and future water situation
- Provide tools able to describe short term and seasonal variability
- Online and user-friendly systems showing real-time observations and modelled results
- Assist optimal planning of energy trading and hydro power production
- Support for decision making





**Thank you for your attention.**

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Access or Demo: <https://www.energyquantified.com/>

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