

Minutes

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Meeting date 28 June 2022	Meeting Delft-FEWS Community Strategy Board #25		

Present

Nadine Slootjes / Gerben Boot / Ilonka ten Broeke - Krottje / Marcel Ververs / Justin Robinson / Martin Ebel / Amy Tavendale / Trey Flowers / Ian Clayton / Gabriel Miller / Ben Balk

Absent

Roger de Crook / Marc Philippart

Introduction and attendance

Nadine welcomes everybody to this meeting. Roger and Marc have sent their apologies for this meeting.

The list of members is as follows:

Organisation	Represented by
Bureau of Meteorology in Australia	Justin Robinson
Dutch Waterboards	Roger de Crook
Federal Office for the ENvironment Switzerland	Martin Ebel
Rijkswaterstaat in the Netherlands	Marc Philippart
Scottish Environment Protection Agency	Amy Tavendale
National Weather Service (USA)	Trey Flowers
Environment Agency (UK)	Ian Clayton / (Peter Connolly)
Tennessee Valley Authority	Gabe Miller
Deltares-USA	Ben Balk
Deltares NL	Nadine Slootjes, Marcel Ververs, Gerben Boot, Ilonka ten Broeke

Delft-FEWS Community Talks

The first Community Talk has been organized since the last meeting. We therefore briefly evaluated the first session.

About 80 people attended the first Delft-FEWS Community Talk. The format was a presentation and break out rooms to share experiences. The presentation was received positively and there was a positive vibe. It was considered valuable to share experience in the community. Also was it considered interesting to share forecasting core activities instead of new features. New features are sometimes too big of a change.

Amy: It went well, it was positive.

Justin: It was relatively easy to prepare,

Ian: Powerful to share experience in the community

Ben: How many people attended? Ilonka: About 80 people.

What was the format? Presentation + break out rooms to share experiences
Amy: it is interesting to share forecasting core activities instead of new features. New features are sometimes too big of a change.

Tips for next time: Functionality that everybody uses or could be using?
Martin: How many break out rooms? Ilonka: 3, but it was originally planned to have 10

Brainstorm about topics for the next community talk? From the chat:

- Show your system
- Web Operator Client
- Open Archive
- Webservices
- Hidden (not so known) features and show them
- How you manage your configuration
- other experiences with flood events
- recent new features/developments put into practice
- Handling of ensemble forecasts, handling and visualisation of uncertainty
- (how) to include open data sources into your system

The Community talks are open for all users with different level of experiences. The break-out rooms could reflect this with different rooms for different levels of expertise.

For next community talk: Gabe volunteered with Ian as a host. It should be planned at a later time than previous meeting because of the time differences with Northern America / Latin America

Action: The list of invitees should be checked as some people from Australia were not aware of the community talk.

Deltares Open Archive – Vision

The Deltares Open Archive has been successfully developed in recent years. However, we think it would be good to have a vision for the future of the Open Archive. The discussion can be summarized as follows.

Primary role and key elements of the Deltares Open Archive:

- Store observed data and forecasts (and other products produced by Delft-FEWS),
- Store Quality Control Data - for use in Historical Events, testing and calibration of models configured in FEWS,
- Reporting,
- Do historical analysis of events,
- Forecast verification based on data in Open Archive,
- Performance of forecasts during events,
- Bring back historical context into forecasts,
- Integration with WaterCoach and training/exercising on events,

- Auditing purposes,
- Seamless integration is key.
- TVA uses it a lot, mainly through seamless integration
- Reporting is done from the Open Archive
- Forecast verification based on data in Open Archive

One client reported issues with operating the Open Archive in the cloud. This is something that should be resolved (see whether open archive can be made more robust for cloud infrastructure).

Potential future use:

- Long term data archive,
- Upload data that is not currently available in the archive,
- Offline storage - so we can take data off the archive when it gets too big,
- Get Data from Offline storage and back into the Archive,
- Academic usage.

Future needs/requirements:

- Integrate much more with Delft-FEWS,
- Resilience of Elastic Search, More robust for cloud infrastructure.

Below you will find the responses to the above questions from the different CSB members:

Amy:

- *Do historical analysis of events*
- *Performance of forecasts during events*
- *Bring back historical context into forecasts*

Ian:

- *Bring back historical context into forecasts*
- *Integration with WaterCoach and training/exercising on events.*
- *Have not been able to fully utilize it*
- *Issues with operating the Open Archive in the cloud. This is something that should be resolved (see whether open archive can be made more robust for cloud infrastructure).*

Justin:

1. *Store Observed Data that we "had" at the time when a forecast was issued*
2. *Store forecasts, and other products produced by FEWS.*
3. *Store Quality Control Data - for use in Historical Events, testing and calibration of models configured in FEWS.*
4. *Think of using it for long term data archive.*
5. *Upload data that is not currently available in the archive.*
6. *Offline storage - so we can take data off the archive when it gets too big.*
7. *Get Data from Offline storage and back into the Archive.*

Gabe:

- *TVA uses it a lot, mainly through seamless integration*
- *Reporting is done from the Open Archive*
- *Forecast verification based on data in Open Archive*

Ben:

I would like to see it much more integrated with Delft-FEWS.

Martin:

The Open Archive has been integrated with their system and they mainly use it through seamless integration

Justin:

Why are you using your own Database format (MongoDB)?

The response from Gabe is that the current technology of the Open Archive is not super reliable.

Ian:

I'm certainly really interested to hear more about MongoDB, as we have similar issues with vast amounts of data.

Gabe:

They store scalar data in their MongoDB and Grids in NetCDF format

- Operationally it is used a lot*
- The open archive is used to meet data requests from the public for historic events*

We are working on developing an external API for the public that they can pull our data based on the archive.

Justin:

A stand-alone FEWS application is used to download the data, but also download of NetCDF files and obtaining the data from it using their own tools. Auditing is a key requirement for the BoM as well. I think that we have statutory requirements about saving data and forecasts. The "tagging" is important for us as well so we can find important events and we also use it to manage the lifetime of data in the archive. The NWP data sets are very big and we cannot store them for a very long time.

Amy:

Interesting that users are asking for datasets, will it be a public resource? Will all SEPA users be able to obtain data themselves? Is there an element of generic functionality that everyone could apply? It is configurable so it gives you a lot of flexibility, but it requires quite a step to start setting it up.

Ben:

Other reasons to implement the Open Archive is for auditing purposes.

Ian:

Auditing is a key objective of the Open Archive! Recent events were good examples of that. Another important aspect to take into account is governance, who is accessing the information.

Trey:

The US National Weather Service archives our data through NOAA's National Centers for Environmental Information (<https://www.ncei.noaa.gov/>). It is not one stop shopping for all of the data that is used by the different RFCs and other organisations. It is dependent on the data (the scale is rather large). Their archive is also for academic usage of all the data sources.

Justin:

We are now working on two data streams - one with "raw" data and "quality controlled" data for the seamless integration and testing our models etc. TVA is doing the same according to Gabe.

Ian:

The Open Archive is also dependent on the infrastructure which in case of EA is in Azure cloud and managed by their Defra team. --> should the Open Archive be made more robust for cloud infrastructure.

Amy: Resilience of the archive is important too!

Gabe: We struggled a lot with elastic search and its resilience.

Roadmap developments 2022

Gerben presented a brief status update of the roadmap plans for this year.

A concern was raised not to put all information about security out in the open! Deltares explained that the plan was to make this information available on request.

It was suggested to make clients as soon as possible aware of the F12 functionality to show which old configuration files are going to be end of life, as this could potentially be a large job. The response from Marcel was that clients will be contacted in different ways, directly by Deltares (USA) or through the consultants with whom they have a S&M contract. We will be using multiple channels to communicate this end of life date of specific modules.

Community (Nadine/Ilonka)

Was not discussed in this meeting.

Actions previous meeting

Question from Ben about S&M renewals to new standardized service packages --> over 50% of contracts have been adjusted (contracts that had ended end of 2021 or between 1st of January and now).

AOB

Machine Learning / Artificial Intelligence is a hot topic in the EA. How do deal with this? Possible topic to be discussed in more detail?

Justin also mentions that Artificial Intelligence needs a lot of data, so perhaps that is another archive use case?

Trey says that they have used LSTM for streamflow in another modelling system. I've also seen applications for post processing for bias correction. We also tried with reservoir releases but were not very successful.

Ian thinks that is interesting, as EA does similar with reservoir management for River Severn Regulation.

Action			Due by	Status
23.1	Heads-up on when the Delft-FEWS security documents are ready.	Deltares	Jan 2022	Open
24.1	Organisation of the new webinars	Deltares / CSB members	June, October, February	Open
24.2	Organisation of drop-in sessions	Deltares	September	Open
24.3	Presentation on centralized and decentralized storage of time series	Rogier	June or other meeting	Open
25.1	List of invitees for Community Talks should be checked (e.g. for missing users in Australia)	Ilonka	Before next community talk	New