

# UO System

```
graph LR; A[Microservices] --> B[Queue]; B --> C[Databases]; C --> D[User]
```

Microservices

Queue

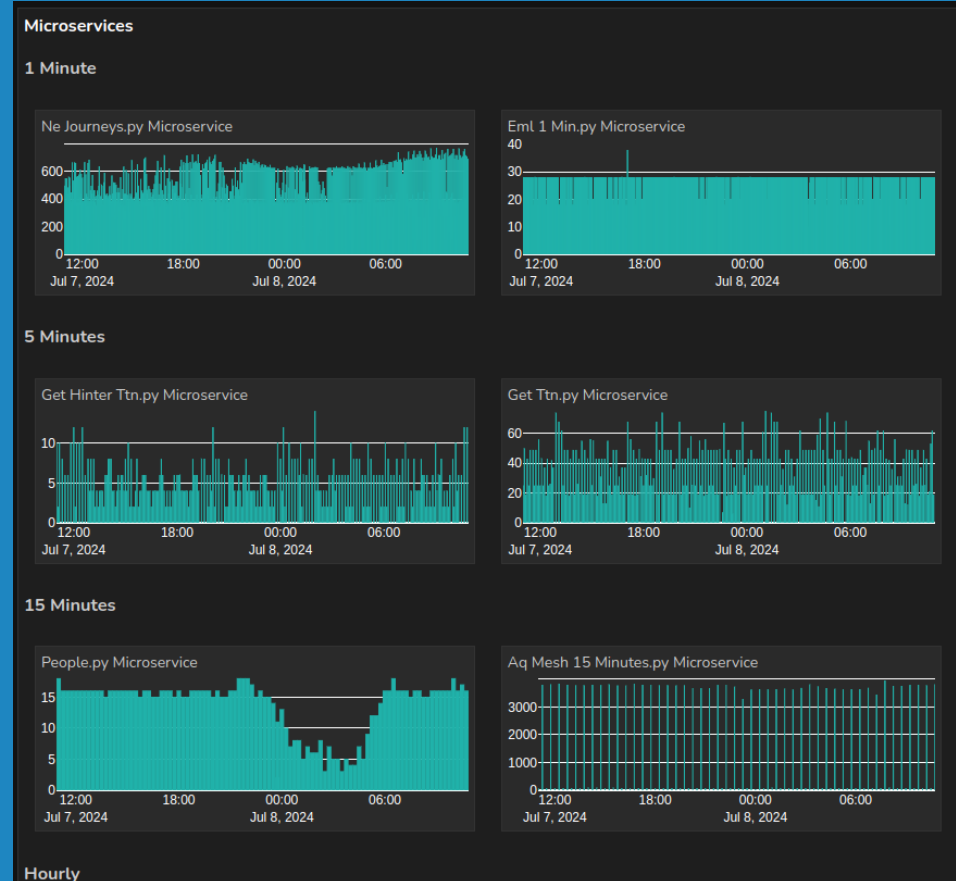
Databases

User

# Microservices

13 scheduled python scripts

GET requests to both 3<sup>rd</sup>  
party and sensor supplier  
APIs



# Queue

- RabbitMQ

Queues

▼ All queues (16)

Pagination

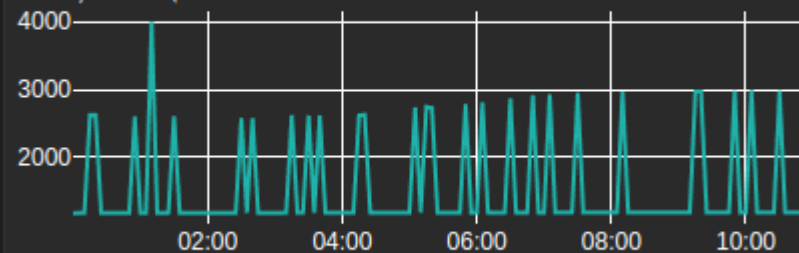
Page **1** of 1 - Filter:  ☐ Regex ?

Overview				Messages			Message rates			+/-
Name	Type	Features	State	Ready	Unacked	Total	Incoming	deliver / get	ack	
city.city_archive	classic		idle	0	0	0				
city.city_live	classic		idle	0	0	0	0.00/s			
city.sensor_data	classic		running	0	0	0		0.00/s	0.00/s	
fanned_archive_city_data	classic	D Args	idle	1,796	0	1,796	0.00/s	0.00/s	0.00/s	
fanned_city_data	classic	D Args	running	0	0	0	0.00/s	0.00/s	0.00/s	
microservice_setup	classic		idle	661	0	661	0.00/s			
nifi	classic		idle	0	0	0				
uo.dup_channel	classic		running	530	0	530	0.00/s	106/s	0.00/s	
uo.insert_channel	classic		running	0	0	0	0.00/s	0.00/s	0.00/s	
uo.live_row_update	classic		running	0	0	0	0.00/s	0.00/s	0.00/s	
uo.live_table_update	classic		running	0	0	0	0.00/s	0.00/s	0.00/s	
uo.microservices_setup	classic		idle	0	0	0				
uo.new_sensors	classic		running	0	0	0	0.00/s	0.00/s	0.00/s	
uo.script_run	classic		running	0	0	0	0.20/s	0.20/s	0.20/s	
uo.script_run_time	classic		running	0	0	0	0.00/s	0.00/s	0.00/s	
uo.skipped_channel	classic		idle	0	0	0	0.00/s	0.00/s	0.00/s	

▼ Add a new queue

## Queue Counts

### Uo System Queue







# Databases

- ~~We don't need columns {key:values}~~
- Columns are useful

# Databases

- Postgresql + PostGIS
- Python brokers

A screenshot of a database interface showing a list of tables. Each table name is preceded by a small grid icon and followed by a right-pointing arrow. The tables listed are: script\_updates, sensor\_data\_2024\_4\_cols, sensor\_data\_2024\_5\_cols, sensor\_data\_2024\_6\_cols, sensor\_data\_2024\_7\_cols, sensor\_data\_live\_cols, sensor\_full\_names, sensor\_source, and sensors.

 script_updates	▶
 sensor_data_2024_4_cols	▶
 sensor_data_2024_5_cols	▶
 sensor_data_2024_6_cols	▶
 sensor_data_2024_7_cols	▶
 sensor_data_live_cols	▶
 sensor_full_names	▶
 sensor_source	▶
 sensors	▶

# Databases

Archive DB

Temporal Aggregates

sensor_data_2013_cols	▶
sensor_data_2014_cols	▶
sensor_data_2015_cols	▶
sensor_data_2016_1_cols	▶
sensor_data_2016_2_cols	▶
sensor_data_2016_3_cols	▶
sensor_data_2016_4_cols	▶
sensor_data_2016_5_cols	▶
sensor_data_2016_6_cols	▶
sensor_data_2017_10_cols	▶
sensor_data_2017_11_cols	▶
sensor_data_2017_12_cols	▶
sensor_data_2017_1_cols	▶
sensor_data_2017_2_cols	▶
sensor_data_2017_3_cols	▶
sensor_data_2017_4_cols	▶
sensor_data_2017_5_cols	▶
sensor_data_2017_6_cols	▶
sensor_data_2017_7_cols	▶
sensor_data_2017_8_cols	▶
sensor_data_2017_9_cols	▶
sensor_data_2018_10_cols	▶
sensor_data_2018_11_cols	▶
sensor_data_2018_12_cols	▶
sensor_data_2018_1_cols	▶
sensor_data_2018_2_cols	▶
sensor_data_2018_3_cols	▶
sensor_data_2018_4_cols	▶
sensor_data_2018_5_cols	▶
sensor_data_2018_6_cols	▶
sensor_data_2018_7_cols	▶
sensor_data_2018_8_cols	▶
sensor_data_2018_9_cols	▶
sensor_data_2019_10_cols	▶
sensor_data_2019_11_cols	▶
sensor_data_2019_12_cols	▶
sensor_data_2019_1_cols	▶
sensor_data_2019_2_cols	▶
sensor_data_2019_3_cols	▶

- Archive rows

3,963,995,675

- Live rows

78,655,283



## Introduction

[UO API v1.1](#)

## Documentation

### Sensors

[/sensors/json/](#)

[/sensors/csv/](#)

[/sensors/hdf/](#)

[/sensors/xlsx/](#)

[/sensors/shp/](#)

### Raw Sensor Data

[/sensors/data/json/](#)

[/sensors/data/csv/](#)

[/sensors/data/hdf/](#)

[/sensors/data/xlsx/](#)

[/sensors/data/sensor\\_csv/](#)

[/sensors/data/tabbed\\_xlsx/](#)

### Variables

[/variables/json/](#)

[/variables/csv/](#)

### Themes

[/themes/csv/](#)

[/themes/json/](#)

### Sensor Types

[/sensors/types/json/](#)

[/sensors/types/csv/](#)

### Sensor

[/sensors/{sensor\\_name}/json/](#)

[/sensors/{sensor\\_name}/csv/](#)

[/sensors/{sensor\\_name}/hdf/](#)

[/sensors/{sensor\\_name}/shp/](#)

[/sensors/{sensor\\_name}/xlsx/](#)

### Individual Raw Sensor Data

[/sensors/{sensor\\_name}/data/json/](#)

# UO API v1.1

## Raw Sensor Data

### Get Sensors

GET

<https://newcastle.urbanobservatory.ac.uk/api/v1.1/sensors/data/json/>

### Parameters

#### Data

##### Data Variable

Variables to retrieve data for

Field	Format	Example
data_variable	Text	Temperature

#### Time Slice

##### Last n days

Selects Data from the last n days

Field	Format	Example
last_n_days	Integer	3

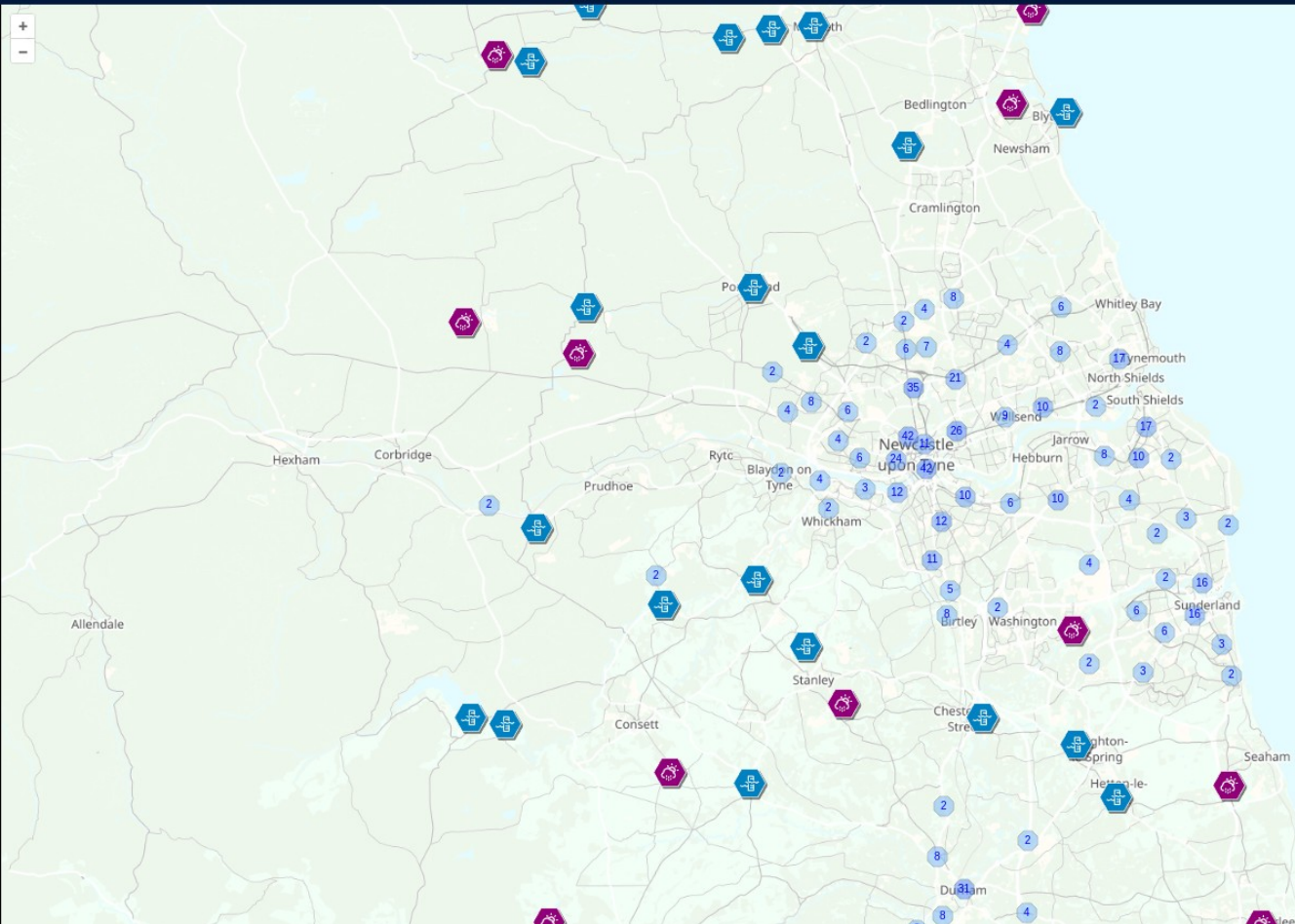
##### Start & End Times

Time slice for which data is queried

Field	Format	Example
starttime	strftime "%Y%m%d%H%M%S" or "%Y%m%d" ( <a href="http://strftime.org/">http://strftime.org/</a> )	20150101
endtime	strftime "%Y%m%d%H%M%S" or "%Y%m%d" ( <a href="http://strftime.org/">http://strftime.org/</a> )	20160101

### Sensor Type



	Air Quality
	Building
	People
	Sensor Metrics
	Vehicles
	Water Level
	Water Quality
	Weather



## Sensors

PER\_ENVIRONMENT\_EA\_023018

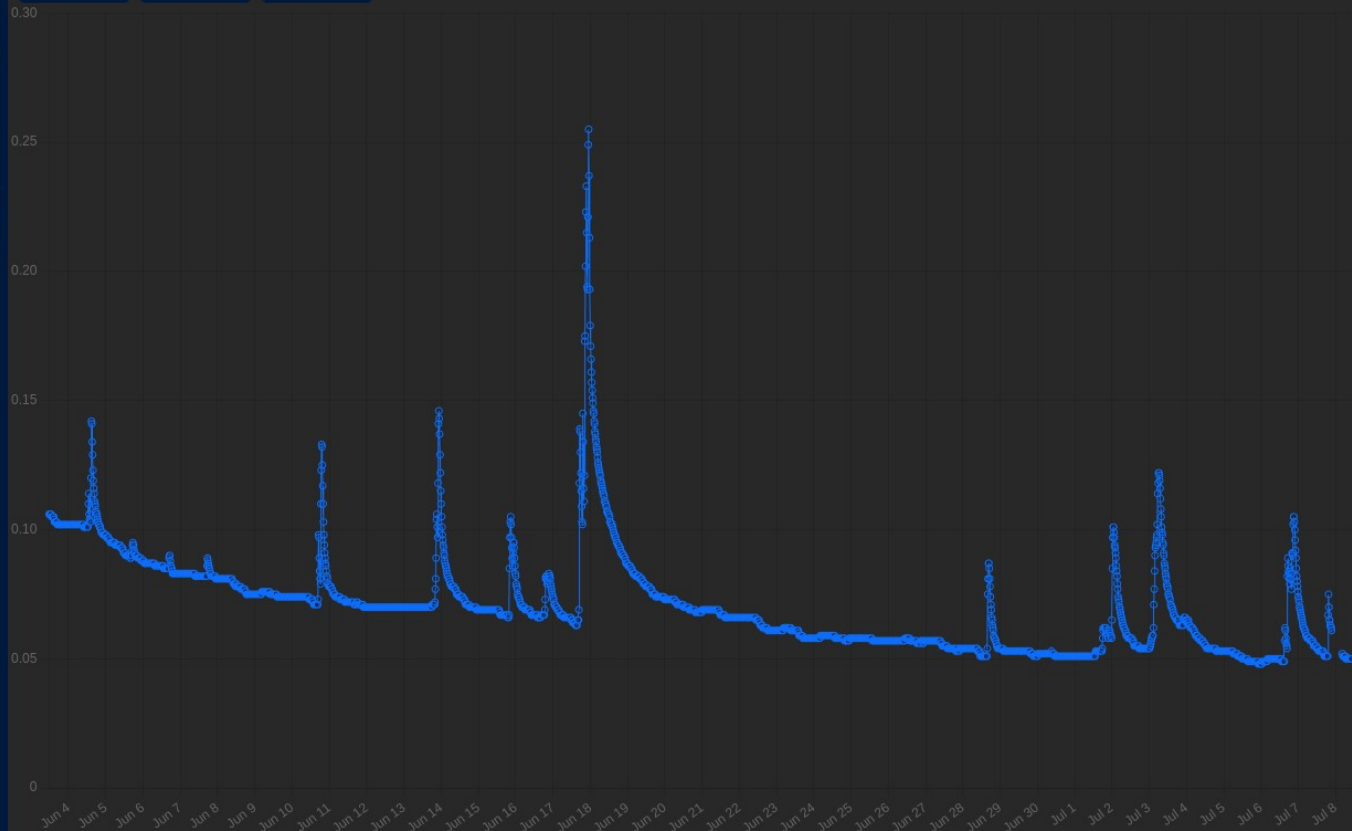
### Water Level Data

	Relative Water Level	0.05 m	11:30:00 8 Jul 2024
	Water Level	63.37 m	11:30:00 8 Jul 2024

[View Sensor Page](#)

## Relative Water Level

Zoom 35 day Zoom 7 day Zoom 24 Hours



PER\_AIRMON\_MONITOR915



PER\_AIRMON\_MONITOR914



PER\_AIRMON\_MESH1761150



PER\_AIRMON\_MESH1910150



PER\_AIRMON\_MESH1915150



PER\_AIRMON\_MESH1916150



PER\_AIRMON\_MESH1919150



PER\_AIRMON\_MESH1922150



PER\_AIRMON\_MONITOR1048100



PER\_AIRMON\_MONITOR1056100



PER\_AIRMON\_MESH1957150



PER\_AIRMON\_MESH1964150

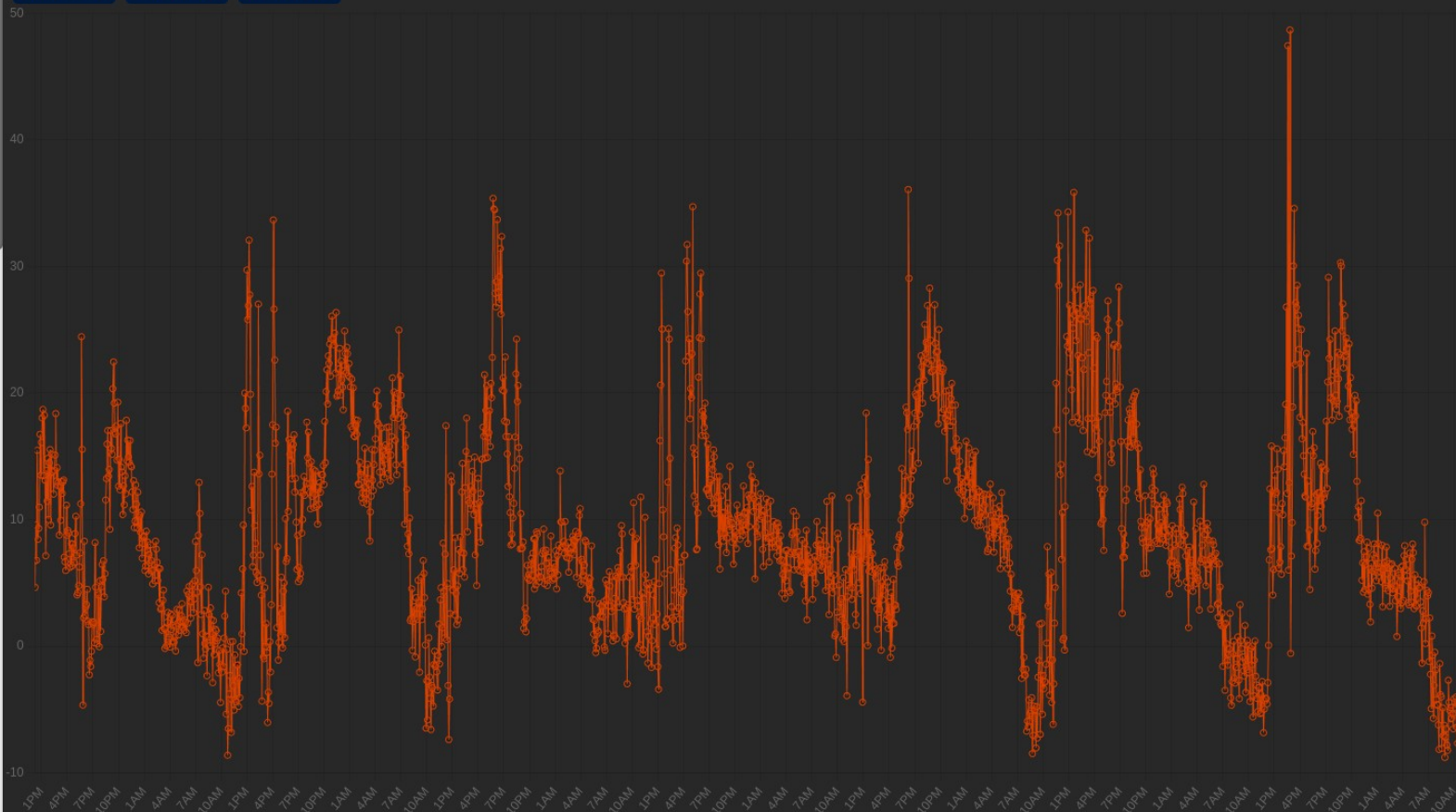


NO2

Zoom 35 day

Zoom 7 day

Zoom 24 Hours





Last 35 Days



Raw Archive Data



Aggregated Data

## Air Quality

CO

CO2

NO

NO2

NOx

O3

PM 4

PM1

PM10

PM2.5

Particle Count

VOC

## Building

Internal Humidity

Internal Temperature

## People

Walking

## Sensor Metrics

Battery

## Vehicles

Journey Time

Plates In

Plates Matching

Plates Out

## Water Level