

Deltares

Deltares



Deltares

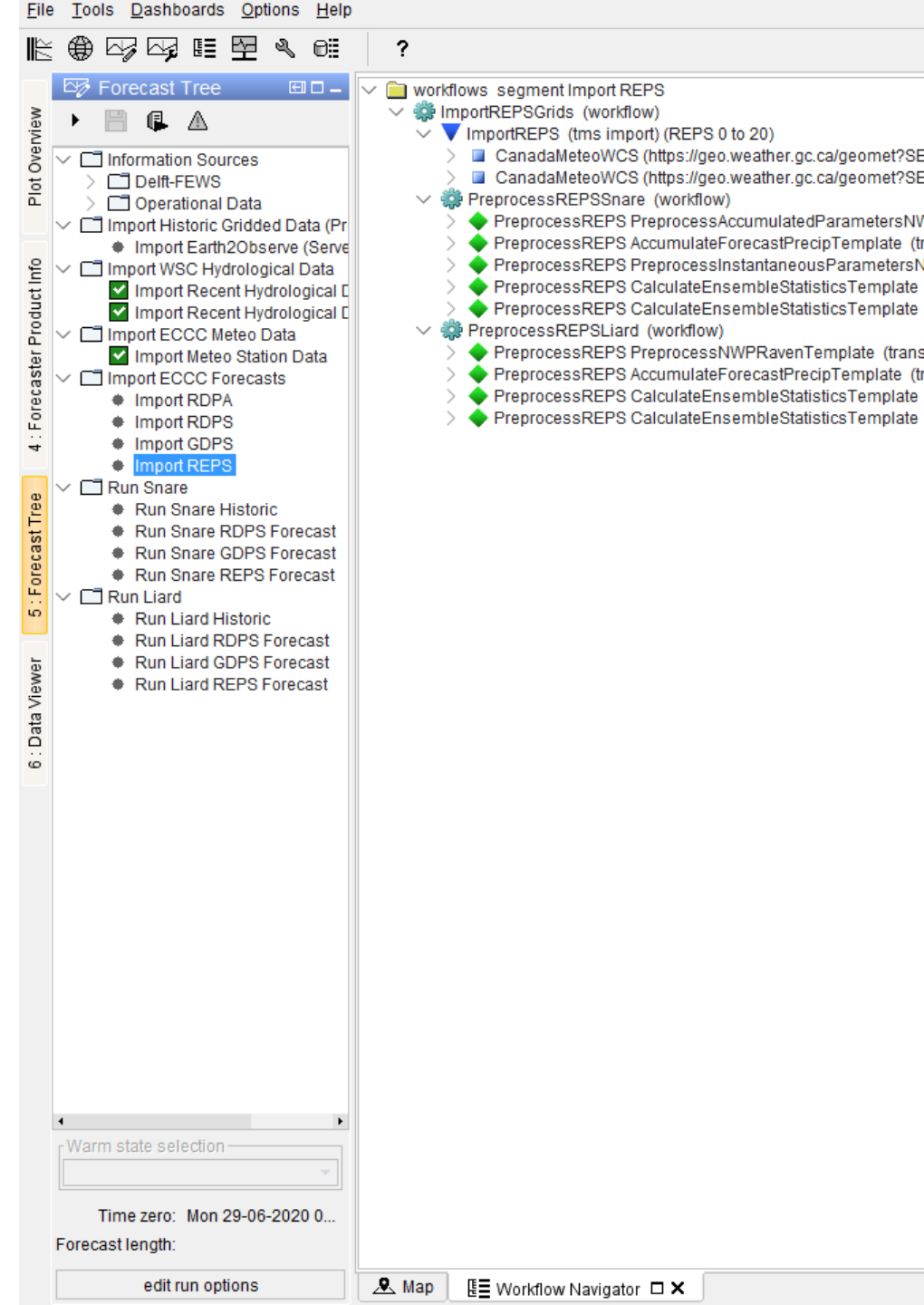
Delft-FEWS

Basic Configuration Course

Module: Running Workflows

Module Motivation

- Delft-FEWS is designed to run structured workflows
- Building your own workflows, allows you to harness the power of Delft-FEWS
- Running workflows is needed to test what you implement in Delft-FEWS
- Understanding how to analyze and de-bug your workflow runs is a key part of learning this system.



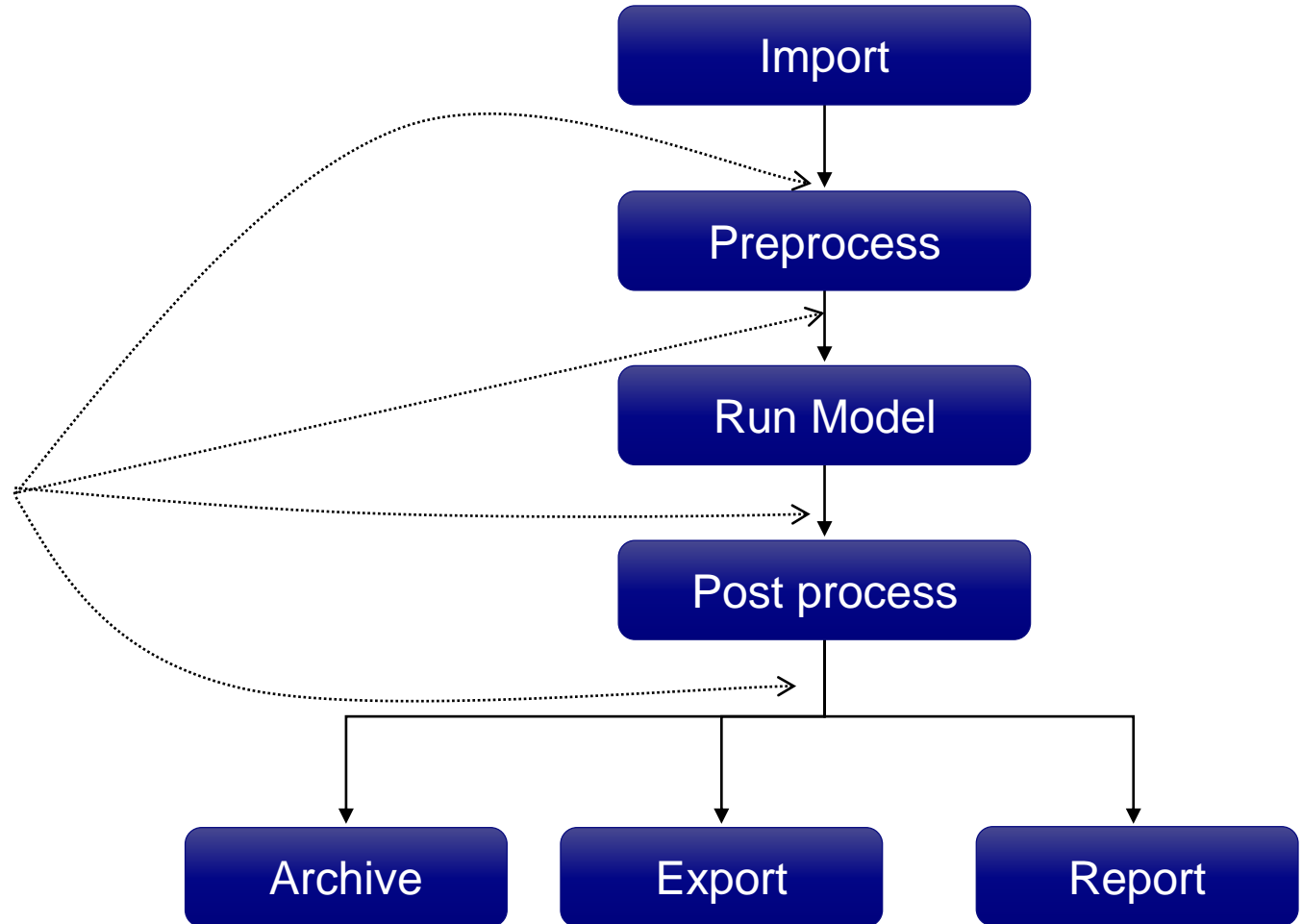
Learning Objectives

By the end of this module, you will have met the following learning objectives:

- 1) Understand how workflows are shown to the user in the Delft-FEWS interface.
- 2) Have exposure to the Topology, and how is it configured and when the user would use it.
- 3) Have experience with the Manual forecast display, how is is configured and when the user would use it.

Workflows and Modules - Review

- Workflow – A sequence of modules
- Module instance – Configured module
- Task run – Actual execution of a workflow
- Time series connect the dataflow between the module instances



Example of a simple workflow - Review

Schema Definition

```
<workflow xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-  
instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://fews.wldelft.nl/schemas/version1.0/workflow.xsd" version="1.1">
```

```
<activity>  
  <moduleInstanceId>ImportForecast</moduleInstanceId>  
  <description>Example Description</description>  
</activity>
```

Module to be run

```
</workflow>
```

Registering workflow in WorkflowDescriptors.xml



- Located in WorkflowFiles Folder
- Multiple Files
- Flexible Naming Structure

- Located in RegionConfig Files Folder
- Single file
- Always named WorkflowDescriptors

- If you forget to register a workflow, or misspell it in configuration, you'll get a message that it is not recognized

Manual Forecast Display

- The Manual Forecast Display is built directly from the WorkflowDescriptors.xml
- Containing the following elements:

```
<workflowDescriptor id="ImportHydroHistoric" name="Import Hydro Historic Data" visible="true" forecast="false" autoApprove="false" allowApprove="false"/>
```

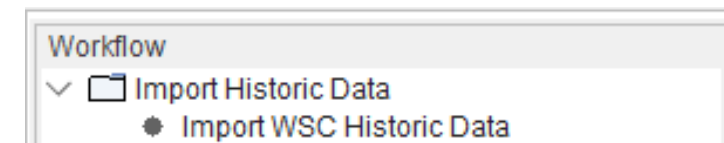
Diagram illustrating the XML element structure for the Manual Forecast Display, with annotations for each attribute:

- id="ImportHydroHistoric"**: Id for referencing throughout FEWS configuration
- name="Import Hydro Historic Data"**: Name for Display
- visible="true"**: Set Visibility
- forecast="false"**: Is it a forecast?
Needed if you want to write simulated timeseries
- autoApprove="false"**: Set approval defaults (advanced)
- allowApprove="false"**: Set approval defaults (advanced)

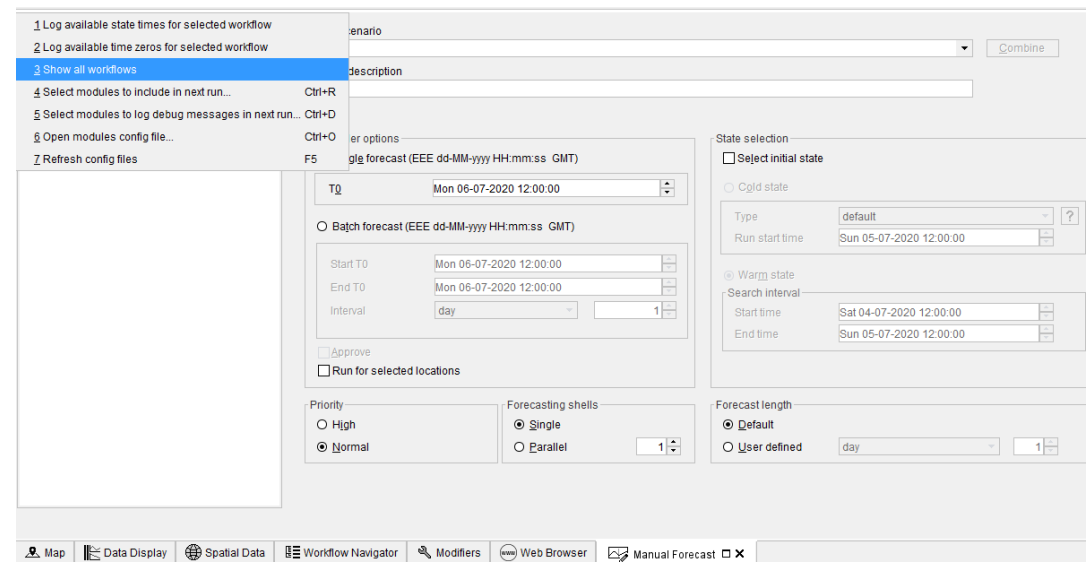
Manual Forecast Display

- Since 2019.02, workflows can be assigned to Nodes in the Manual Forecast Display

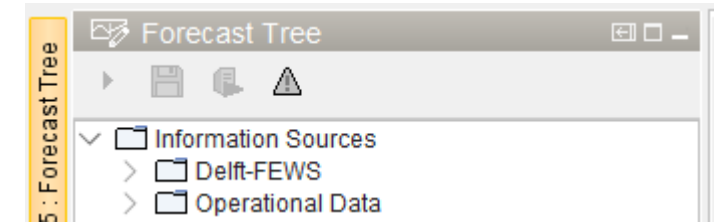
```
<node name="Import Historic Data">  
  <workflowId>ImportWSCHistoric</workflowId>  
</node>
```



- None visible Workflows can be viewed by pressing the F12 Button, with these nodes selected

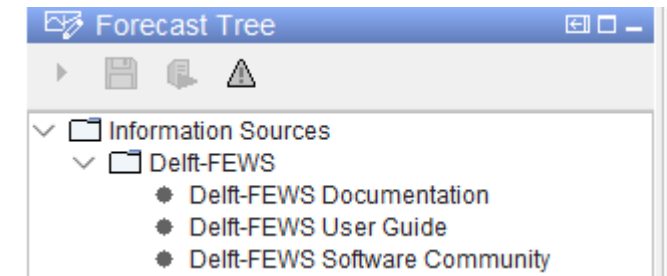


Topology – Building the Forecast Tree



- The Topology.xml file, located in the RegionConfigFiles folder, contains the instructions to build the forecast tree.
- This provides the main dashboard for running workflows. It can also link to external data, such as websites.
-

```
<nodes id="Information_Sources" name="Information Sources">
  <nodes id="Delft-FEWS">
    <node id="Delft-FEWS_Wiki" name="Delft-FEWS Documentation">
      <url>https://publicwiki.deltares.nl/display/FEWSDOC/Home</url>
    </node>
    <node id="Delft-FEWS_UserGuide" name="Delft-FEWS User Guide">
      <url>https://publicwiki.deltares.nl/display/FEWSDOC/Using+Delft-FEWS++User+Guide</url>
    </node>
    <node id="Delft_FEWS" name="Delft-FEWS Software Community">
      <url>http://oss.deltares.nl/web/delft-fews/</url>
    </node>
  </nodes>
</nodes>
```

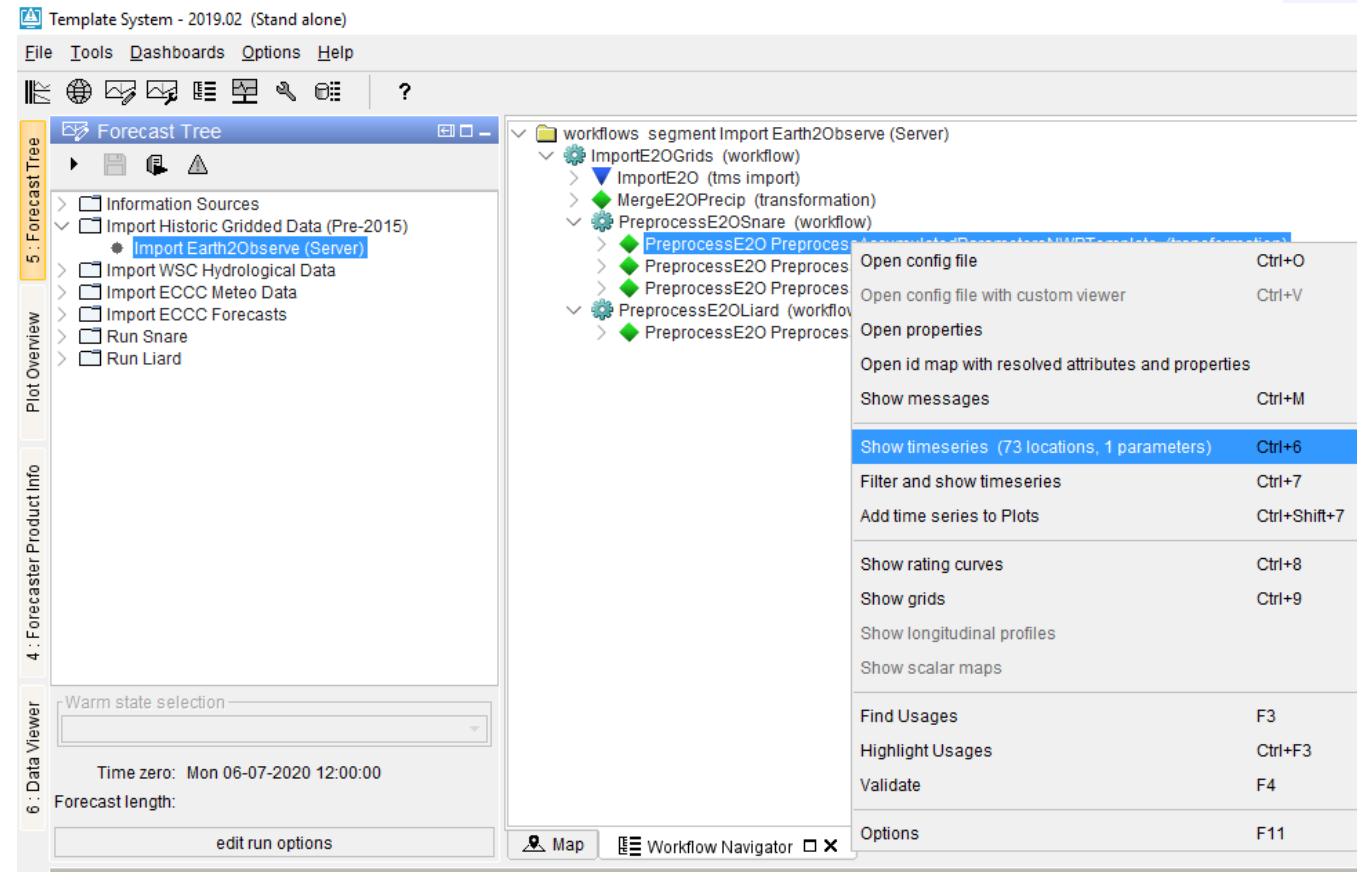


Topology - Building the Forecast Tree

- The Topology should structure the forecasting process in a logical way. For example
 - Reference Information
 - Import Workflows
 - Processing Workflows
 - Model Run Workflows
 - Export Workflows
- There are additional options that control the icons, such as the grace time for which a workflow run is up to date.
- Many more options are available, Google “Delft-FEWS” Topology for more!

Workflow Navigator

- The Workflow Navigator gives the most detailed view of each workflow in the Topology.
- You can access each configuration file and check what data is available.
- Likely the best way to dive into each workflow!
- Right click each component for more options.

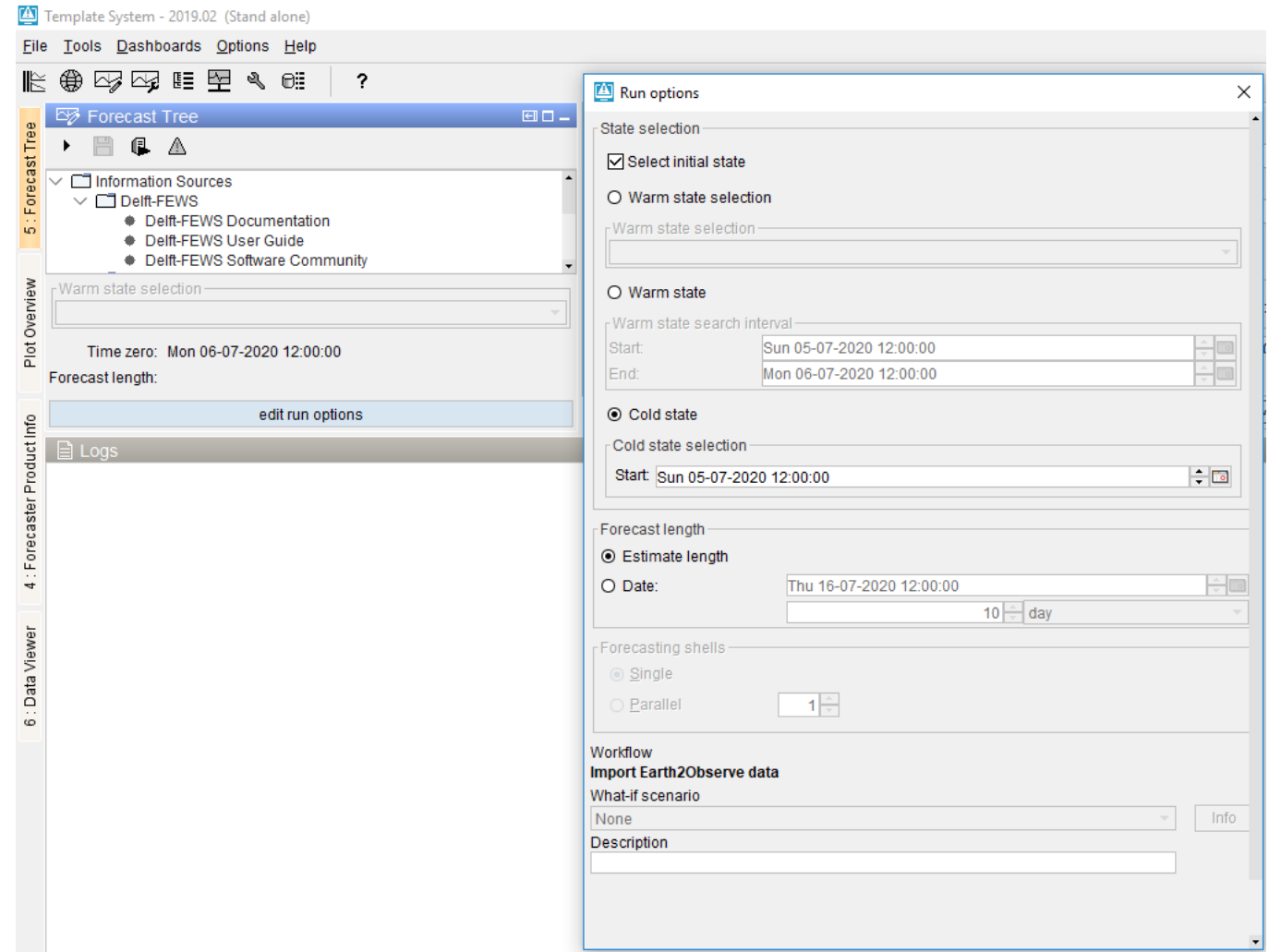


Run Time Options → Cold and Warm State

- State handling is a key concept in forecasting and in Delft-FEWS
- Workflows, such as imports or model runs, may have default run periods, however this can be overwritten with the selection of a state.
- Many workflows, or model runs, will start when a state is available.
- For example, setting the cold state from the Manual Forecast or Topology can set the run time.

Editing Run Options in the Topology

- Selecting a workflow with a variable run time will enable the edit run options
- From there you can select the initial state, or even set the estimated forecast length.
- This is most useful in more detailed model runs.



Edit Run Options in Manual Forecast Display

- The Manual Forecast Display contains additional options, including to control the TO
- Perhaps the most useful, is highlighting a workflow, then pressing “ctrl+r” or “ctrl+d”
- This provides module by module control on running and debugging respectively!!

What-if scenario
None Combine

Forecast description

Scheduler options

☒ Single forecast (EEE dd-MM-yyyy HH:mm:ss GMT)

T0 Mon 06-07-2020 12:00:00

☐ Batch forecast (EEE dd-MM-yyyy HH:mm:ss GMT)

Start T0 Mon 06-07-2020 12:00:00

End T0 Mon 06-07-2020 12:00:00

Interval day 1

☐ Approve

☐ Run for selected locations

State selection

☐ Select initial state

☐ Cgld state

Type default ?

Run start time Sun 05-07-2020 12:00:00

☒ Warm state

Search interval

Start time Sat 04-07-2020 12:00:00

End time Sun 05-07-2020 12:00:00

Priority

☐ High

☒ Normal

Forecasting shells

☒ Single

☐ Parallel 1

Forecast length

☒ Default

☐ User defined day 1

Workflow

- ☐ Import Historic Data
 - ☒ Import WSC Historic Data
- ☒ Import Re-Analysis Data
 - ☒ Import Earth2Observe data
- ☐ Near Real Time Data Import (MSC Data)
- ☐ Gridded Data Import (GeoMet WCS)
- ☐ Gridded Data Import (NOMADS)
- ☐ Import Snow Data
- ☐ Run Model - Snare
- ☐ Run Model - Liard

Select debug modules int...

- ☐ ImportE2OGrids
 - ☒ ImportE2O
 - ☒ MergeE2OPrecip
- ☐ PreprocessE2OSnare
- ☐ PreprocessE2OLiard

Map Data Display Spatial D

OK Cancel

Module Summary

- The workflows are typically viewed in the Forecast Tree (Topology.xml) or the Manual Forecast Display (Workflowdescriptors.xml)
- Using the workflow navigator, in combination with the the Forecast Tree, allows a great view of information!
- There are additional run options for both the Forecast Tree and Manual Forecast Tree.
- Selecting the correct time (TO) or cold state time, can often be essential.
- Use ctrl+r or ctrl+d in the manual forecast display to get module-by-module running and debugging options.

Additional Resources

🏠 Google [“Delft-FEWS WIKI”](#)

🏠 Google [“Delft-FEWS Configuration Guide”](#)

🏠 Google [“Delft-FEWS Forum”](#)

✉ Email fews-pm@Deltares.nl

