OceanCube's Observation Nodes Data Display on Grafana

Introduction: Grafana, an open-source visualization tool is used to monitor the Ocean Cube observations data. Grafana was built on the principle that data should be accessible to everyone in your organization, not just the single Ops person. By democratizing data, Grafana helps to facilitate a culture where data can easily be used and accessed by the people that need it, helping to break down data silos and empower teams. Grafana allows teams to seamlessly correlate and visualize all your data.

All OceanCube's observation nodes data is stored in the USM owned PostgreSQL database via various data transmission mediums. Stored data is queried from Grafana panels to visualize the data. Each observation node has dashboards and panels designed specifically for them. Currently, the Ocean Cube has Viking, WaveRider, Iver, and HRSN observation nodes. Each node has its own dashboard where all the data panels for that particular observation node are present.

Depending on the WiFi network you are connected to, use below addresses to go to the OceanCube Data page

USM Network: local.theoceancube.com

External Networks: theoceancube.com

Please follow below instructions to familiarize with Grafana so you get full benefits of OceanCube data.
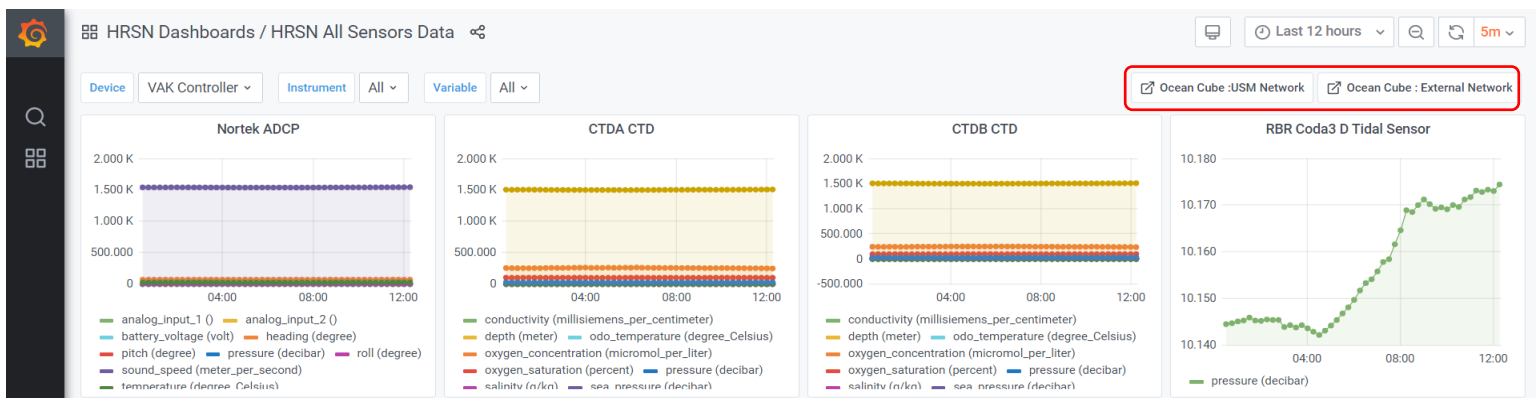

Figure 1: Screenshot of HRSN All Sensors Data Web Page.

Data Access: Here we discuss how to access each observation node data, how to switch from one node to another, how to access data on each panel, how to change time-frame and other features.

Figure 1 is the default web page that is loaded when you are on the link. This web page is the "HRSN All Sensors Data" dashboard where you have several panels created for each sensor in the network. In figure 1 you can see ADCP, CTDA, CTDB, and Tidal Sensor panels. You can go to the OceanCube modelling

page by clicking on the appropriate button depending on the WiFi network you are connected to as shown in figure 1.

View Single Panel: To view just a single panel, click on the view button of any panel that you are interested in as shown in Figure 2. By clicking on view, maximized single panel will be shown as in Figure 3.
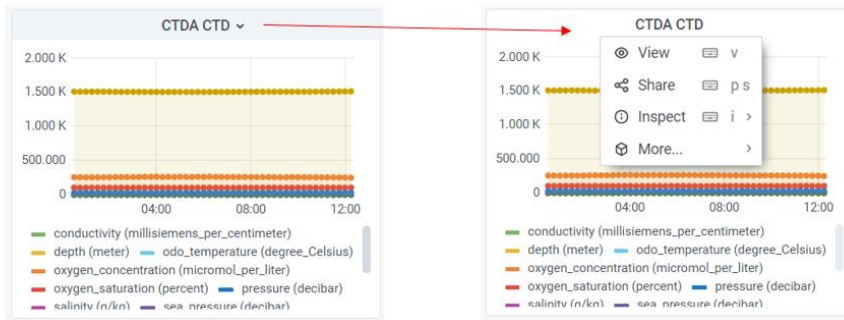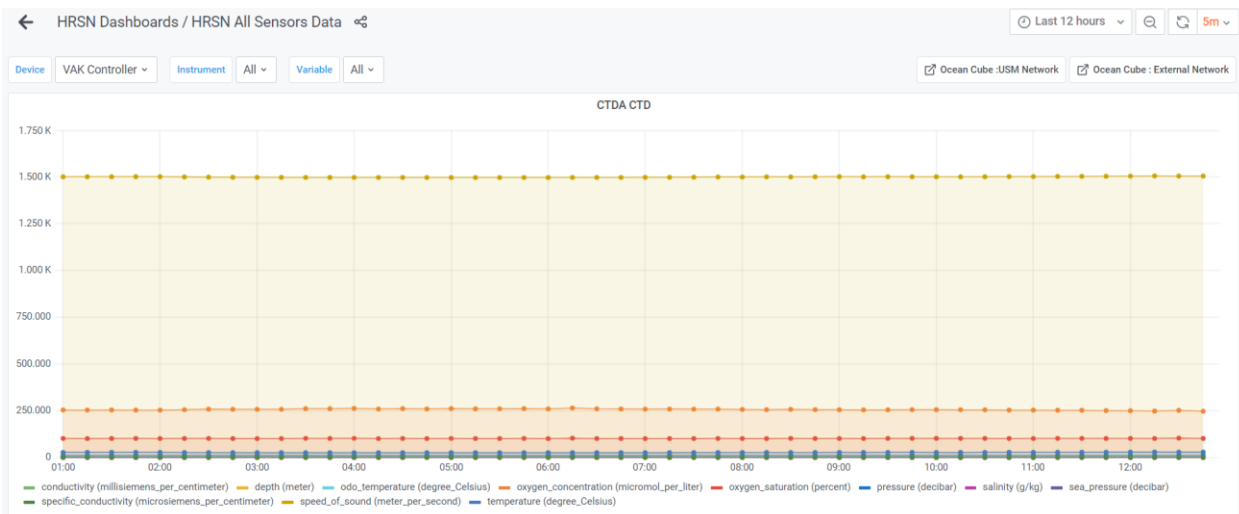

Figure 2: View CTDA Panel

Figure 3: Single panel view

In addition, you can also select the instrument that you are interested in to view in the "instrument" drop box along with the variables that you want to view as shown in Figure 4.
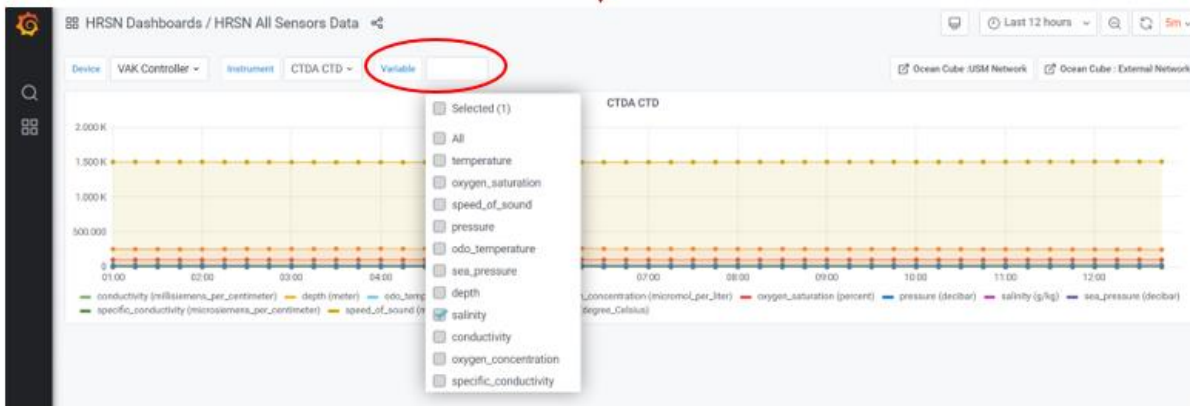
Figure 4: Selecting Instrument and variables

Once the desired instrument and variables are selected the panel looks as in Figure 5.

Figure 5: CTDA CTD Salinity data plot

Select Time Range: You can choose to view the data at a particular time in the past by changing the time range. To change the time range choose the time span you are interested in the time field as shown in figure 6.
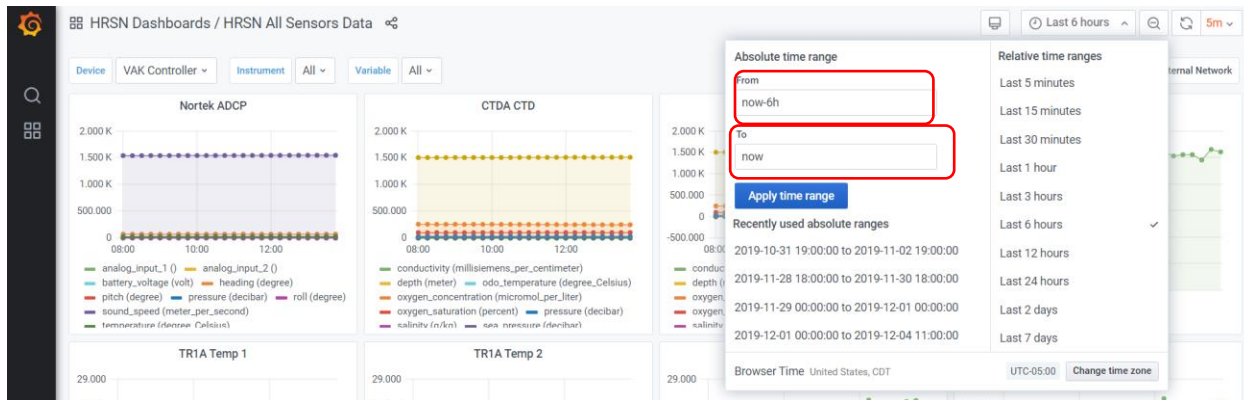
Figure 6: Selecting time range

One can also choose the data received recently from the predefined time ranges as well as shown in the figure 6.

Download Data: You can download any data that you seen on the Grafana. To download the data displayed on a panel, click on the "data" button as shown in the figure 7. When you click on the "data" button, a pop up window with the time series data data column shows up as shown in figure 8. On this pop-up window, chose the variable you are interested in to download and click on the download CSV button to download the data in CSV format. You can also select "series joined by time" as shown in figure 9 to select all the parameters in that particular panel to be downloaded.
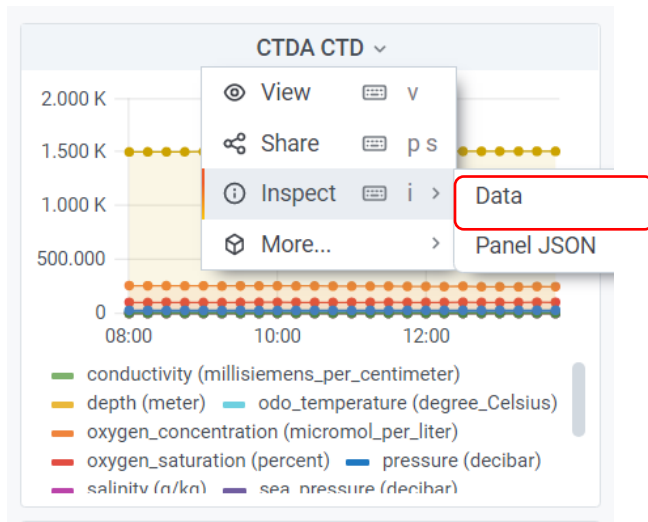

Figure 7: Data download button

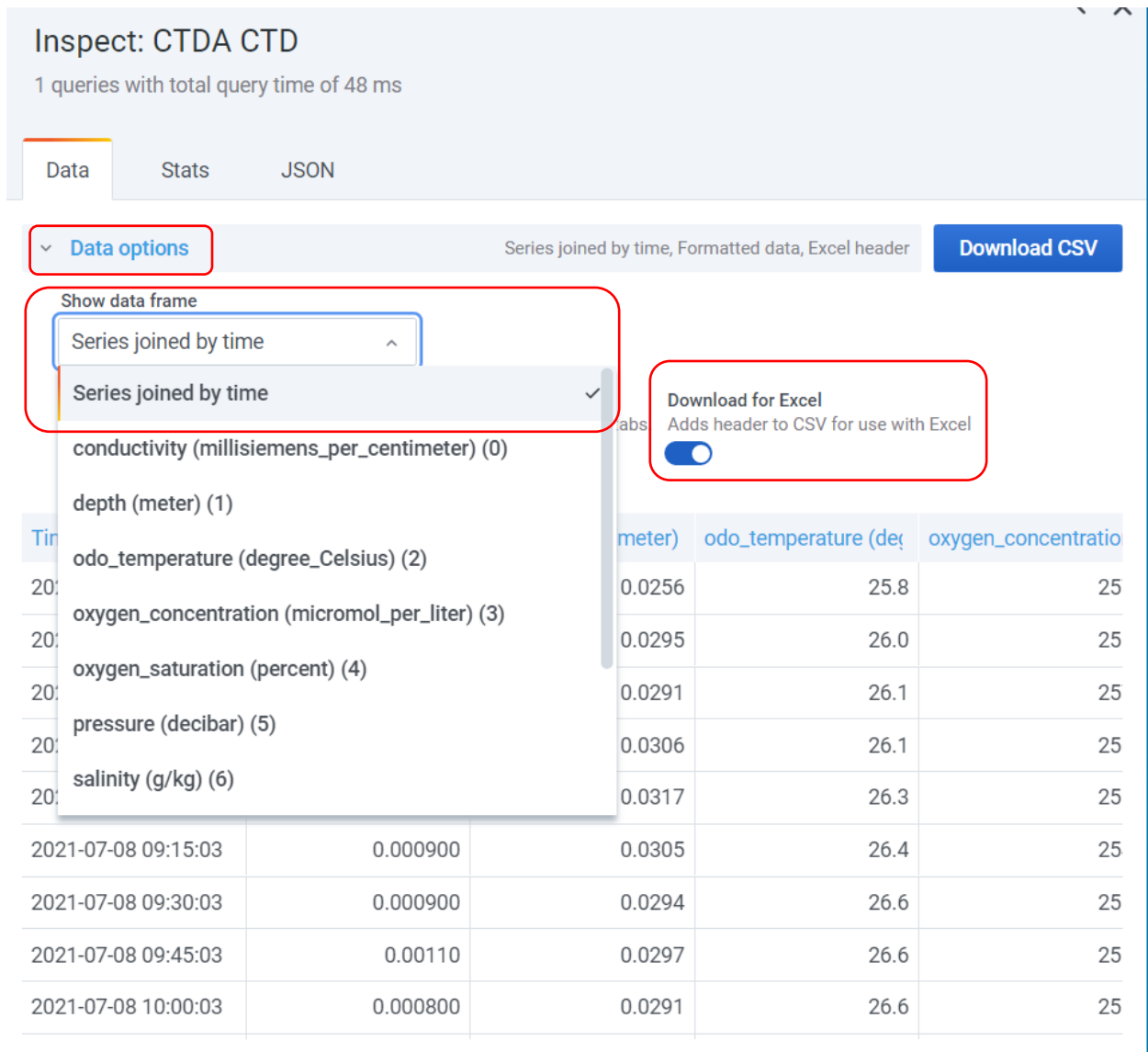*Figure 8: Data download pop-up window*

Figure 9: Selecting all parameters in a panel

View all Dashboard Folders: To view all available dashboards, click on manage tab as shown in the figure 10.
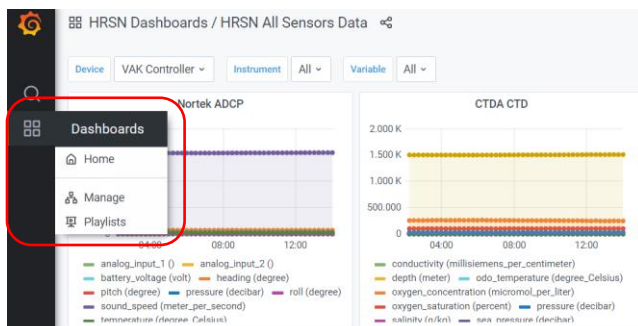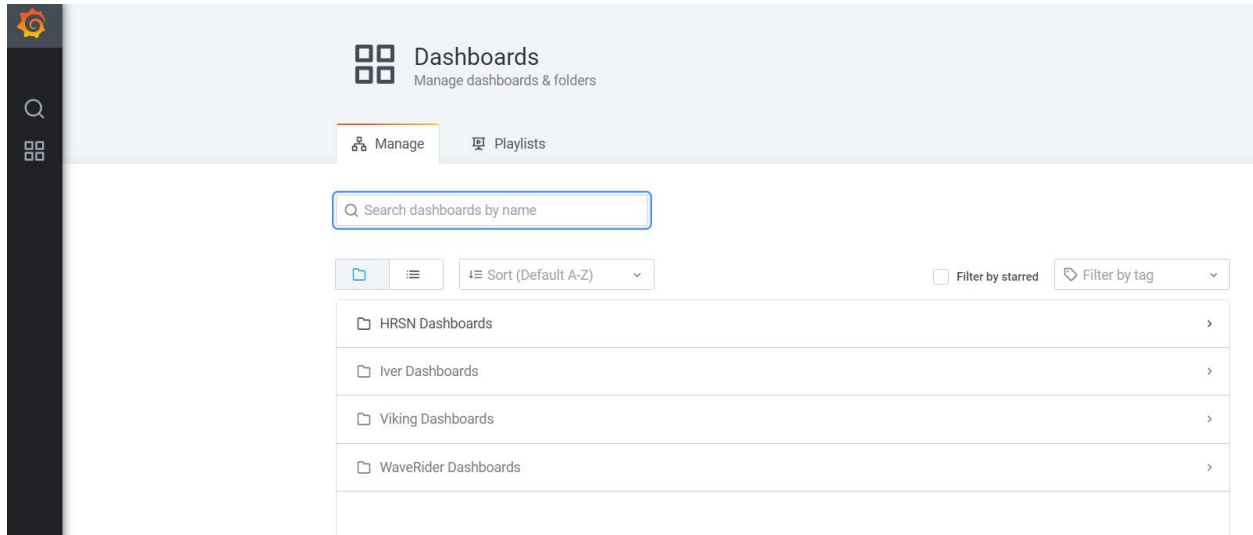

Figure 10: Go to list of all dashboards

Now, you will see all the available dashboards one for each observation node in the OceanCube as shown in figure 11.

Figure 11: Dashboards view

From her, you can select any dashboard to view the data panels pertaining to that observation node. As OceanCube expands, more dashboards will be created and can be seen here.