

Hydrology from a user perspective

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Destination Earth

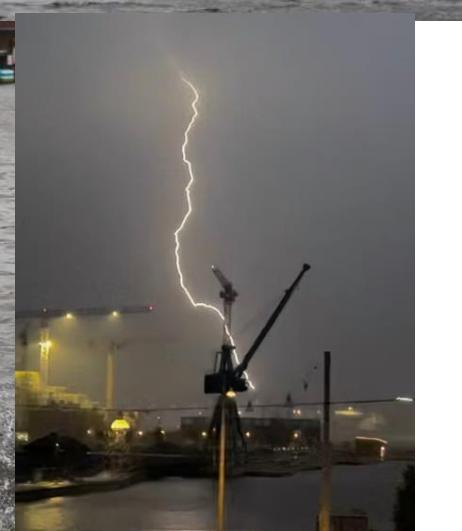
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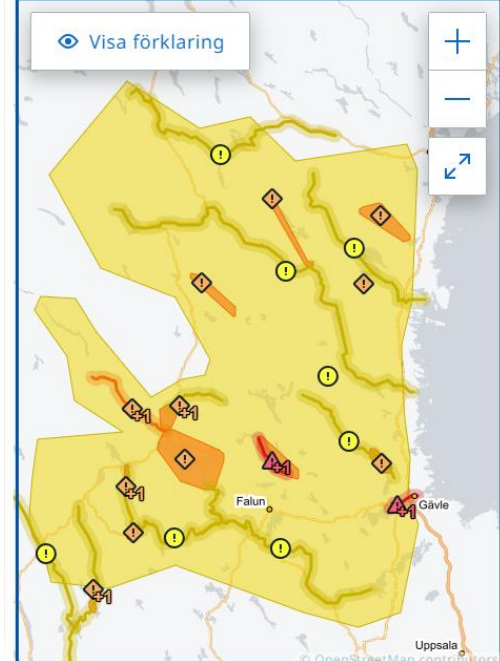
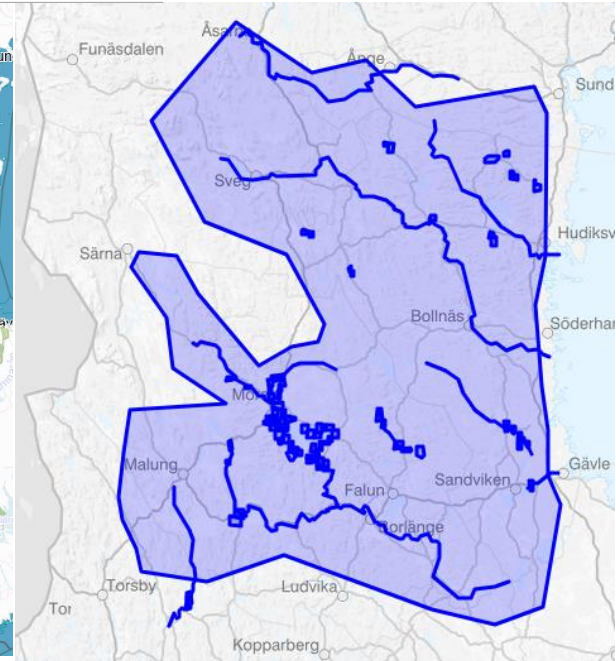
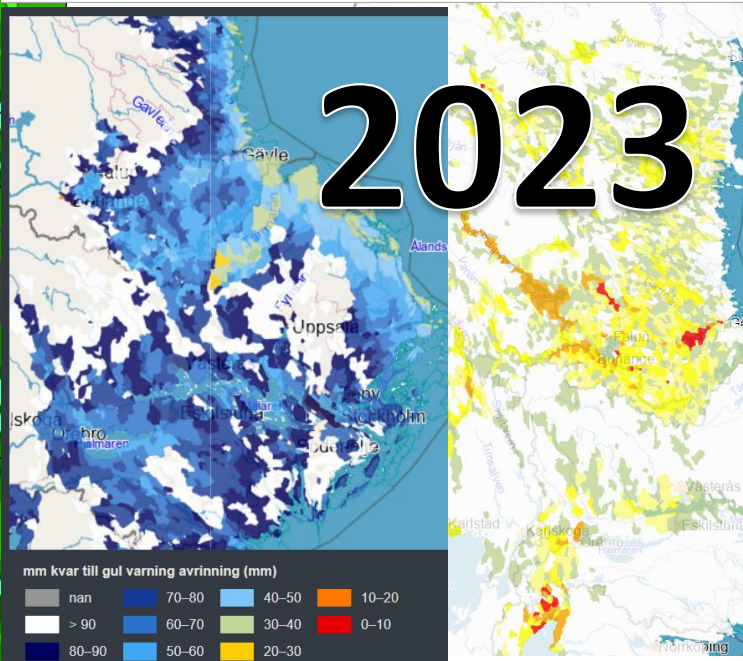
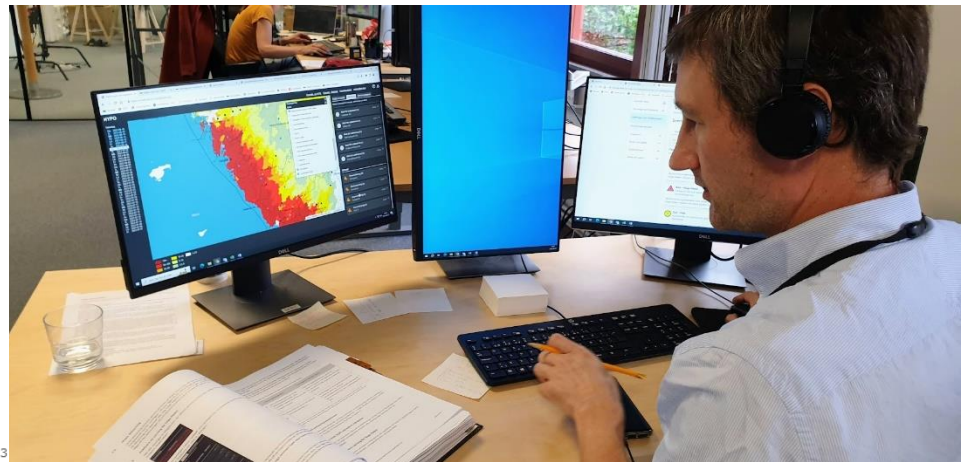
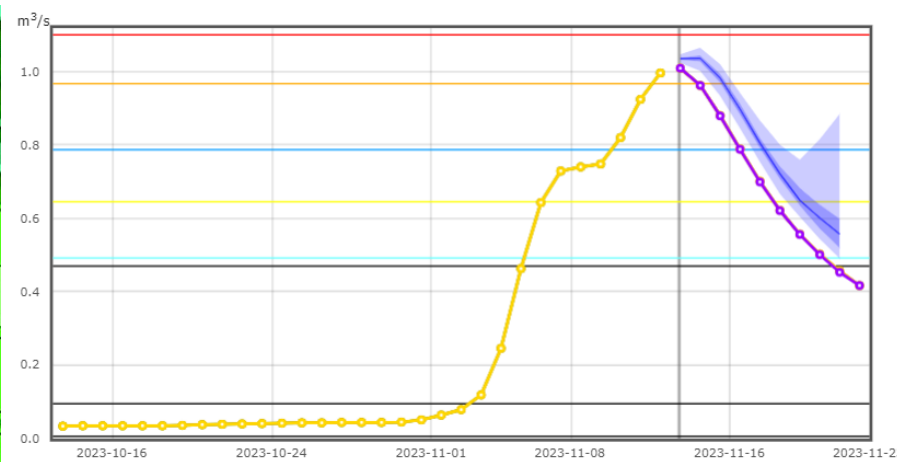
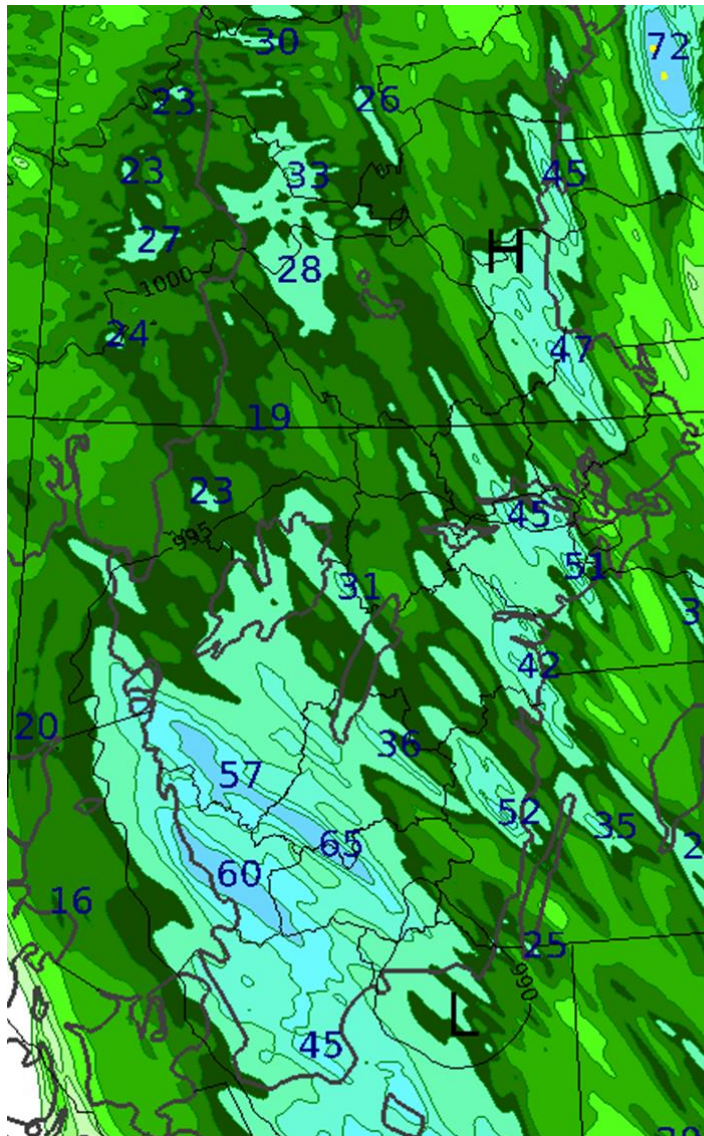
Hydrology from an *end-user* perspective



2023



Hydrology from an *user* perspective



SMHI

Forecast and
warning services



Meteorological
forecasts

Topography,
buildings,
infrastructure



Watershed info,
historic weather



Hydrological
forecasts



Hydraulic
forecasts



End-user
interaction



Hydrological
warnings

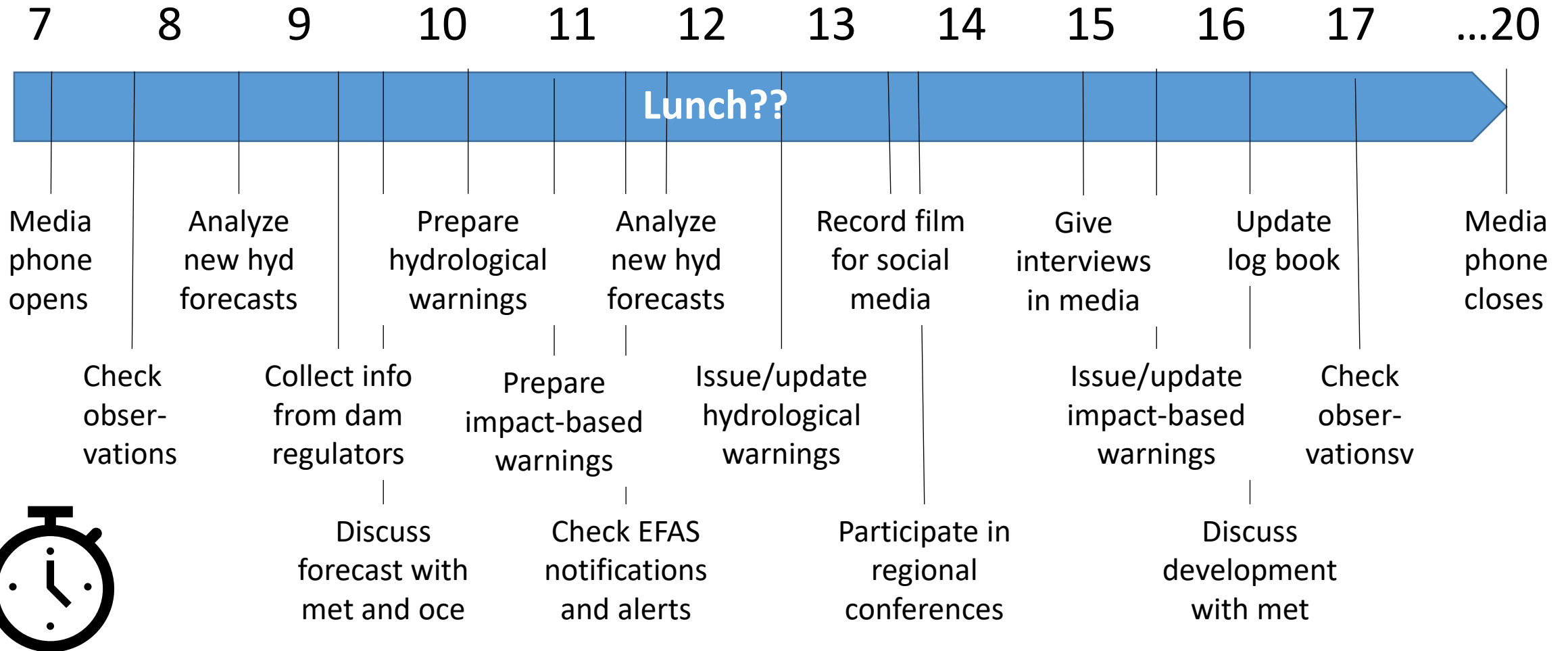
Impact-based
warnings

Coarse scale:
Areas and
rivers



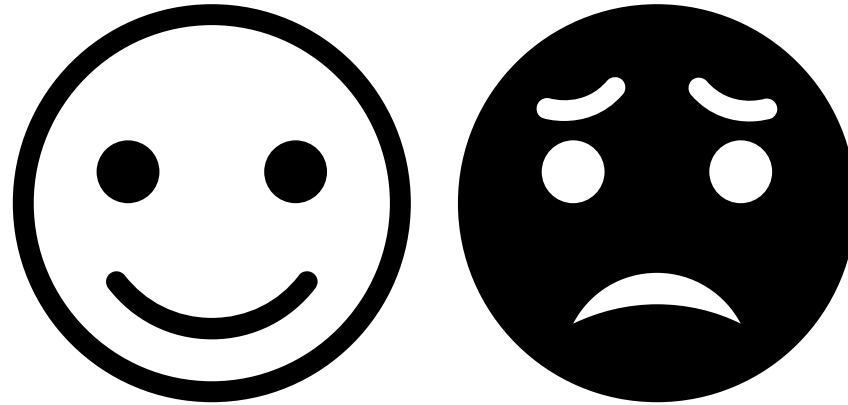
Fine scale:
Locations

A typical (busy) day for a hydrologist-on-duty



The balancing act

We like
better (more)
information



...but we suffer
from information
overload

→ When adding something new, we must skip something else.

→ Think *operationally* from the start!

When does resolution matter?

- Sometimes, coarse resolution in meteorological data is ok. Examples:
 - Watersheds tend to even out local variability.
 - Hydrologic storages add inertia to response.
 - High ET during vegetation period mute hydrological response.
- Other times, high resolution is very important. Examples:
 - Saturated conditions – finger on the trigger!
 - Precipitation falling on the wrong side of a water divide.
 - Hydrologic response from different parts of the watershed in-sync.
 - Flash flood events in urban settings.

Conclusion: How can we use DT infrastructure to achieve what we want to do?

- SMHI has a double role as a creator of DT forecasts and as a potential user (similar to EFAS). How can we benefit from this?
- Forecasts from DT extremes could be **very useful** in a warning system for flash floods, especially in urban settings where high resolution is very critical.
- Two options are worth exploring:
 1. Integrate systems in DT infrastructure that feed data into models at NHS.
 2. Integrate models in DT infrastructure to simulate the hydrologic response.
- Operations must be streamlined to **avoid information overload** for operational staff... so there is time for lunch!