



# Een laagrempeling meetsysteem als aanvulling op FEWS voorspellingen

**Max Radermacher, Ph.D., M.Sc.**  
Director and co-founder of Obscape

**22 June 2021**  
**FEWS NL User Days**



ENVIRONMENTAL  
OBSERVATIONS

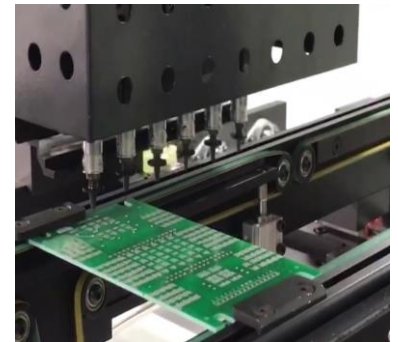
# About us



**Our mission is to make real-time environmental observations available to anyone who needs it.**

We develop and sell environmental monitoring equipment:

- R&D (electronics, housings, software)
- Production
- Sales
- (Field observations)





# Obscape company history

- 2014: Max meets Zane
- 2015: Wave buoy development
- 2016: Start of business
- 2019: Obscape founded
- 2020: Launch of the PTM

Offices in Delft (NL)  
and Durban (SA)



Max Radermacher



Zane Thackeray

# eThekweni Municipality

- Area: 2297 km<sup>2</sup>
- Inhabitants: 3.7 million

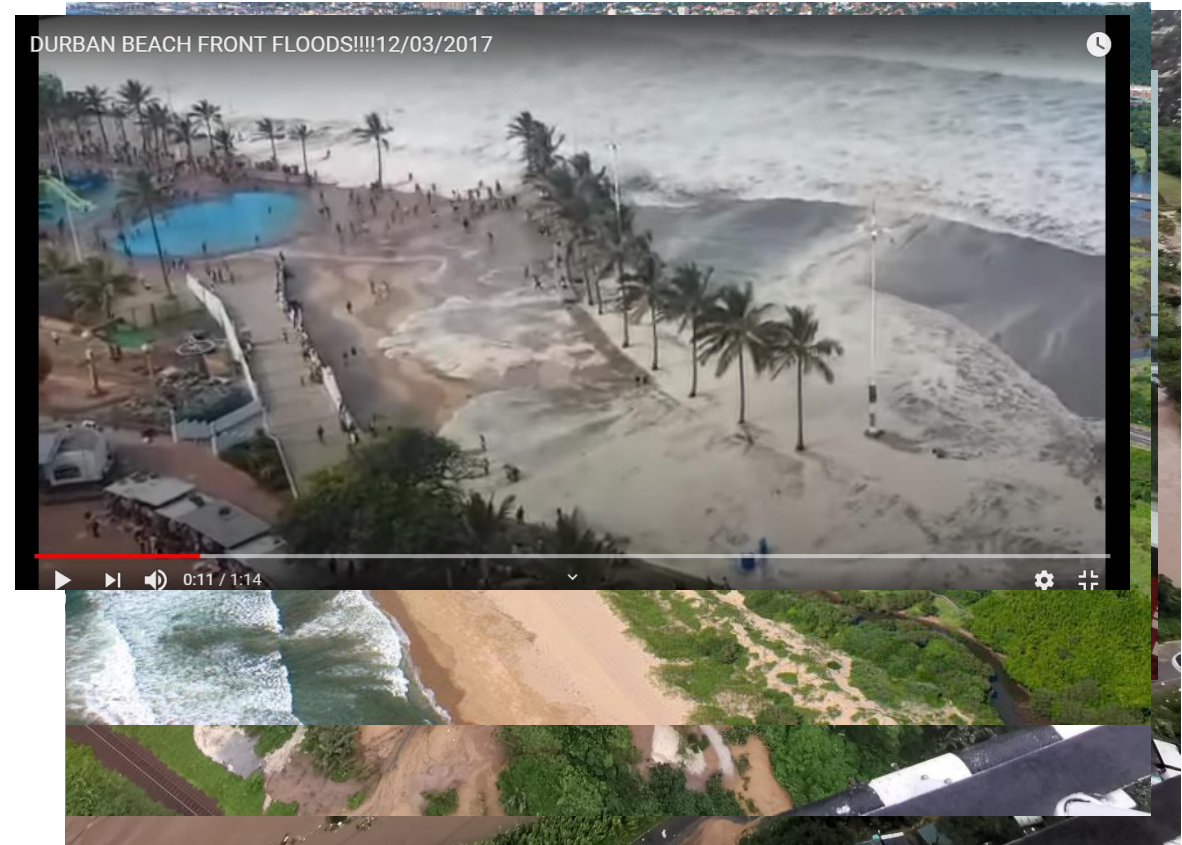
## **Complex environment:**

- Rivers: 4000 km
- Catchments: 18
- Estuaries: 17
- Coastline: 100 km
- Culverts: 200 km

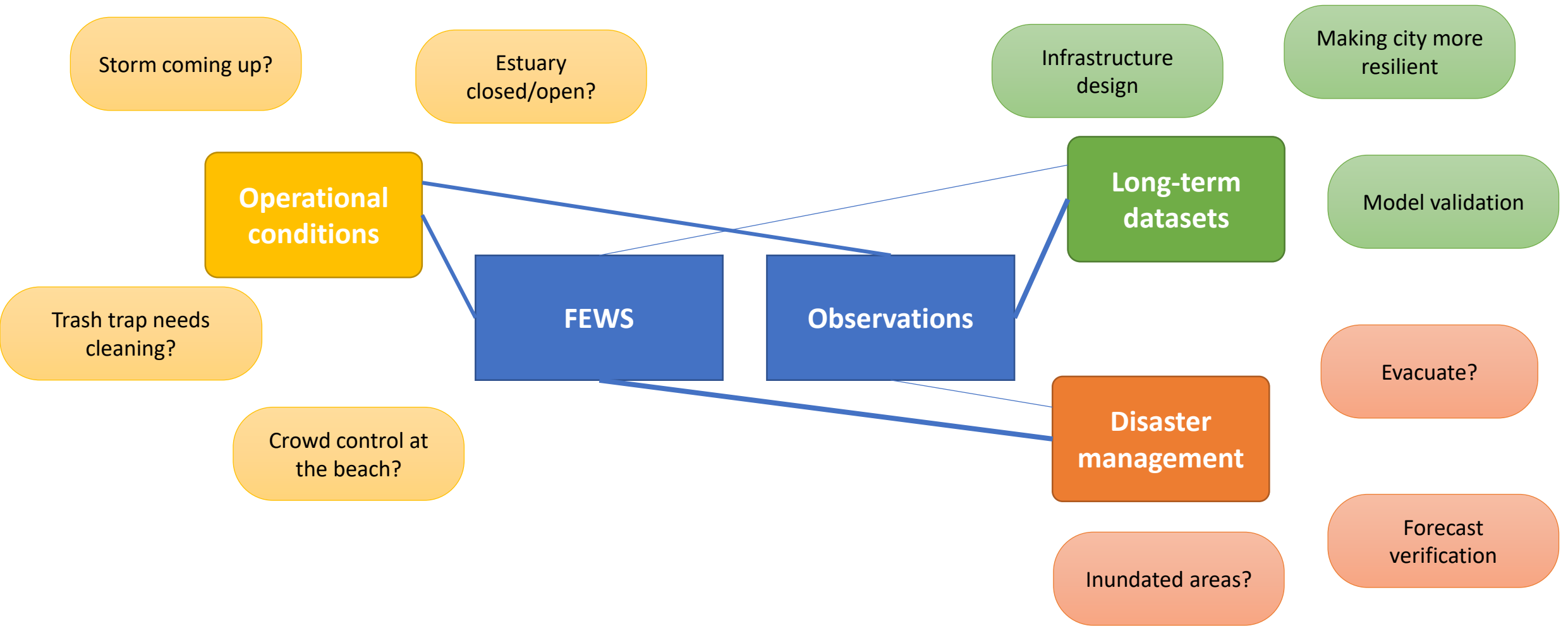


# Challenges & calamities

- Flash floods
  - Settlements
  - Infrastructure
  - Land slides
  - Debris/pollution
- Coastal flooding
- Estuarine dynamics



# Solution: forecasting & monitoring

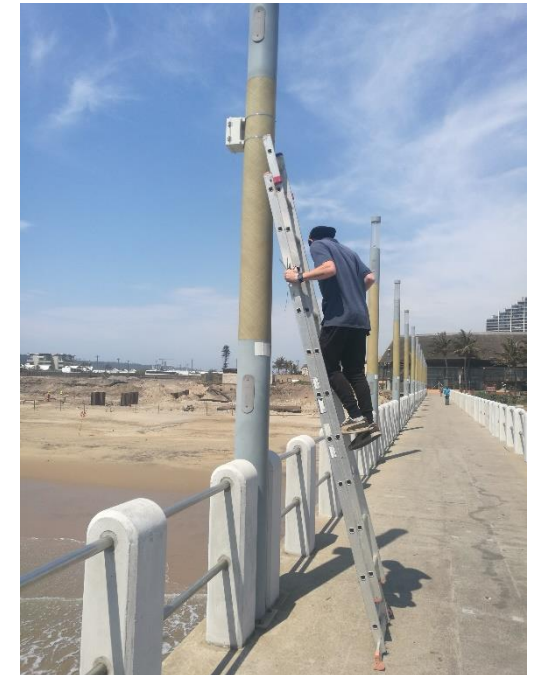




# Real-time monitoring

- Extensive monitoring
  - Around 200 sites
  - Wide range of sensors
- Limited budget
- Small field team

**Solution:**  
**Develop new equipment!**



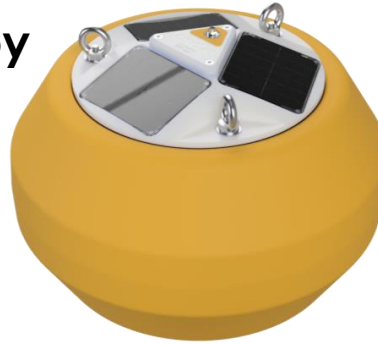
Started 13 years ago...

# Obscape product development

Design criteria:

- Affordable
- Real-time
- Wireless
- Low maintenance

Wave Buoy



Level Gauge



Weather Station



Rain Gauge



Water Quality



Time-Lapse Camera

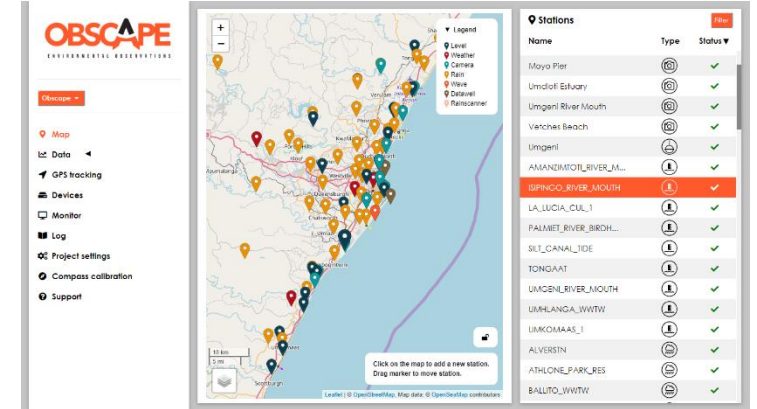




# Obscape product development

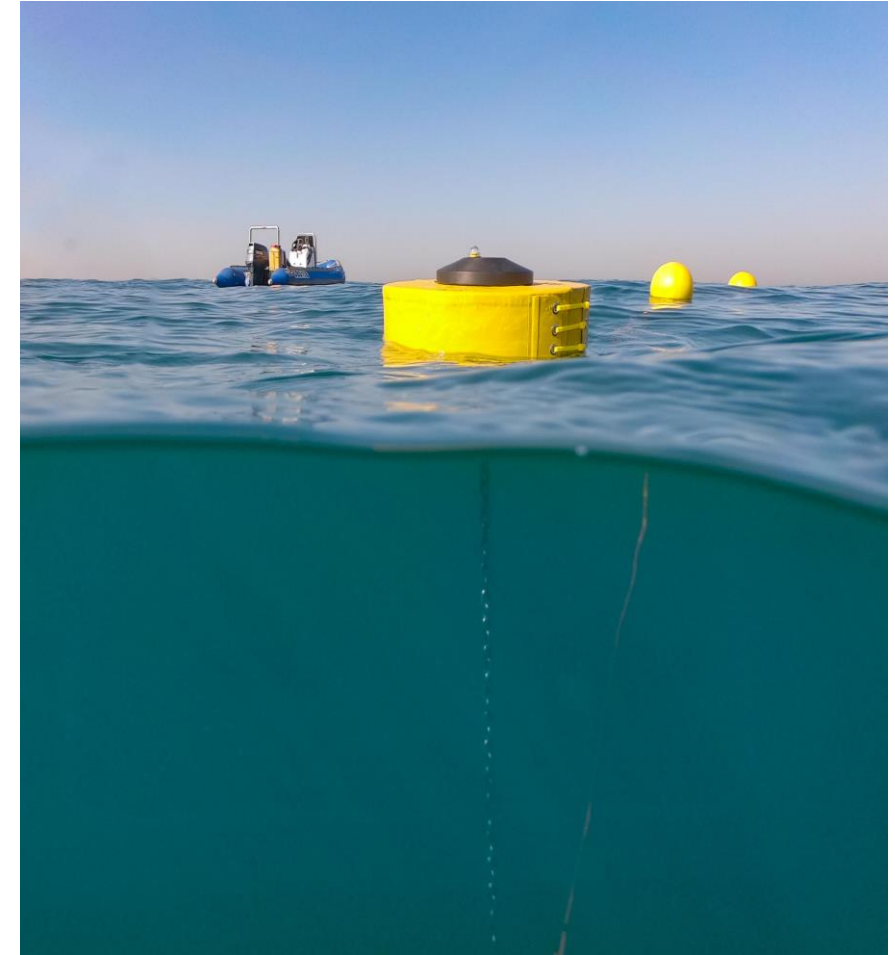
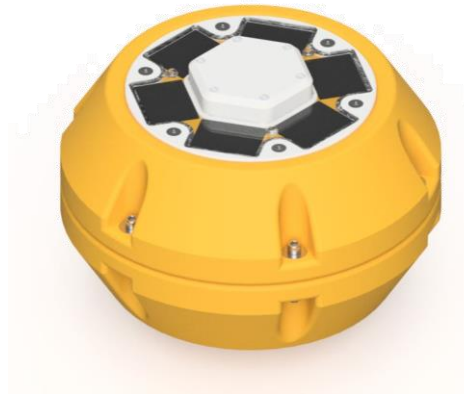
## Features:

- 4G and satellite connection
- Solar-powered
- Real-time settings & firmware
- 3<sup>rd</sup> party sensor interface
- Free Data Portal



# Obscape Wave Buoy

- Fully directional wave buoy
- Real-time directional wave spectra
- GPS-tracked
- Solar-powered



# Obscape Level Gauge

- Radar sensor integrated in housing
- No submerged parts
- Solar-powered
- Range up to 40 m
- Real-time conversion to water levels

## Coming soon:

- Wave analysis





# Obscape Time-Lapse Camera

- Visual inspection of project site
- User-selectable interval
- Solar-powered
- Movie downloads
- Camouflage kit

## Coming soon:

- Geo-referencing / rectification
- Automated image analysis



# eThekwinini deployments



# eThekwinini deployments





# eThekwini deployments



# eThekwinini deployments



# eThekwinini deployments

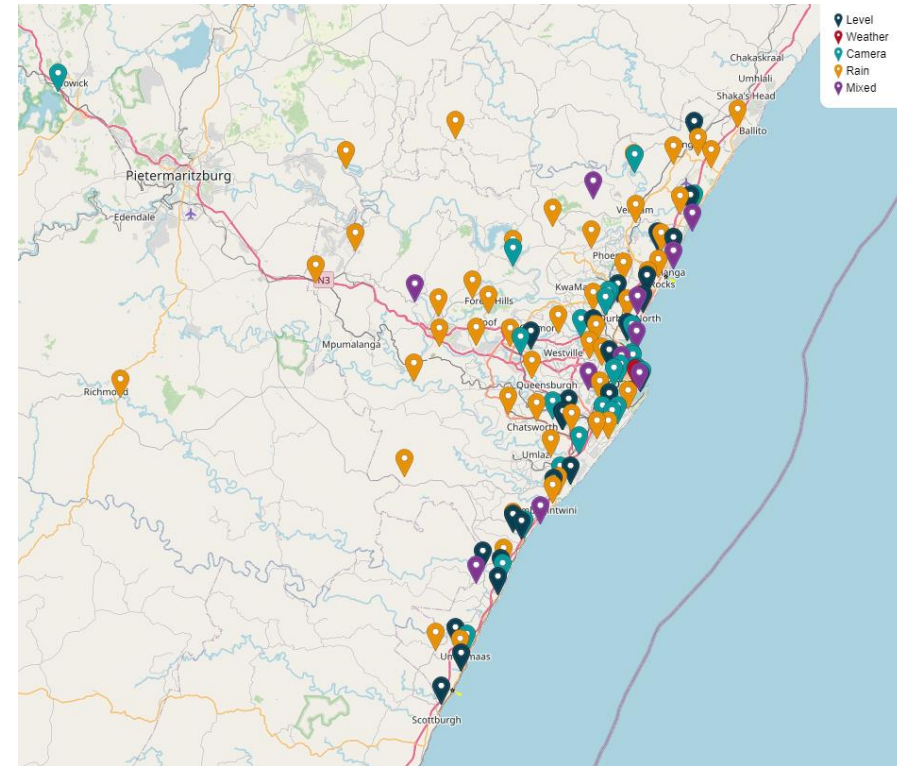




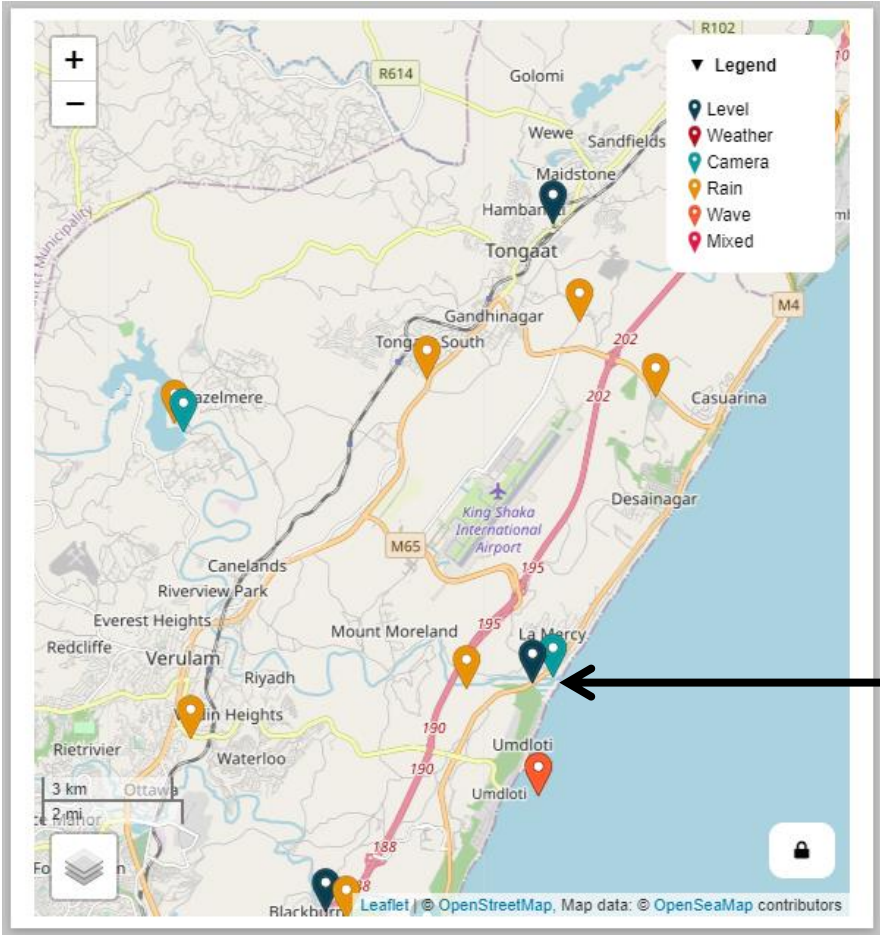
# eThekwinini deployments

## Instrument type

Level Gauges	24
Time-lapse Cameras	28
Rain Gauges	55
Weather Stations	7
Wave Buoys	4
<b>Total:</b>	<b>118</b>



# Umdloti Estuary breach



## Umdloti Estuary

# Umdloti Estuary breach



2020-04-29 06:00 [Africa/Johannesburg] Umdloti Estuary



# Umdloti Estuary breach

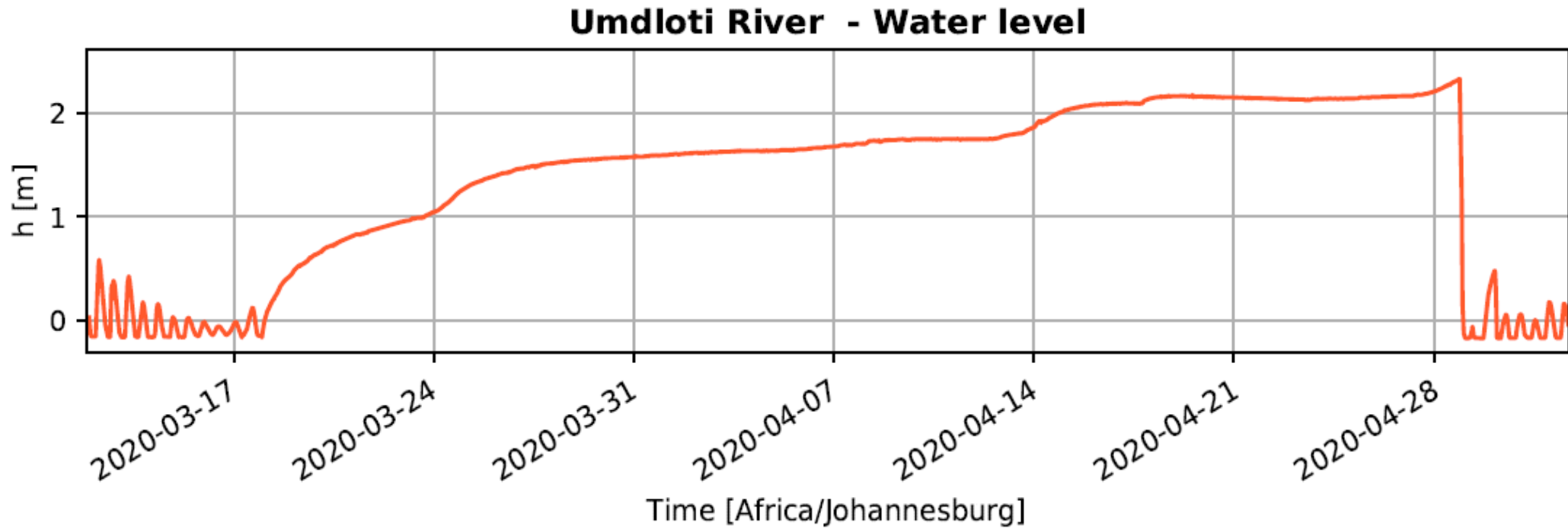


2020-04-29 17:00 [Africa/Johannesburg] Umdloti Estuary



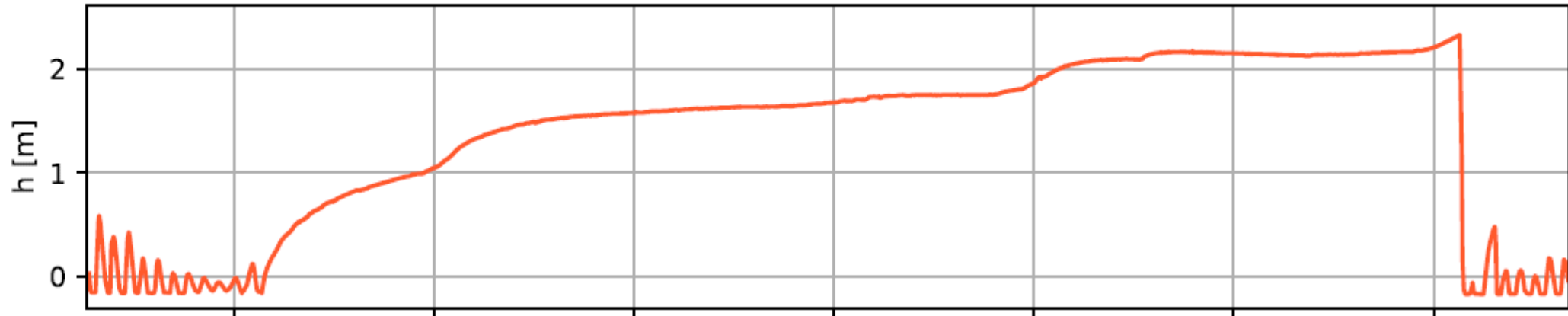
2020-04-30 06:30 [Africa/Johannesburg] Umdloti Estuary

# Umdloti Estuary breach

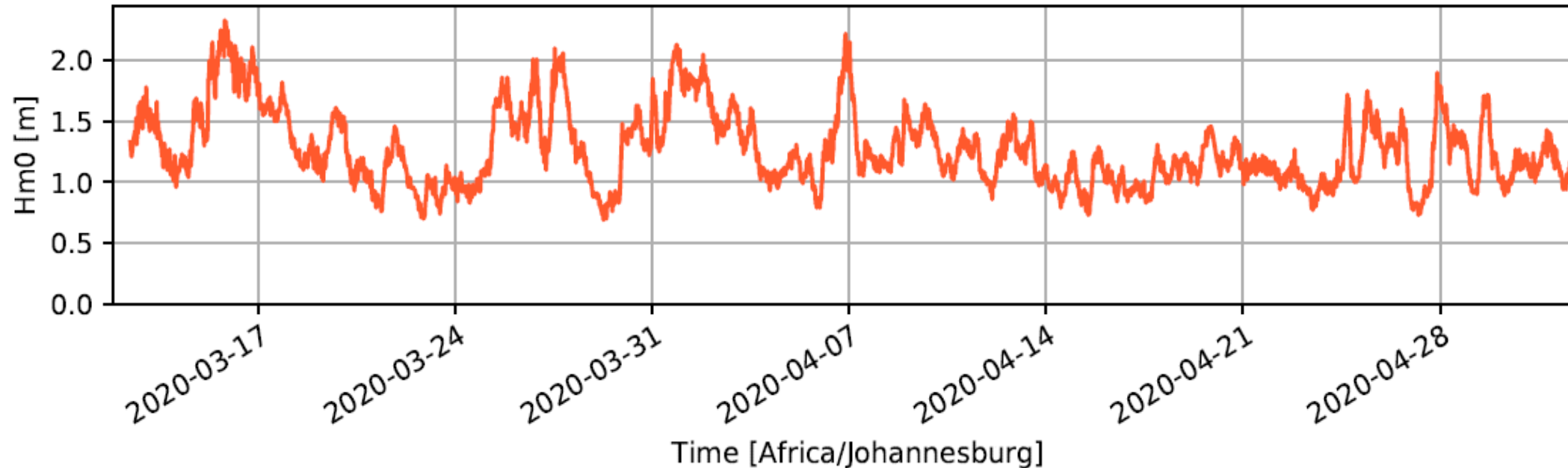


# Umdloti Estuary breach

**Umdloti River - Water level**

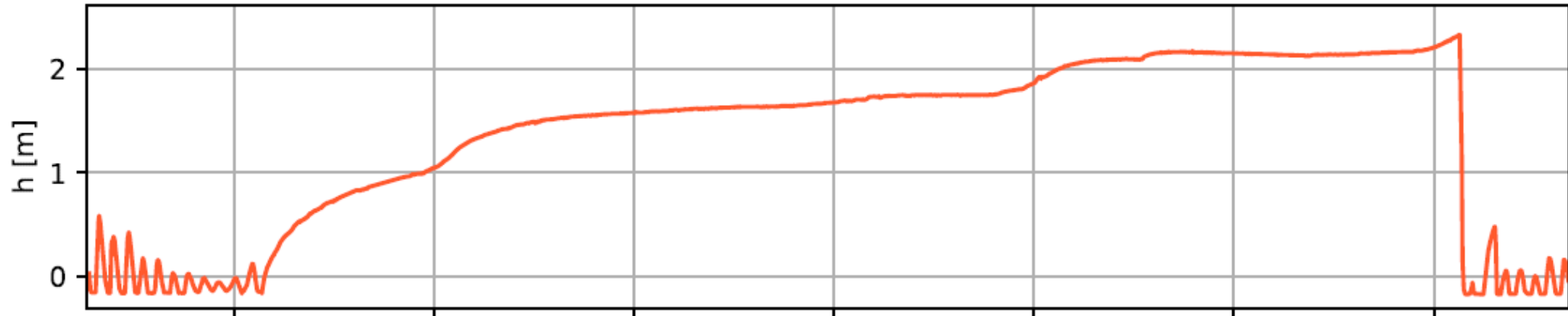


**uMhlanga Main Beach - Significant wave height**

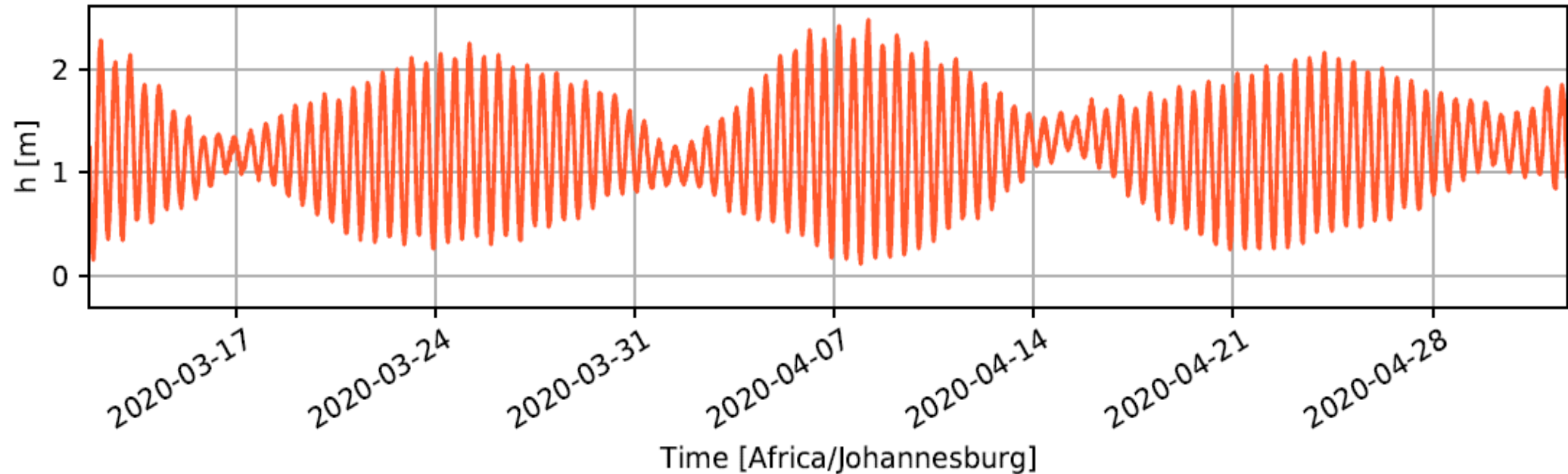


# Umdloti Estuary breach

**Umdloti River - Water level**



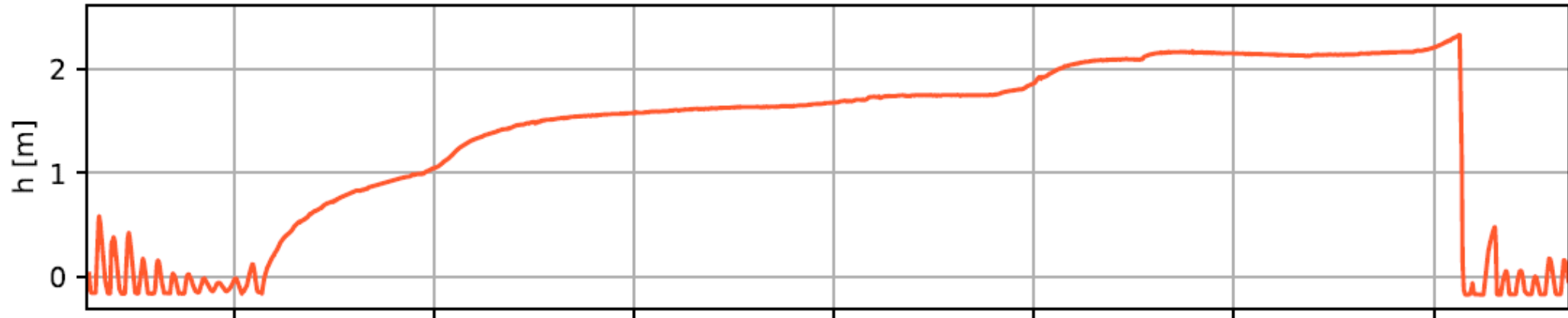
**NSRI Tide Gauge - Water level**



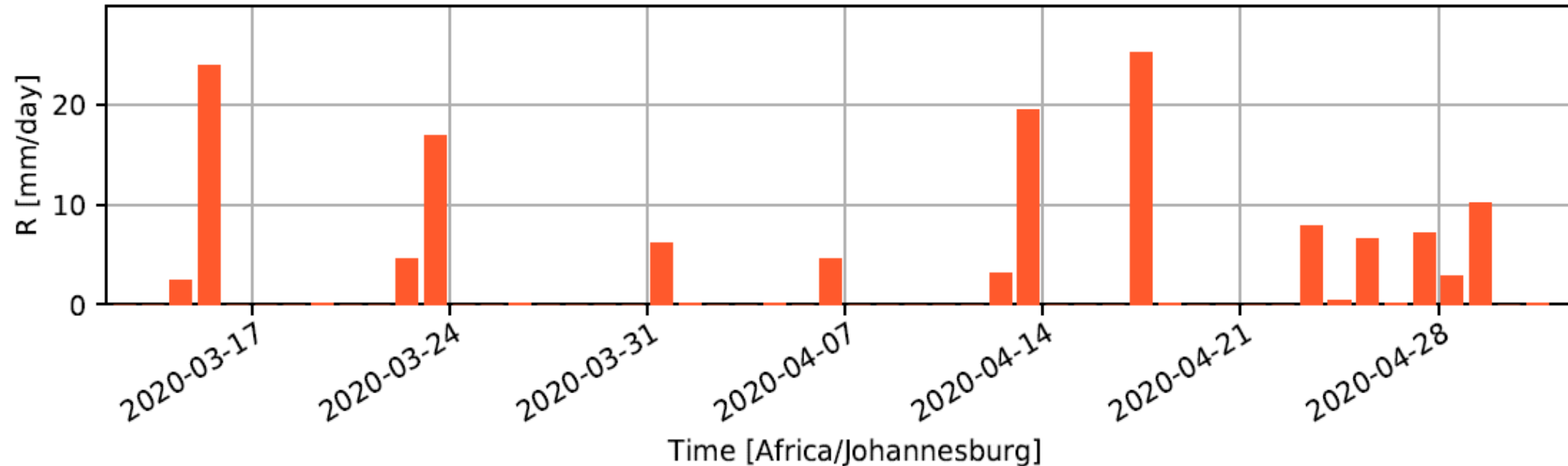


# Umdloti Estuary breach

Umdloti River - Water level

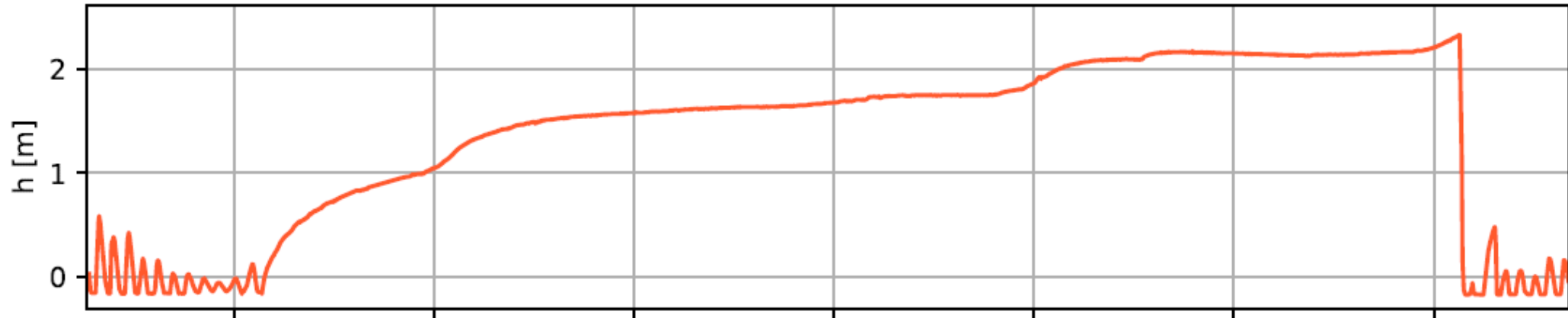


Umdloti WWTW - Rainfall intensity

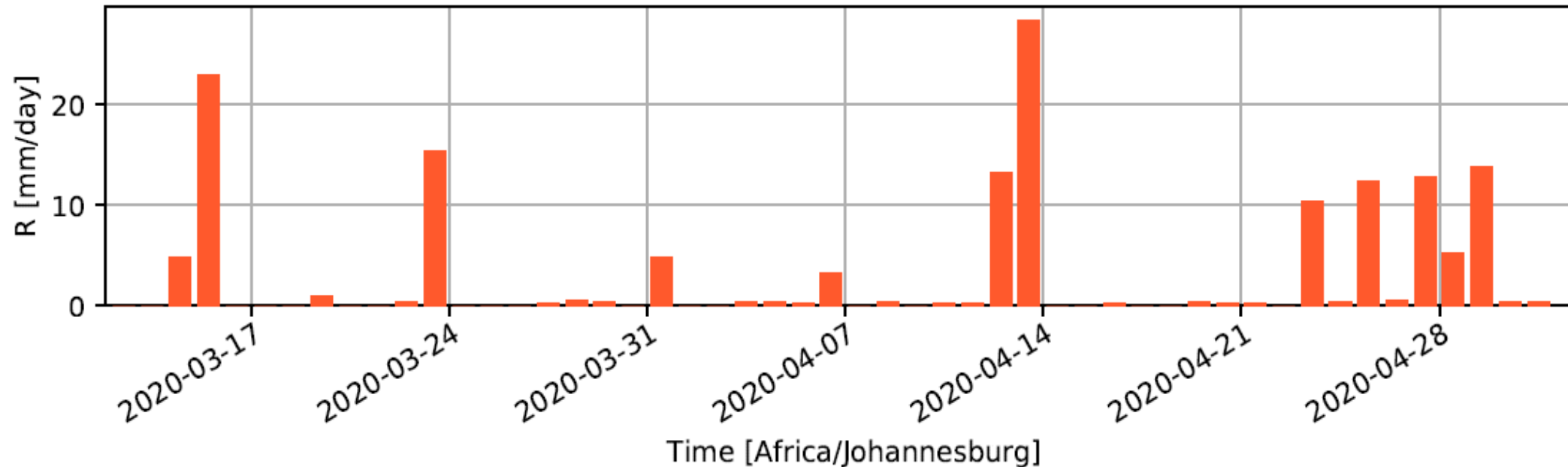


# Umdloti Estuary breach

Umdloti River - Water level



Hazelmere Dam - Rainfall intensity



# April 2019 flooding



# April 2019 flooding

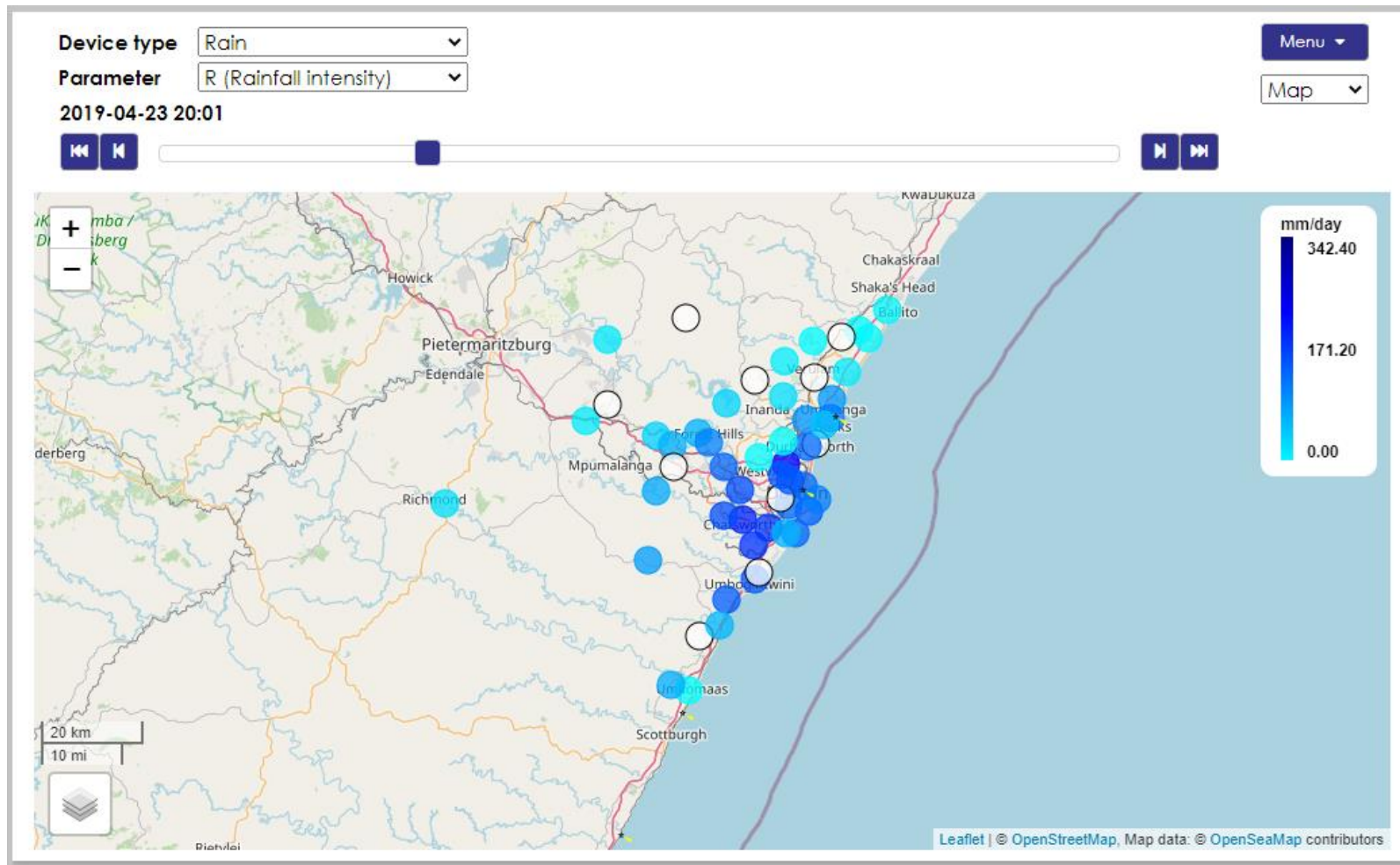




# April 2019 flooding



# April 2019 flooding

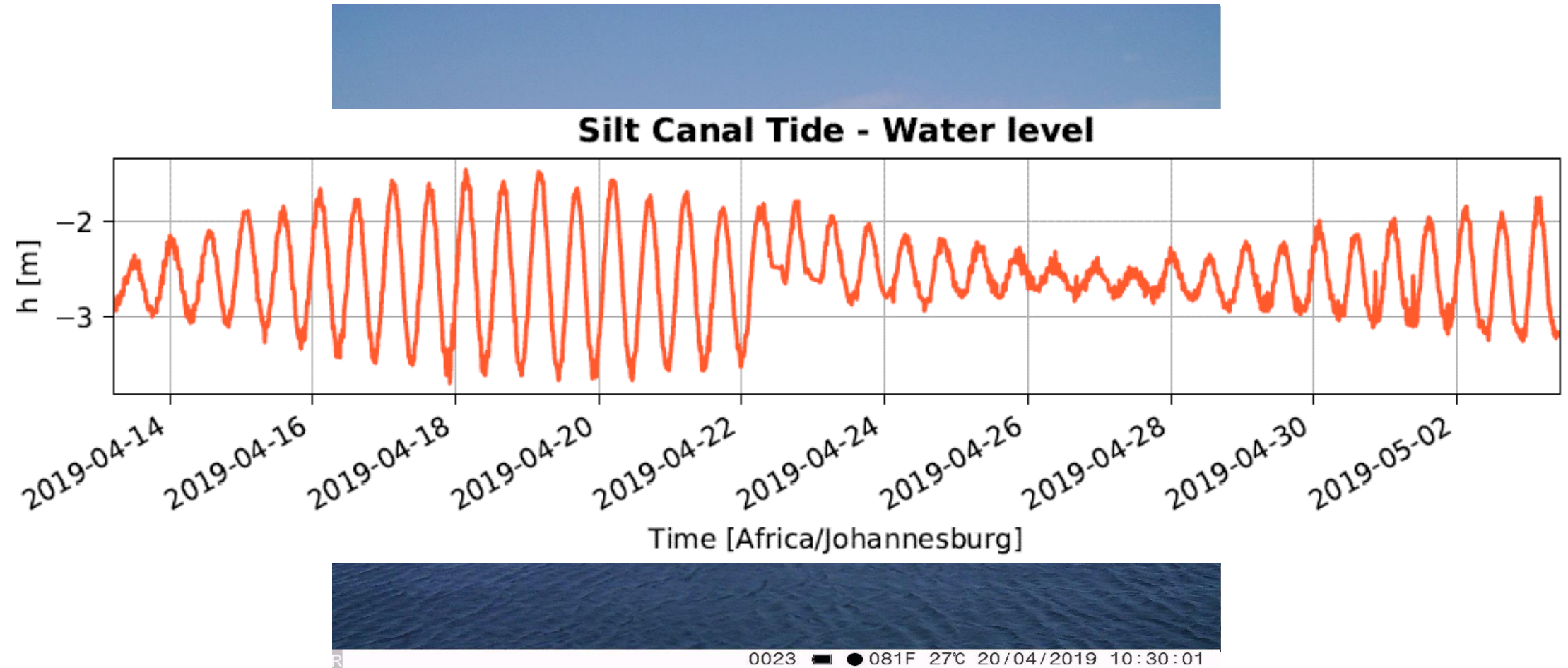


# April 2019 flooding: Amanzimtoti Estuary



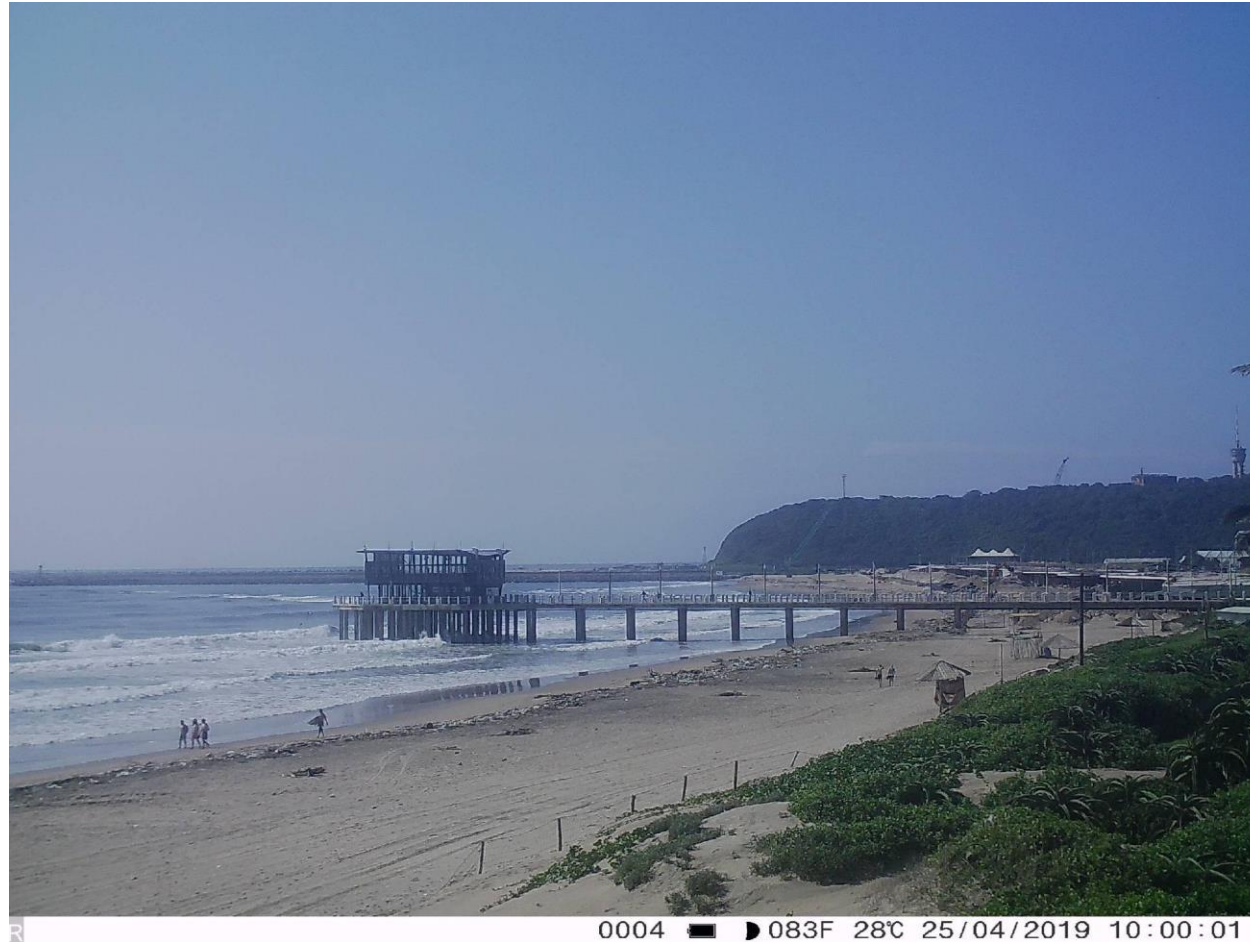


# April 2019 flooding: Umbilo canal





# April 2019 flooding: Debris at the beach



# FEWS + Obscape

## Obscape Import

Integration of Obscape API into FEWS

publicwiki.deltares.nl/display/FEWSDOC/Obscape+Import

NetcdfGridDataset

- NETCDF-CF\_TIMESERIES
- NETCDF-CF\_TRAJECTORY
- NetcdfGridDataset
- NetCDFStorageLatestFor
- NetcdfStorageLatestFore
- NOOS
- › NTUQUARTER Import
- › NTURAIN Import
- **Obscape Import**
- Overview
- Office of Public Works (C
- ONSSoap Import
- ONS-Synoptic
- ONSWebService
- OSHDAsciiGrid
- › OttawaRiverRegulation Ir
- PDO Climate index
- Pegelonline
- › Pi Diagnostics
- PI Webservice Import

Ruimtetools

Pagina's / ... / Available data types

### Obscape Import

Available since 2020.02. Present parser allows to download and import meteorological observations from [https://www.obscape.com/portal/api/v2/api?](https://www.obscape.com/portal/api/v2/api?device=level&username=NAME&key=KEY&station=1&from=2021-03-28T08:00:00&to=2021-03-31T08:00:00)

Example url request:

<https://www.obscape.com/portal/api/v2/api?device=level&username=NAME&key=KEY&station=1&from=2021-03-28T08:00:00&to=2021-03-31T08:00:00>

Where:

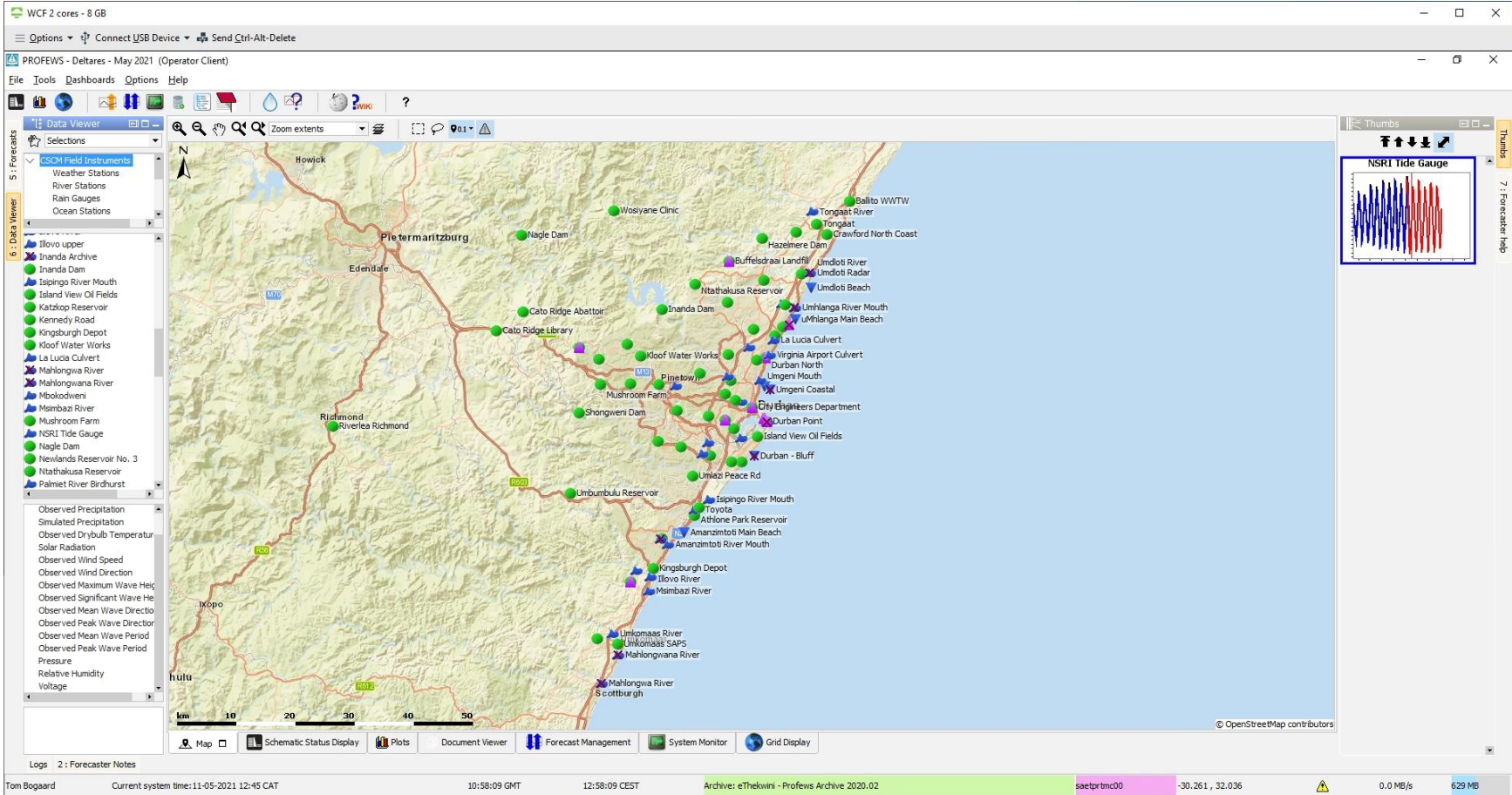
station is the location ID,

device is NOT the parameter Id, it is a parameter group that can contain several different parameters. The name of the device has to be part of the URL in the configuration (see example)

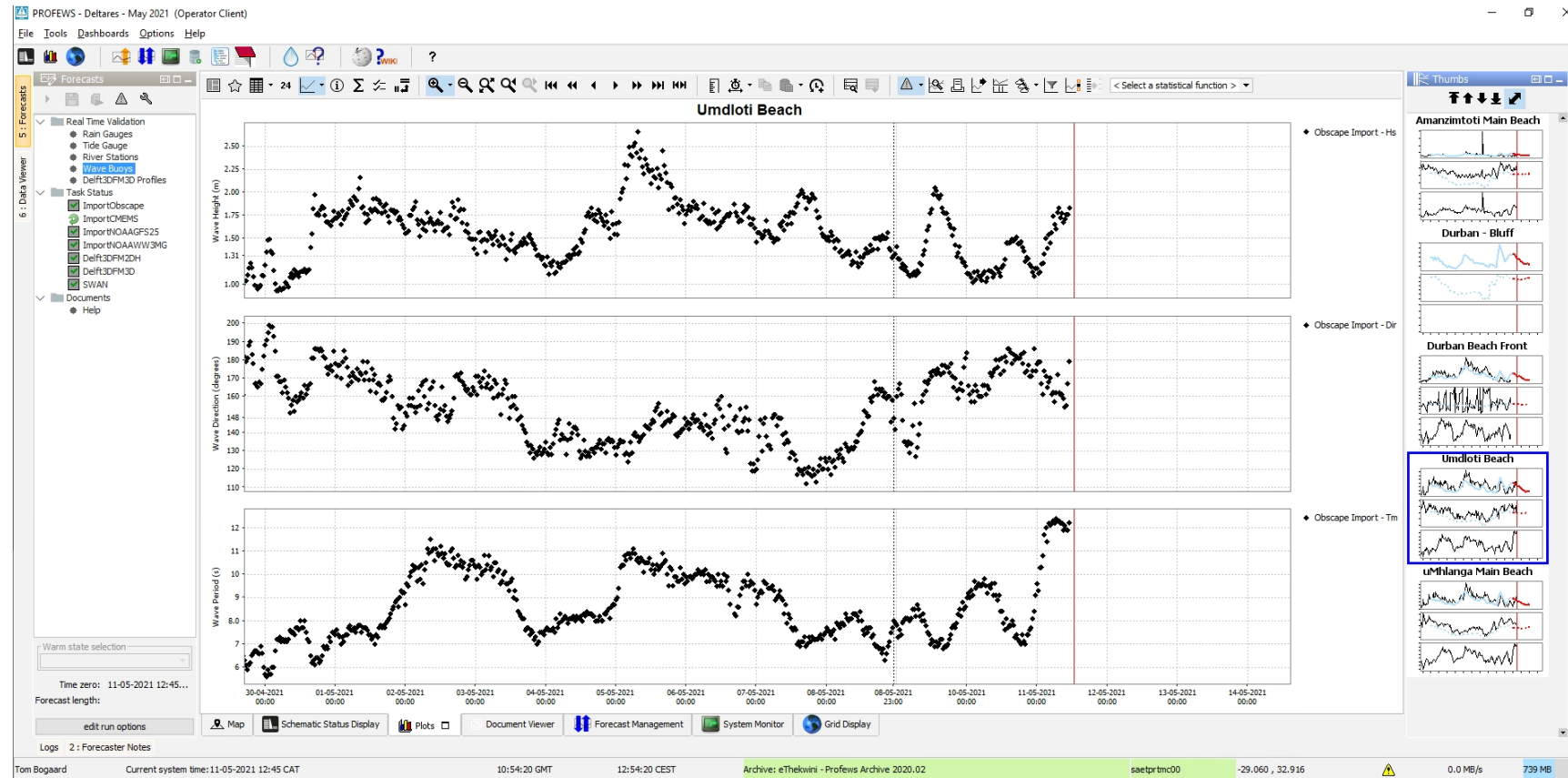
Example configuration:

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <timeSeriesImportRun xmlns="http://www.wldelft.nl/fews
3                               xsi:schemaLocation="http://www.wl
4       <import>
5         <general>
6           <importType>Obscape</importType>
```

# FEWS + Obscape

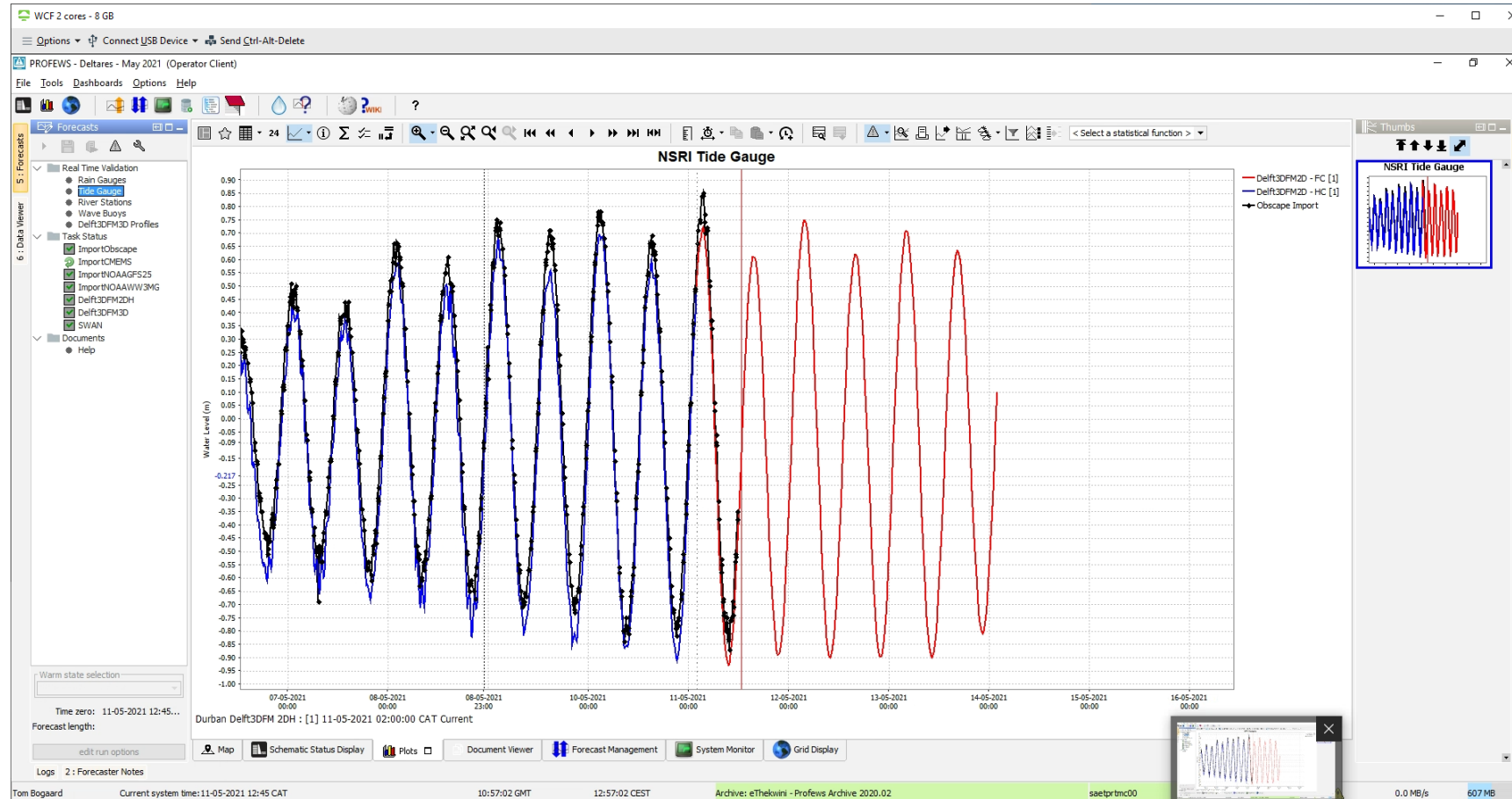


# FEWS + Obscape





# FEWS + Obscape



# FEWS + Obscape

Amend FEWS forecasts with Obscape environmental monitoring

## **Benefits:**

- Model calibration & validation
- “Boots on the ground”
- Turn-key robust monitoring solution
- Seamless integration into FEWS



ENVIRONMENTAL  
OBSERVATIONS



**Thank you!**  
[max@obscape.com](mailto:max@obscape.com)

**Max Radermacher, Ph.D., M.Sc.**  
**Director and co-founder of Obscape**

**22 June 2021**  
**FEWS NL User Days**



ENVIRONMENTAL  
OBSERVATIONS