

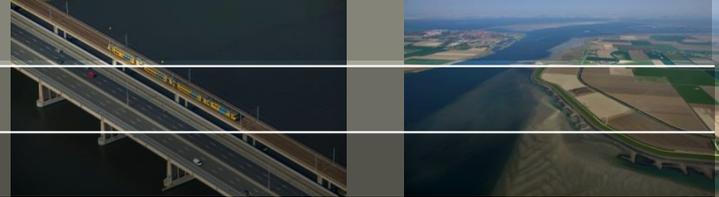


Global Storm Surge and Flood forecasts: towards local impacts

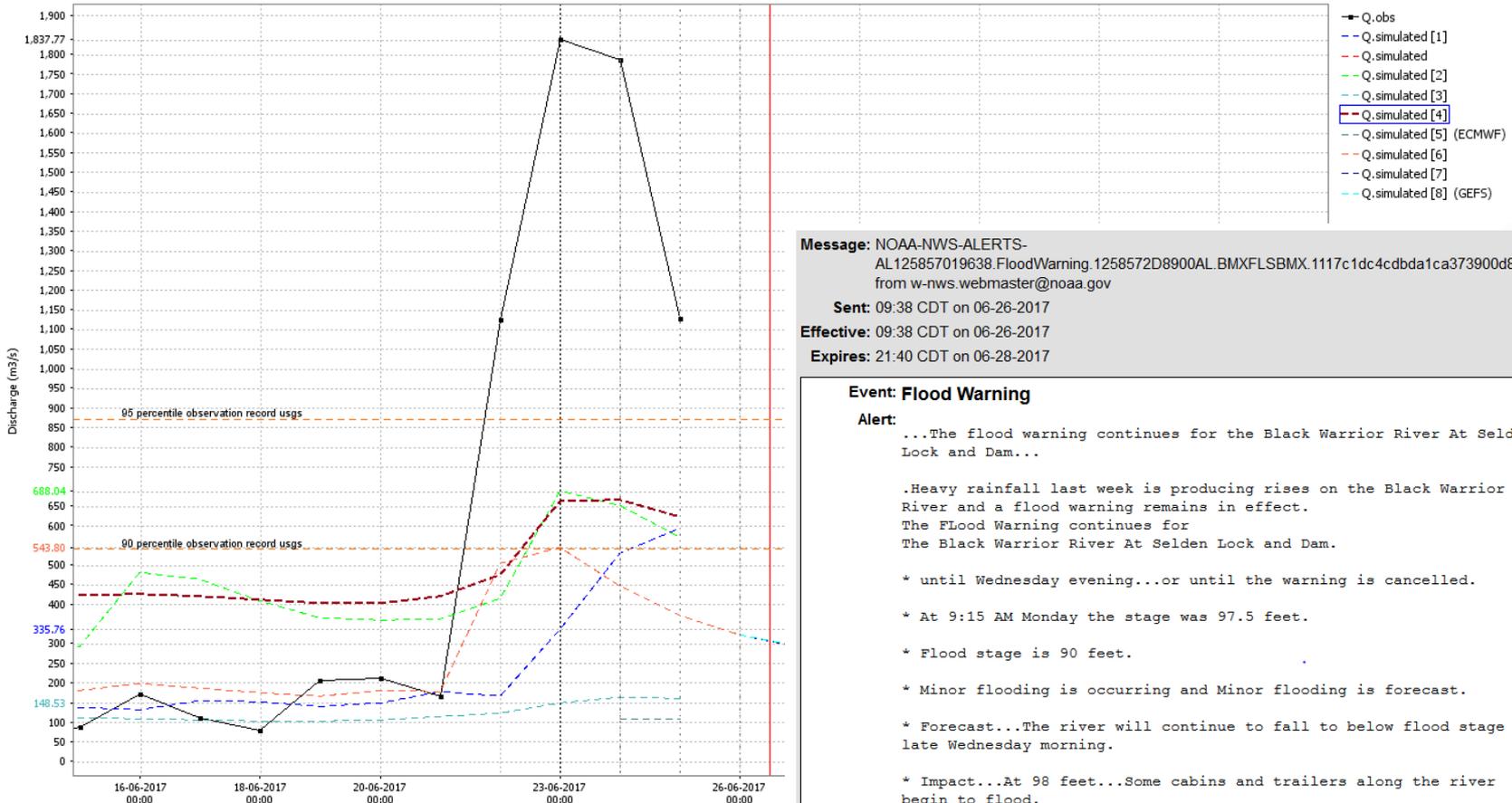
Albrecht Weerts, Dave de Koning, Martin Verlaan, Daniel
Twigt, Patricia Trambauer, Gert-Jan Schotmeijer, Shristi
Vaidya

26 juni 2017

Global forecasts have value...



BLACK WARRIOR RIVER AT NORTHPORT AL



W3RA_Historical_CPC: [1] 25-06-2017 00:00:00 GMT Current
 W3RA_Historical_GSMaP: [2] 25-06-2017 00:00:00 GMT Current
 W3RA_Historical_ECMWF-DET: [3] 25-06-2017 00:00:00 GMT Current
 W3RA_Historical_ECMWF: [4] 25-06-2017 00:00:00 GMT Current
 W3RA_ECMWF-EPS: [5] Run W3RA ECMWF based... 24-06-2017 00:00:00 GMT Current
 W3RA_Historical_GFS: [6] Run W3RA GFS based... 24-06-2017 00:00:00 GMT Current
 W3RA_GFS: [7] Run W3RA GFS Oz base... 26-06-2017 00:00:00 GMT Current
 W3RA_GEFS: [8] Run W3RA GEFS based... 26-06-2017 00:00:00 GMT Current

Message: NOAA-NWS-ALERTS-AL125857019638.FloodWarning.1258572D8900AL.BMXFLSBMX.11171cd4c4dbda1ca373900d89b08760
 from w-nws.webmaster@noaa.gov
Sent: 09:38 CDT on 06-26-2017
Effective: 09:38 CDT on 06-26-2017
Expires: 21:40 CDT on 06-28-2017

Event: Flood Warning

Alert:

...The flood warning continues for the Black Warrior River At Selden Lock and Dam...

.Heavy rainfall last week is producing rises on the Black Warrior River and a flood warning remains in effect. The Flood Warning continues for The Black Warrior River At Selden Lock and Dam.

* until Wednesday evening...or until the warning is cancelled.

* At 9:15 AM Monday the stage was 97.5 feet.

* Flood stage is 90 feet.

* Minor flooding is occurring and Minor flooding is forecast.

* Forecast...The river will continue to fall to below flood stage by late Wednesday morning.

* Impact...At 98 feet...Some cabins and trailers along the river begin to flood.

\$\$

Instructions: Do not drive cars through flooded areas. Turn Around...Don't Drown. Another statement will be issued by Tuesday morning...or sooner if conditions warrant.

Target Area: Greene
 Hale
 Marengo

Forecast: W3RA_GFS: [7] Run W3RA GFS Oz base... 26-06-2017 00:00:00 GMT Current

The screenshot shows a web browser window displaying the 'Global Flood Forecast' website. The browser's address bar shows the URL 'tl-ap009.xtr.deltares.nl/glossis/index.htm' and the search bar contains 'tuscaloosa flooding northport'. The website header includes the 'Deltares' logo and navigation tabs for 'INFO', 'TIMESERIES DATA', and 'GRIDDED DATA'. The 'INFO' tab is active, showing a sub-menu with 'INTRODUCTION' and 'CONDITIONS OF USE'. The main content area features a section titled 'Global Flood Forecast by Deltares' with a descriptive paragraph about flood risks and forecasting. Below this are sections for 'Frequency and lead time of forecasts' and 'How to use?'. A large world map on the right side is overlaid with numerous numbered markers: orange circles for inland locations and green circles for coastal locations. A legend at the bottom of the map identifies these markers. A scale bar at the bottom left of the map indicates distances up to 4000 kilometers. The browser's navigation and utility icons are visible at the top right.

Global Flood Forecast

tl-ap009.xtr.deltares.nl/glossis/index.htm

tuscaloosa flooding northport

Global Flood Forecast

Deltares

INFO TIMESERIES DATA GRIDDED DATA

INTRODUCTION CONDITIONS OF USE

Global Flood Forecast by Deltares

Floods are one of the main risks for coastal cities worldwide. To assist worldwide early warning for flood risk assessments and analyses Deltares presents this data viewer. This viewer presents the results of the GLObal Flood Forecasting Information System (GLOFFIS) and the GLObal Storm Surge Information System (GLOSSIS) of Deltares. These forecasts can be used for early warning in those areas currently lacking any forecasting capability, or can provide boundary conditions for more refined local models.

Frequency and lead time of forecasts

The models run operationally 2-4 times a day and provide forecasts for the upcoming 7-10 days on soil moisture, discharge, snow water equivalent, water level and surge. The models are forced with various meteorological data (e.g. wind, precipitation) which are also shown in the viewer.

How to use?

The tab gridded data allows you to visualize several input and output parameters on global scale. These data can be found when clicking the data folder. By pressing the play button in the lower left of the screen you can see the current forecast for the coming days.

To show scalar time series data, click any of the orange or green dots. The number in the dots indicates the amount of locations that are available in that area. When zooming in this bigger dot will split up in the individual locations. At locations where observations are available it is possible to plot compare the observation with the forecast and analyse the model results.

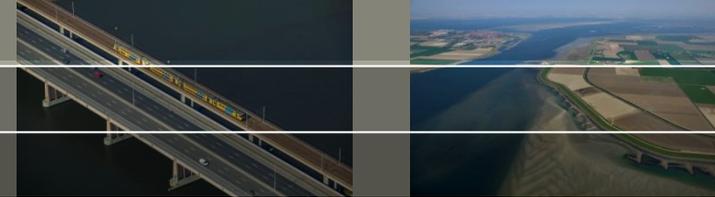
KILOMETERS
0 2000 4000

Coastal locations Inland locations

OpenStreetMap contributors

What's new?

- Global Storm Surge forecasts & threshold crossings



The screenshot displays the Deltares Global Flood Forecast web application. The browser address bar shows the URL `tl-ap009.xtr.deltares.nl/glossis/index.htm`. The page title is "Global Flood Forecast". The main content area is divided into three tabs: "INFO", "TIMESERIES DATA" (which is active), and "GRIDDED DATA".

Under the "TIMESERIES DATA" tab, there are two sub-sections: "Global storm surge model" and "Global flood forecasting model". A dropdown menu labeled "Parameter" is set to "Simulated Water Levels". The selected location is "Dauphin_Island_AL".

The main visualization is a line graph showing water levels in meters (m) on the y-axis (ranging from -1.0 to 1.0) against time on the x-axis (from 21-06-2017 00:00 to 07-07-2017 00:00). The graph shows a fluctuating line representing the water level. A legend at the bottom left indicates that the light blue line represents "Forecast (water level)" and the dark grey line represents "Hindcast (water level)".

Below the graph, there is an "INFO" section with the text: "The above graph shows the time series of the selected location and parameter. By clicking any of the items in the legend the graph will zoom to the extent of the data. Select multiple parameters to compare observations with the model results."

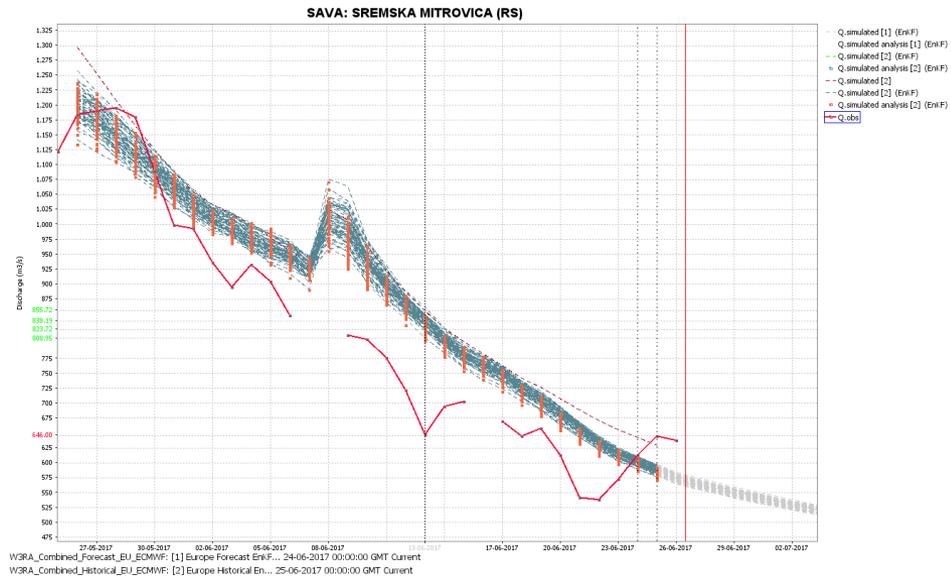
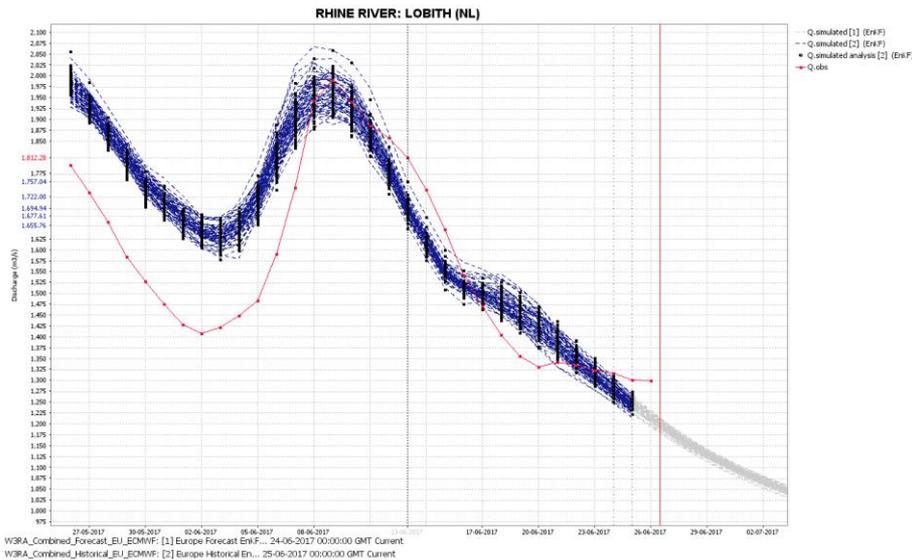
On the right side of the interface, there is a map of the United States and parts of the Caribbean. The map is overlaid with a grid of numbered circles. A legend at the bottom of the map indicates that green circles represent "Coastal locations" and orange circles represent "Inland locations". The map shows various cities and states, with a yellow highlight on the Gulf of Mexico coast.

What's new?

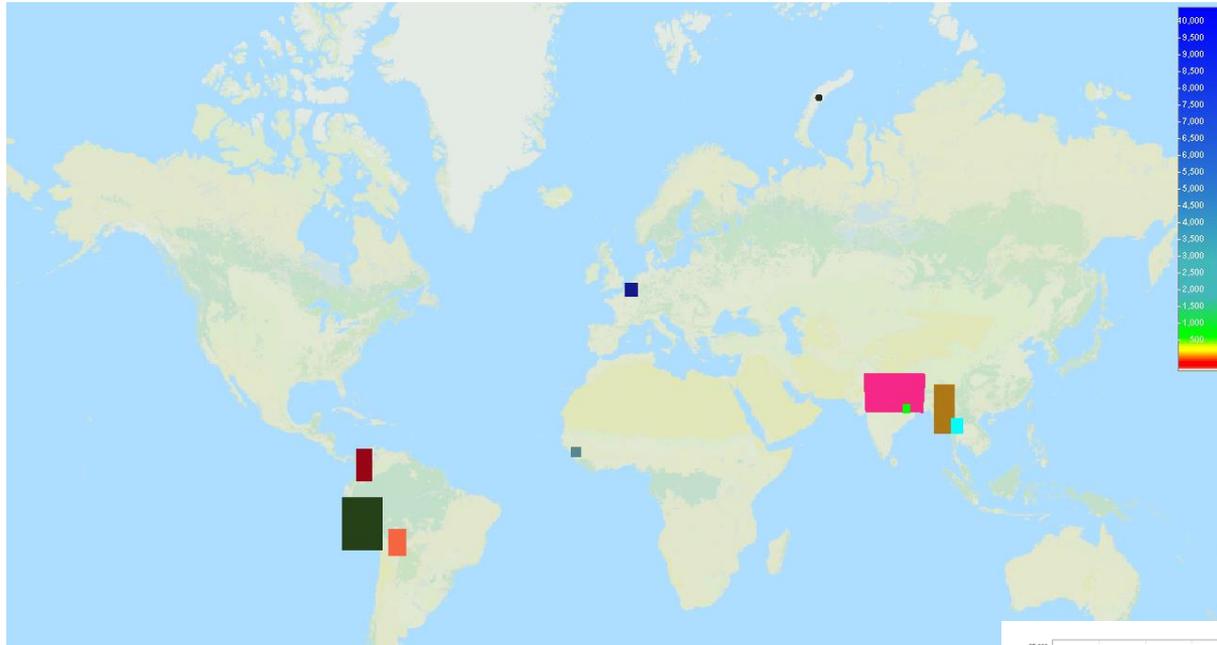
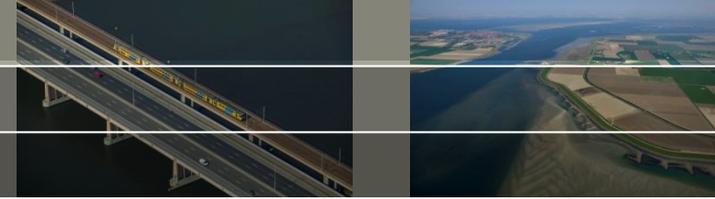
Assimilation of observed discharges for more accurate hydrological forecasts (with both GFS & ECMWF-EPS) (now Europe, USA/Canada+Brazil+SEA to follow)



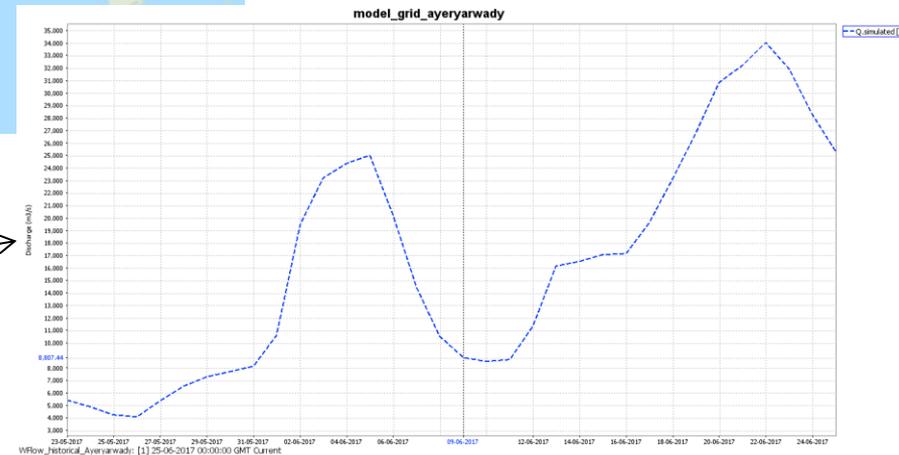
Australian National University



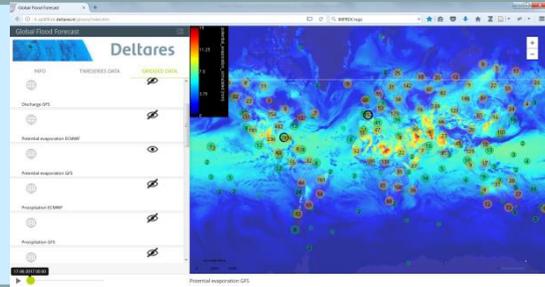
What's new?



High resolution models have been added (e.g. Peru, Myanmar, and more to follow) => towards local impact (and compound events)



Towards local impact (and compound events)



**Meteo
hazard
forecast**

Meteorological
forecasts

Wind and
precipitation



Hydrodynamic
forecasts

Local water
levels
Inundated area

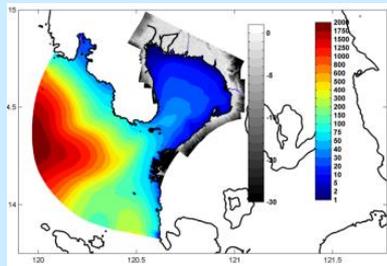


Impact

Population, GDP
and critical
infrastructure
affected



Warning



**Flood
hazard
forecast**



Exposure data
and hazard
forecast



Affected streets, public
buildings, cultural heritage
sites, hospitals



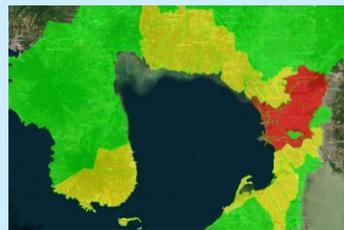
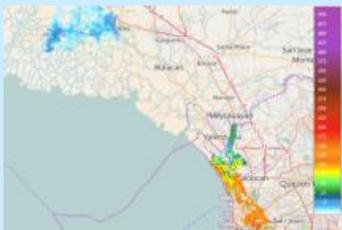
Expected damages



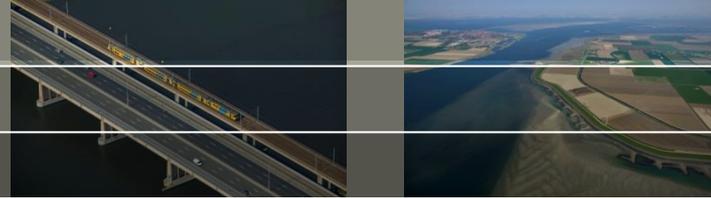
Vulnerable people

(e.g using Delft-FIAT)

**Color
coded
warning**



Feedback appreciated!



Please visit GlobalFloodForecast.com

- Feedback on the viewer and content is highly appreciated
- Observed satellite based discharges can be made available through a WaterML2 server
- Additional output locations can be added upon request
- We like to include your local discharge observations for assimilation.

For login detail, feedback, contributions or other questions please contact gfp@deltares.nl