Deltares

Enabling Delta Life

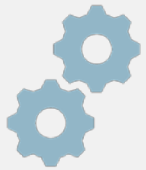
SeaDataCloud Online visualization

Giorgio Santinelli, Fedor Baart, Cindy van de Vries

People

- Fedor Baart
- Cindy van de Vries
- Giorgio Santinelli

Agenda



Methodology

Examples

Feedback

Methodology

Story

Inspiration

Canvas

Data

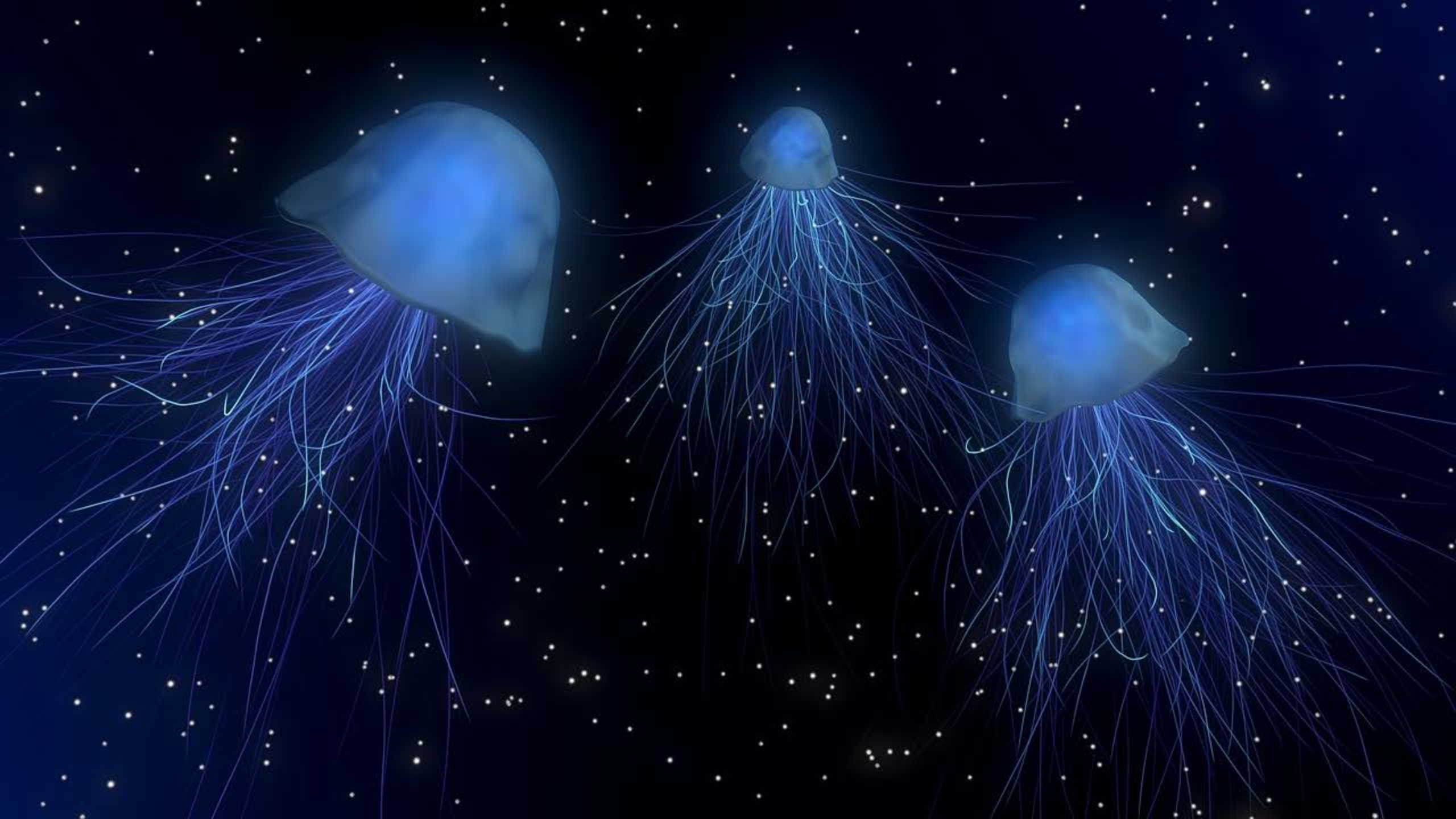
Wrangle

Shape

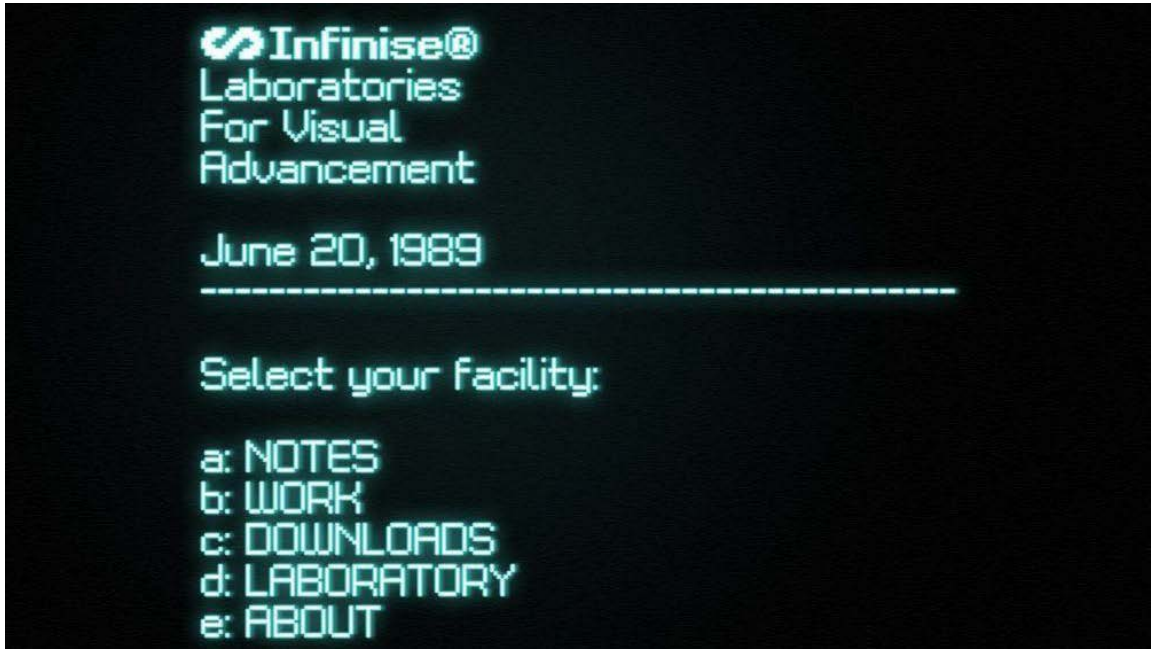
Color

Interactivity

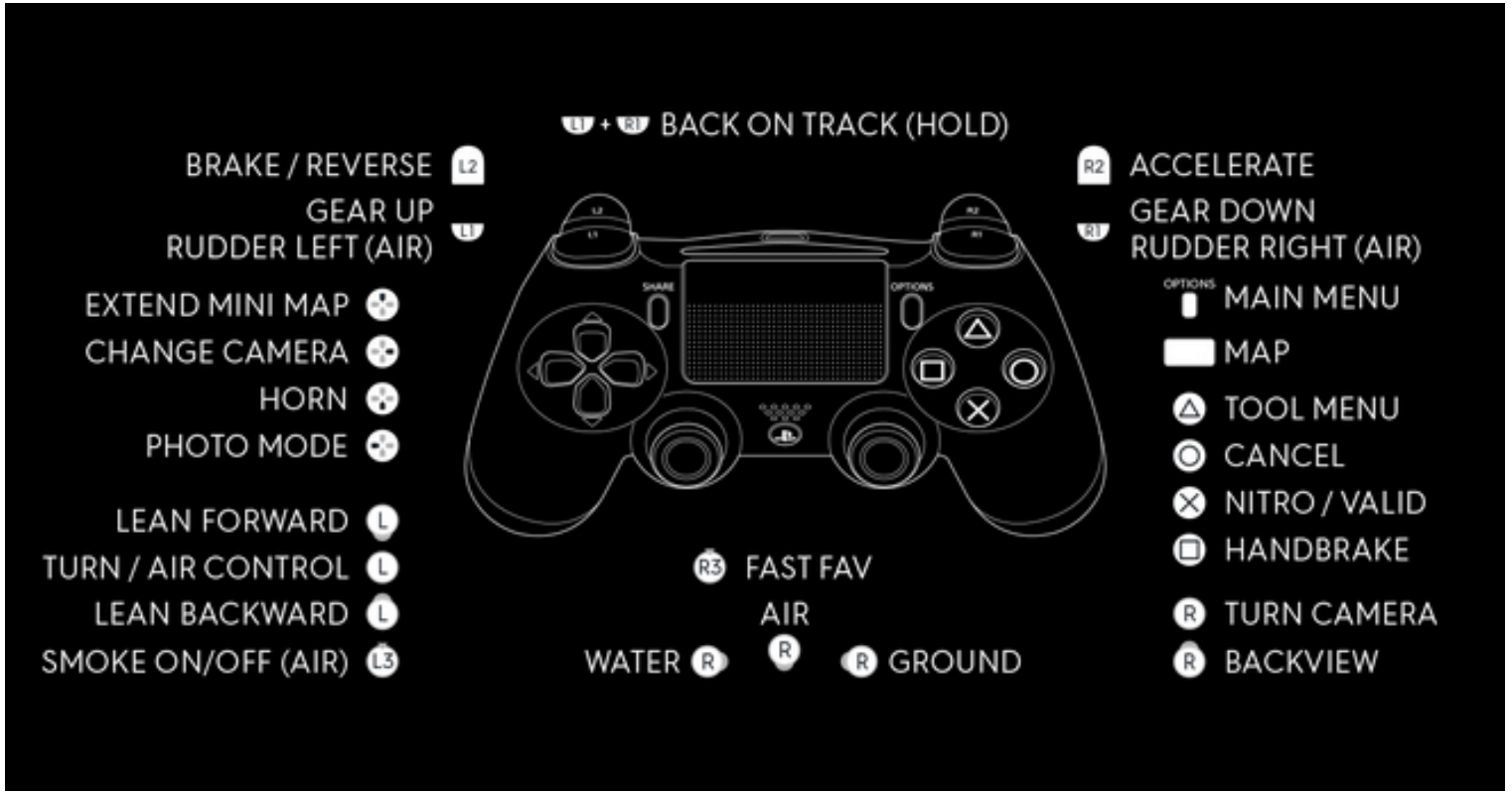
SIMON STEVIN



Inspiration



Canvas


L1 + R1 BACK ON TRACK (HOLD)
BRAKE / REVERSE L2
GEAR UP
RUDDER LEFT (AIR) L1
EXTEND MINI MAP
CHANGE CAMERA
HORN
PHOTO MODE
LEAN FORWARD L
TURN / AIR CONTROL L
LEAN BACKWARD L
SMOKE ON/OFF (AIR) L3
R2 ACCELERATE
GEAR DOWN
RUDDER RIGHT (AIR) R1
OPTIONS MAIN MENU
MAP
TOOL MENU
CANCEL
NITRO / VALID
HANDBRAKE
R TURN CAMERA
R BACKVIEW
R3 FAST FAV
AIR
R
WATER R
R GROUND

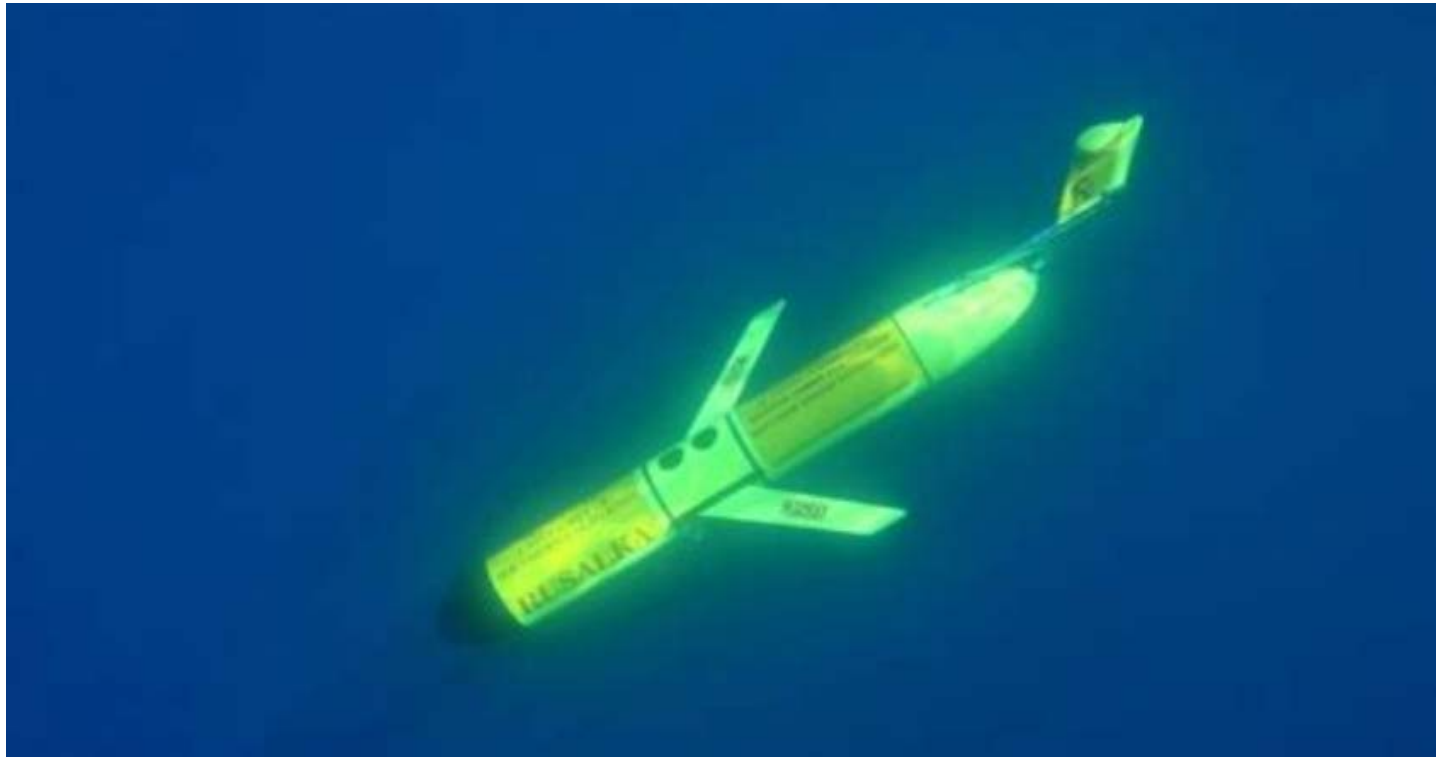
Koninklijke Ba
Vuurtorenweg
Vuurtorendok-West
Taboralaan
VUURTORENWIJK
Wandelaarkaai
Victorialaan
Hendrik Baelskaai
Vismijnlaan
De Rudderstraat
Voorhavenlaan
Langestraat
Van Iseghemlaan
Ostend
Jozef II-straat
Leopoldpark
Vindictivelaan
Voorhaven
Ieperstraat
fons Pieterslaan
Hazegras
Kairostraat
Marinebasis
Bootsman Jonson
Ghent-Bruges-Ostend
Westkaai Vlotdok
Stelplaats De
Lijn Oostende

Data

map (OGC)
CF format (SDN)
MAP
Grafiek
Trajectory
x(t), y(t), v(t)
LineString
Point
Key
val
Current time
Point
Subm x(t) y(t) z(t) v(t)
Timeseries x, y, v(t)
Profile x, y, z(t), v(z), t
Timeseriesprofile x, y, z([], t), v(z, t)
Trajectoryprofile x(t), y(t), z([], t), v(z, t)
LineString

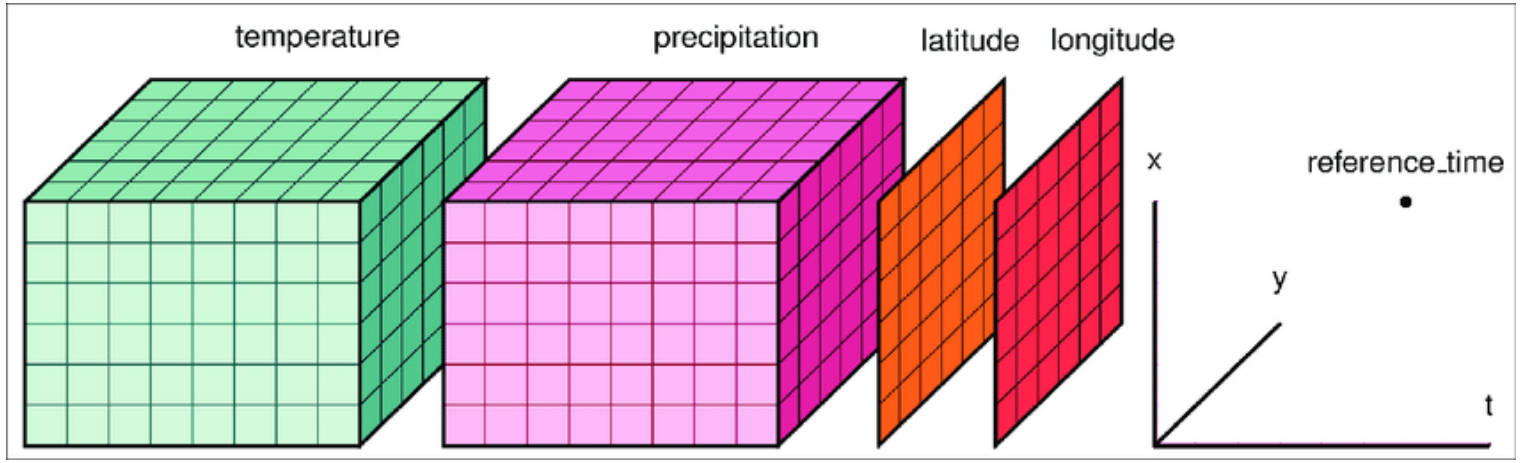
Data

- Trajectory: v(t) y(t) x(t) z?(t) t[]
- Profile: x, y, v(t) z(t) t[:]
- Station: x, y, v(t) t[:]
- Multiple variables
- Multiple trajectories/profiles per cruise
- Multiple stations



Wrangle

- NetCDF as:
  - NetCDF v.4
  - NetCDF CF 1.6+ compliant



- Openearth.eu

Toolbox

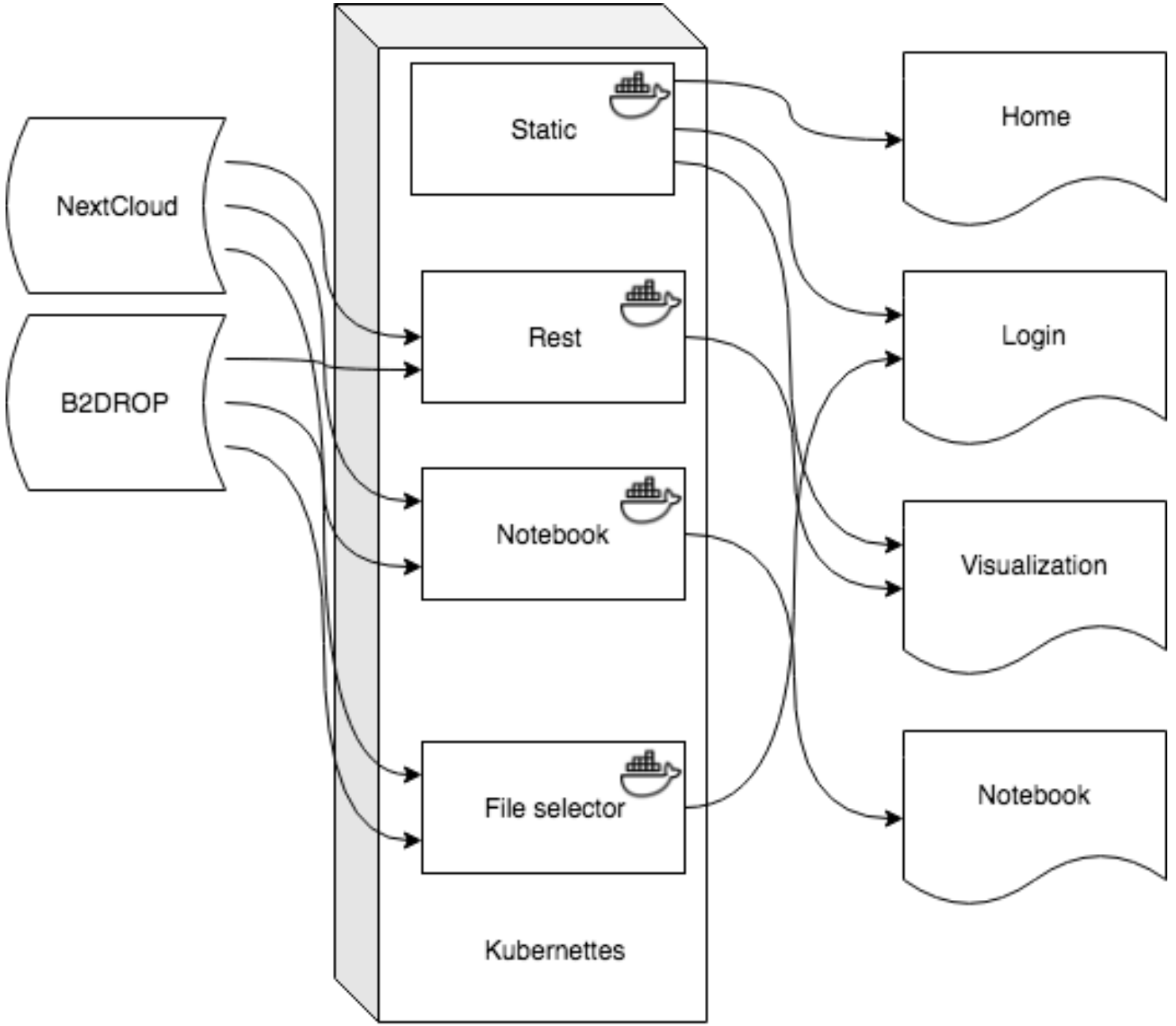
netCDF
OpenCV
docker
ANSIBLE
pandas
python
FFMPEG
scikit-image
image processing in python
NumPy
PixiJS
WebGL
matplotlib
JS
three.js
npm
HTML
CSS
Gulp
Leaflet

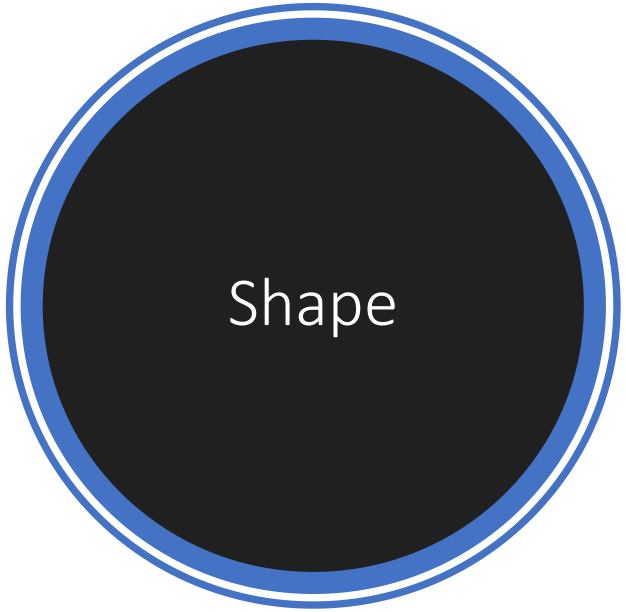
Toolbox

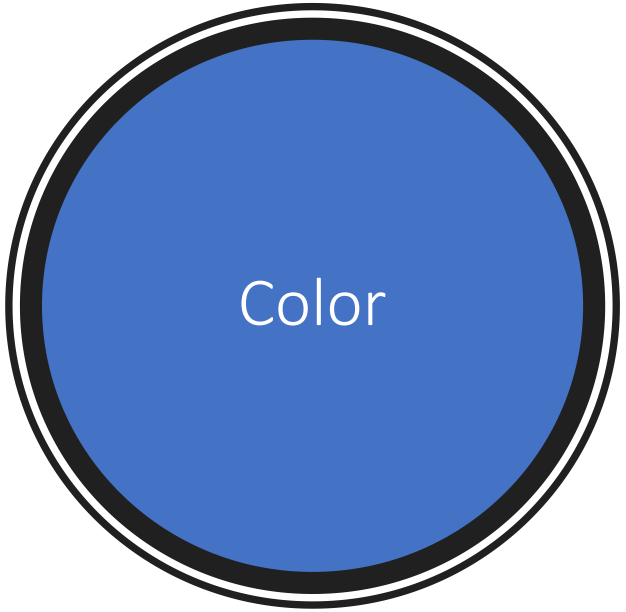
- Docker containers

- Test VM
- Dockerfile on Github.
  https://github.com/openearth/sdc-visualization

Architecture

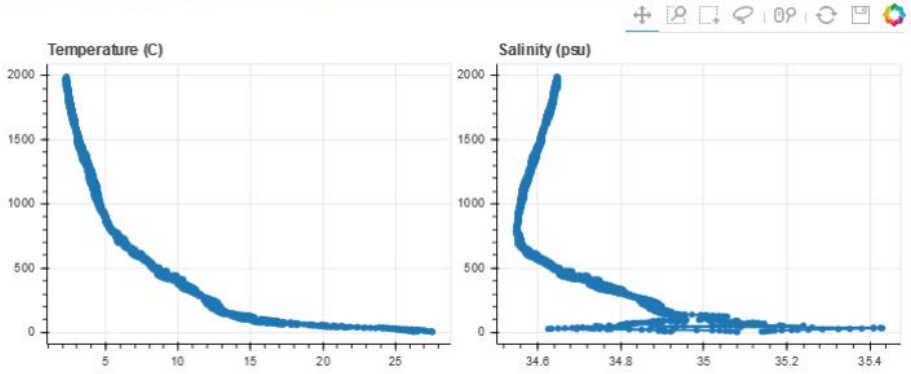



Shape


Color

2016
2017

- Dynamically generated
- Interactive
- HTML output



Create Visualization in Mapbox

Use html to create a div. In Javascript add a mapbox component. When clicking on an element a bokeh plot will appear.

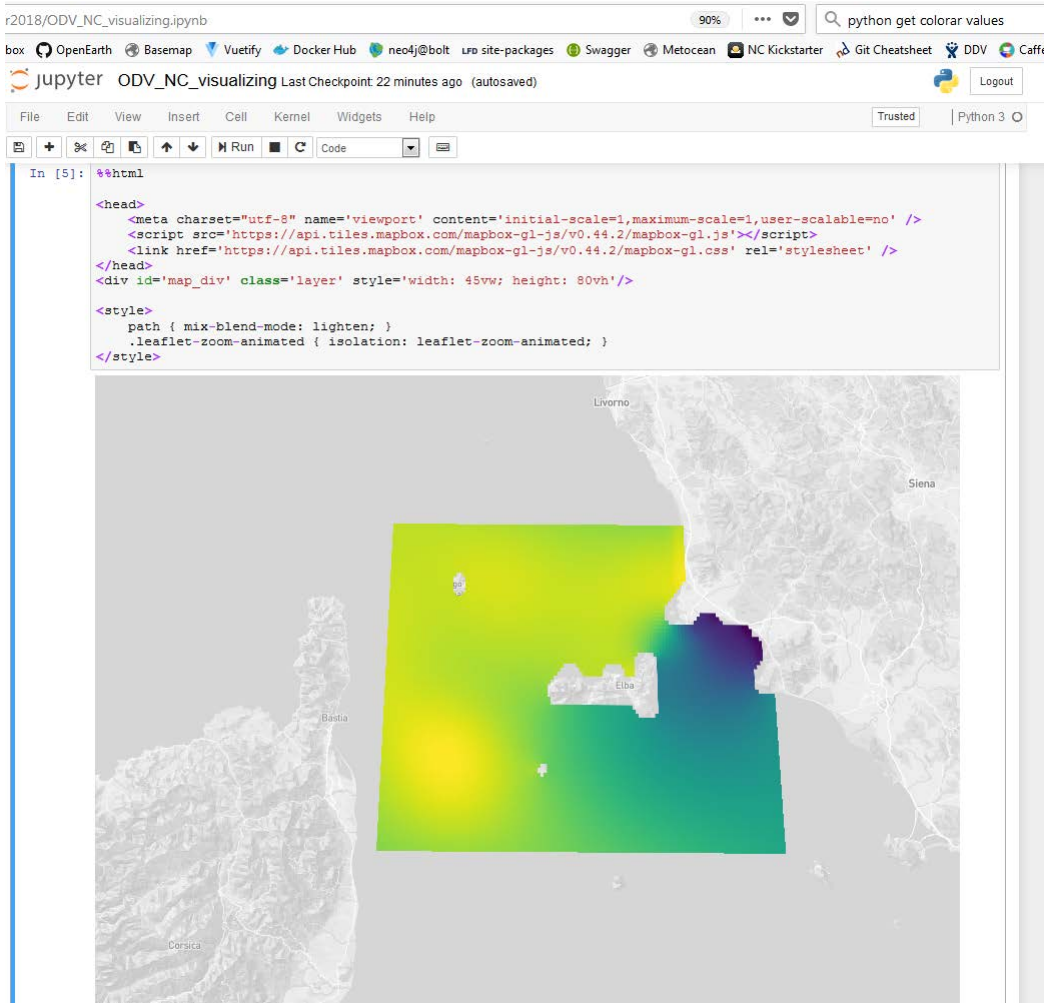
In [6]:

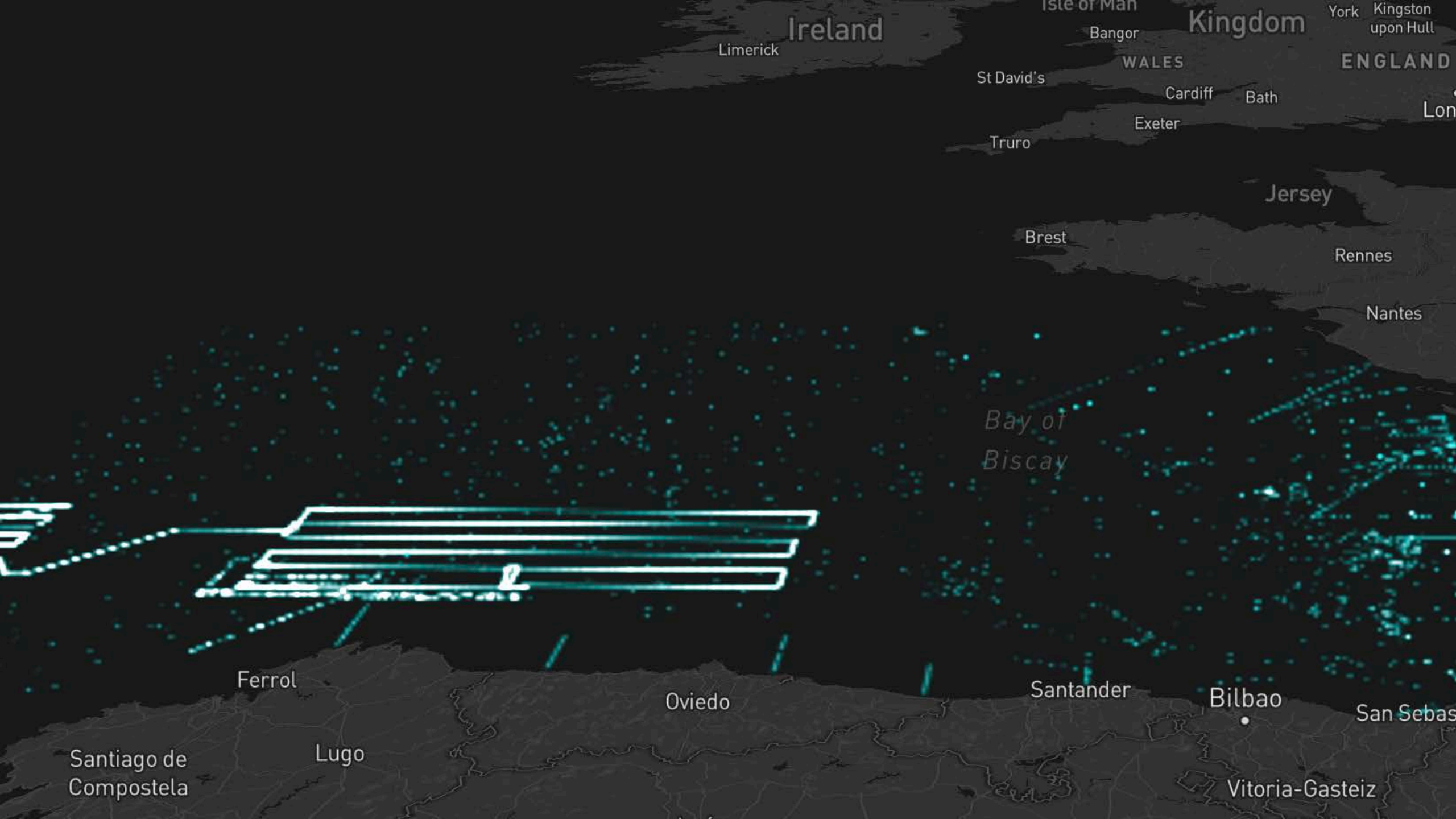
```
%%html

<head>
    <meta name='viewport' content='initial-scale=1,maximum-scale=1,user-scalable=no' />
</head>
<div id='map_div' class='layer' style='width: 50vw; height: 50vh'/>
<div id='data' style='width: 50vw; height: 50vh; background-color: white;'/>

<style>
    path { mix-blend-mode: lighten; }
    .leaflet-zoom-animated { isolation: leaflet-zoom-animated; }
</style
```

\n

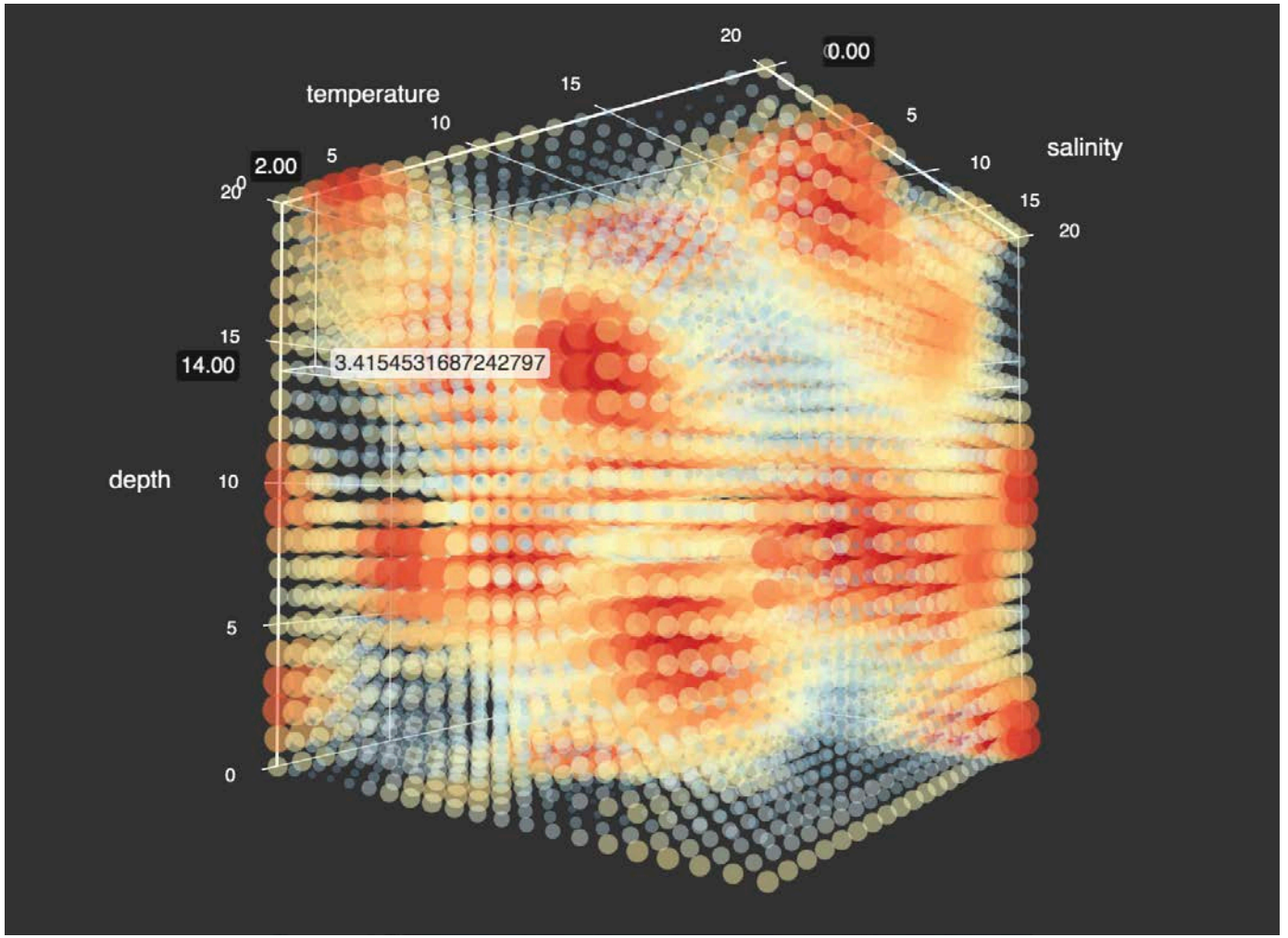
mapbox

- Follow up of the mini use case
- Interactive
- HTML output

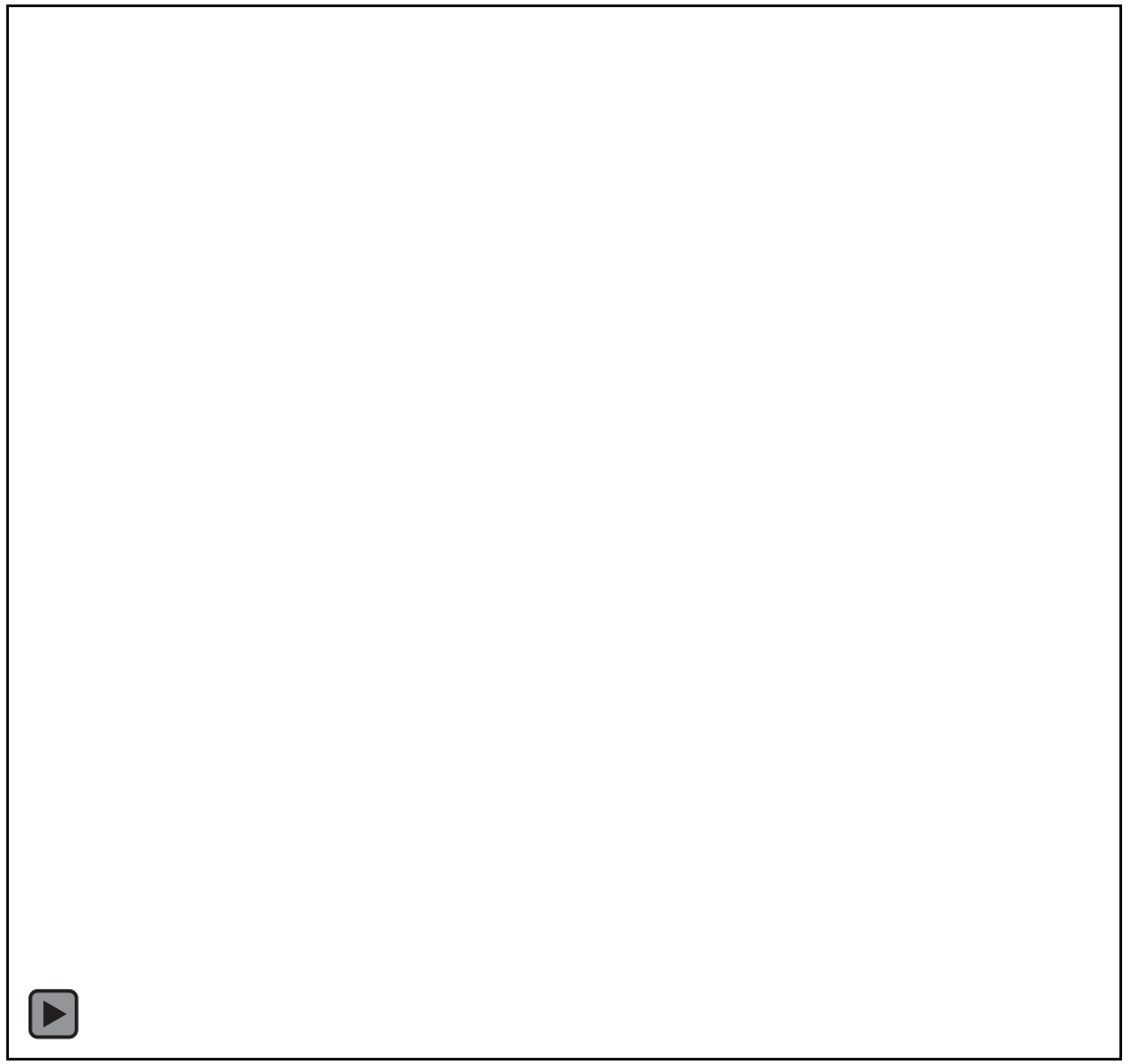



Ireland
Limerick
Isle of Man
Bangor
Kingdom
York
Kingston upon Hull
WALES
ENGLAND
St David's
Cardiff
Bath
Exeter
Truro
Jersey
Brest
Rennes
Nantes
Bay of Biscay
Ferrol
Oviedo
Santander
Bilbao
San Sebas
Santiago de Compostela
Lugo
Vitoria-Gasteiz

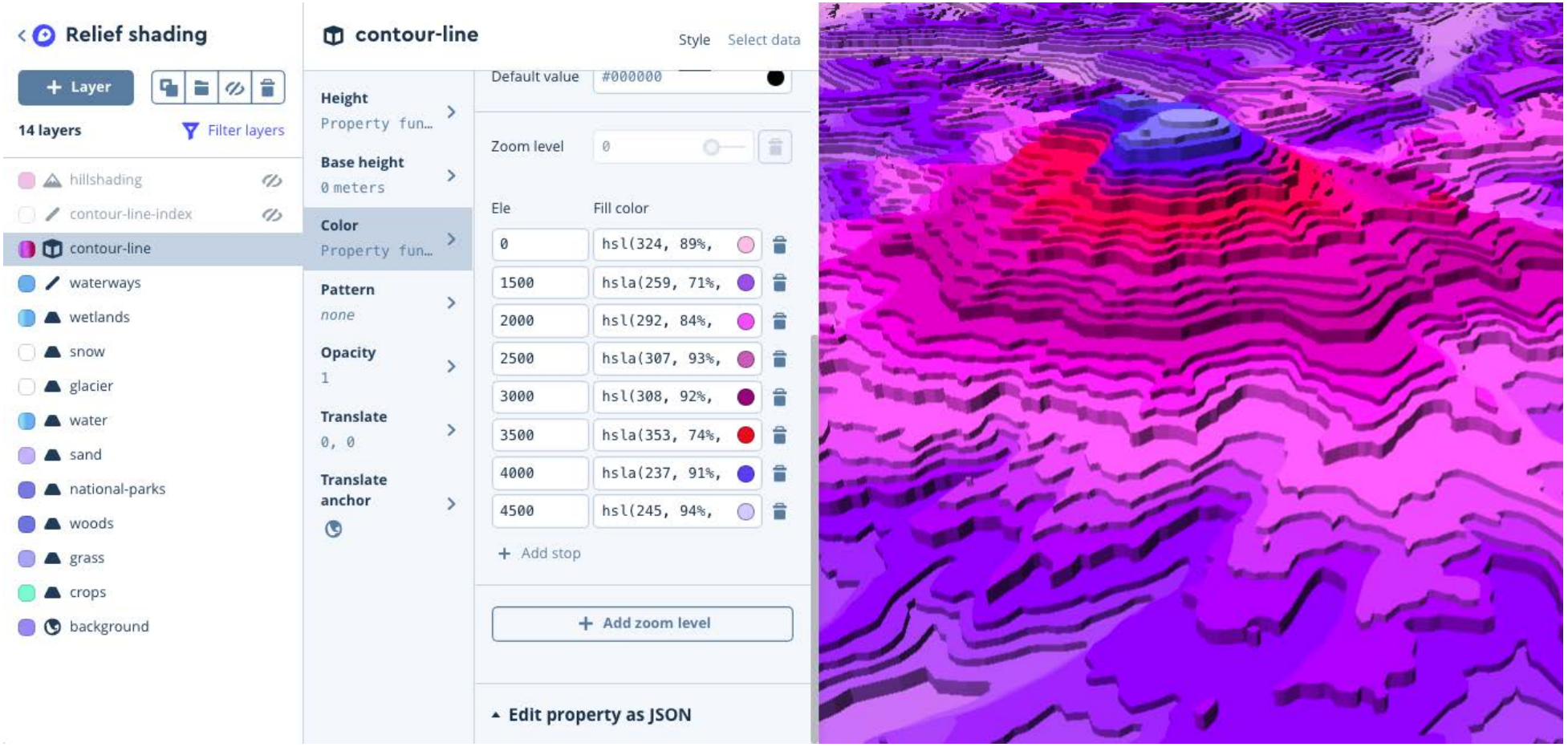
3D example


temperature
salinity
depth
2.00
14.00
0.00
3.4154531687242797
0
5
10
15
20

Interactivity



3D Map of temperature



Demo

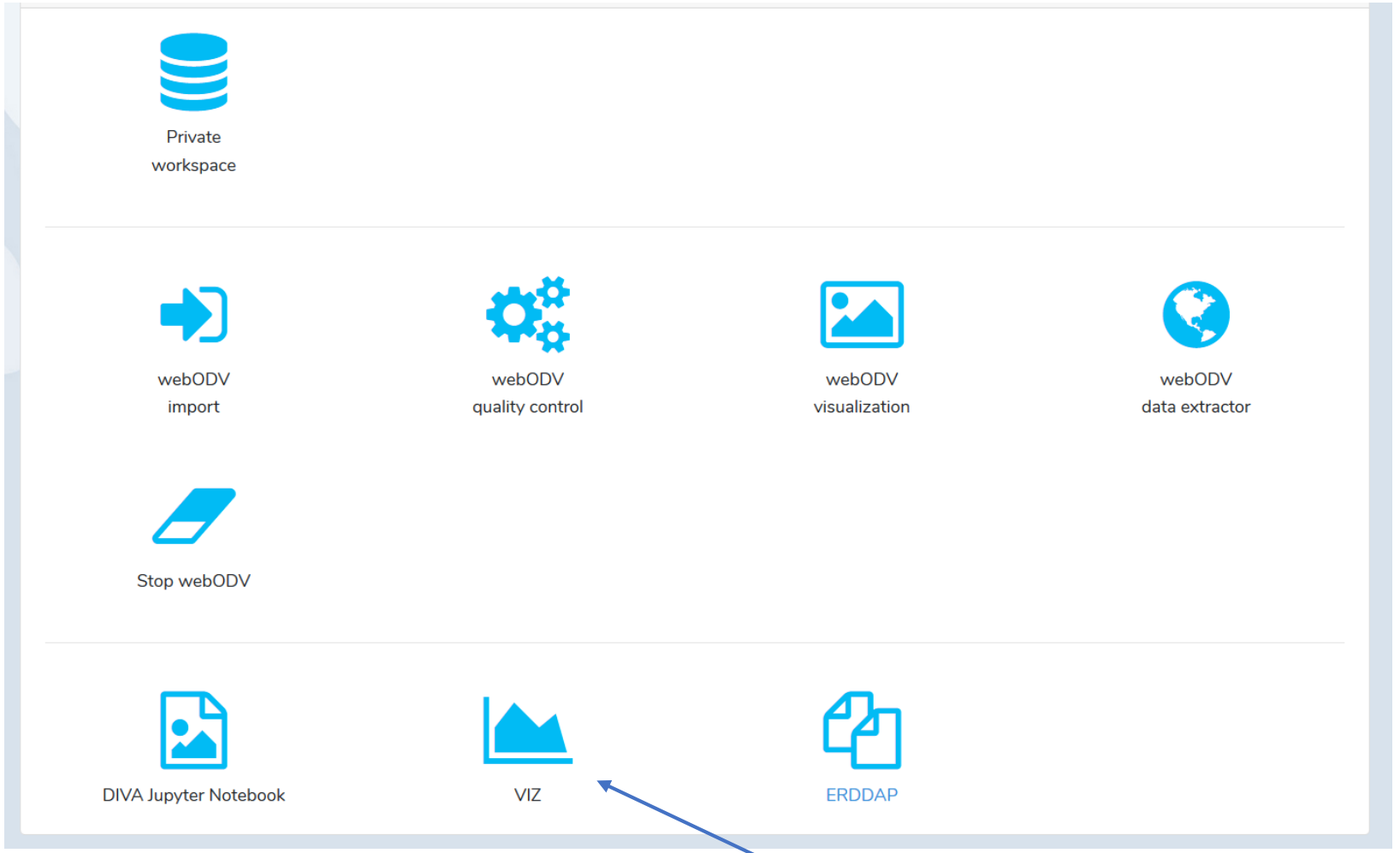
Go to VRE

Login with app credentials

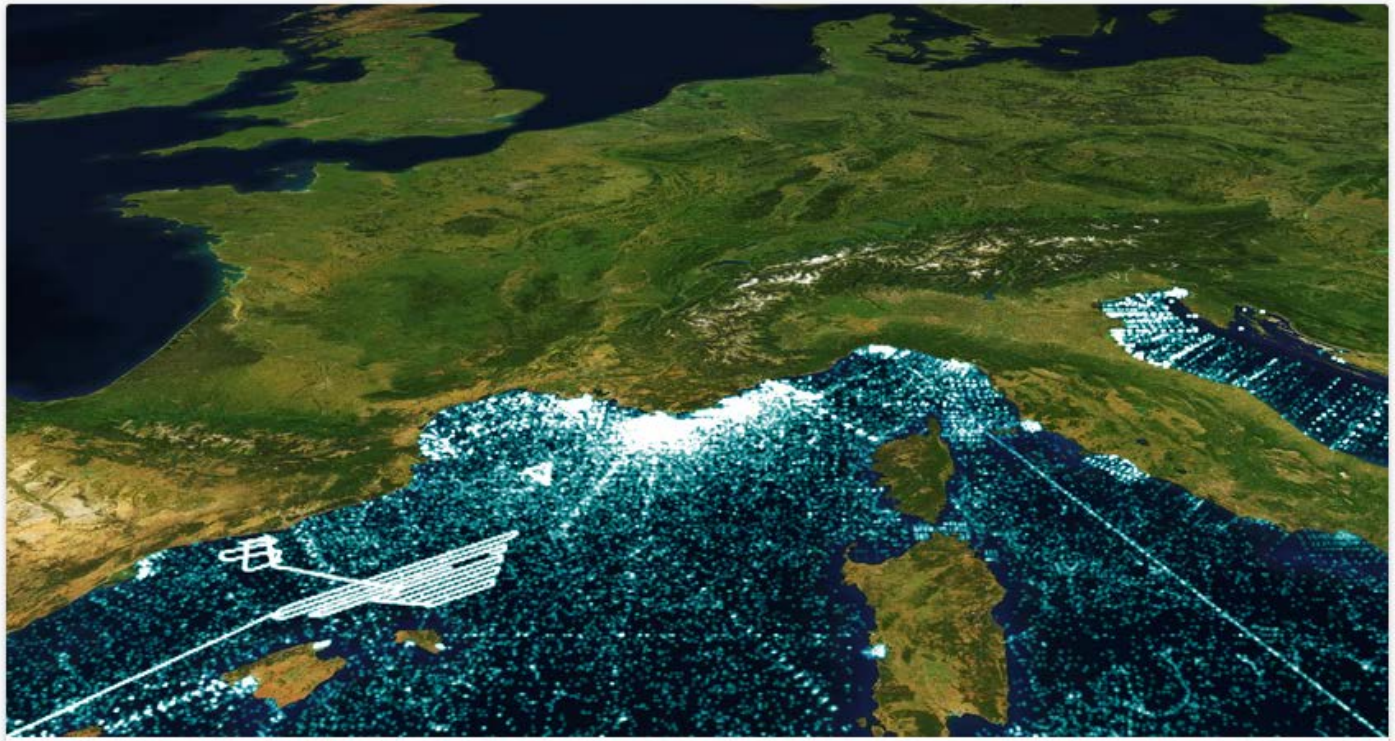
Select a file

Visualise

Go to VRE server https://orca.dkrz.de/



Open the visualization



Visualization

Create visualizations on the map

GO

Visualization

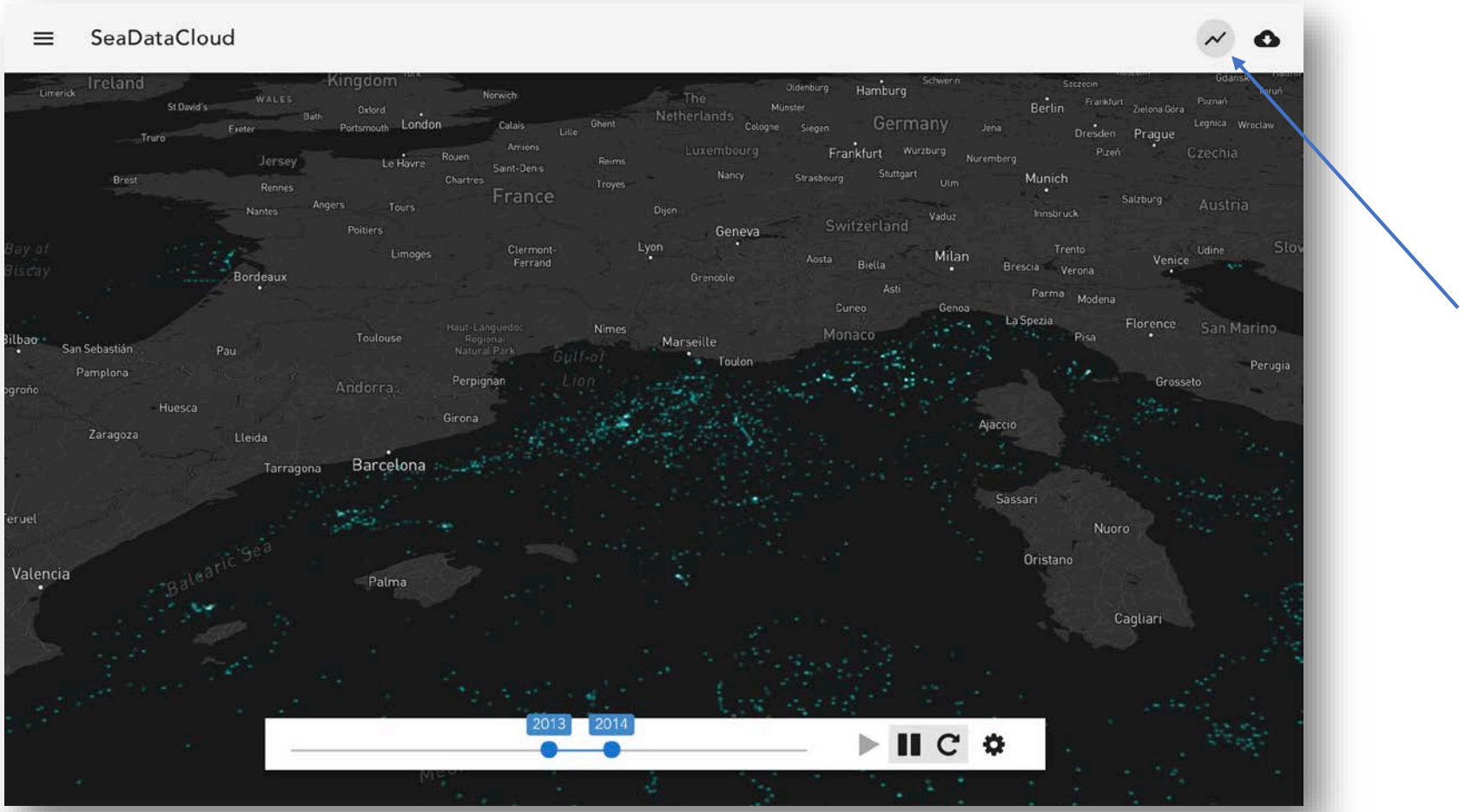
Map visualization

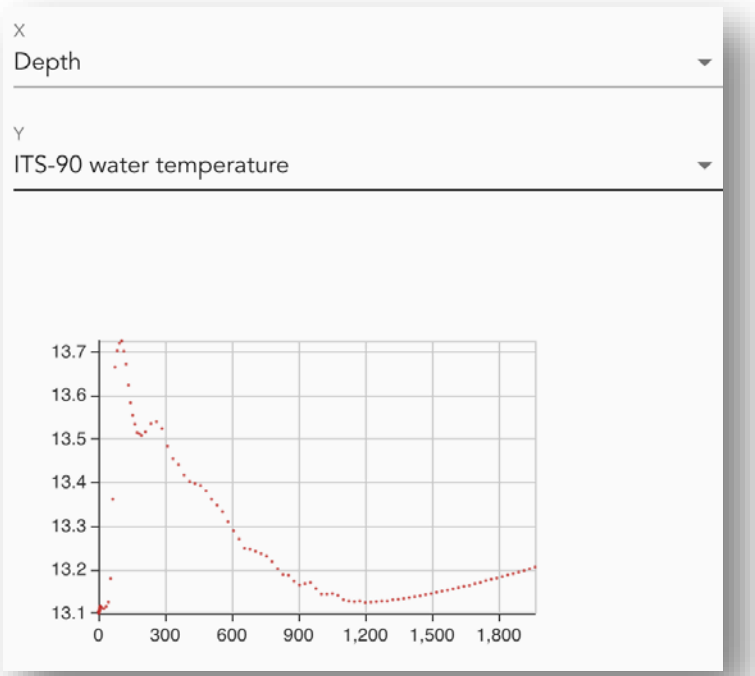
- Zoom (mouse wheel)
- Pan (mouse)
- Tilt (right mouse drag)

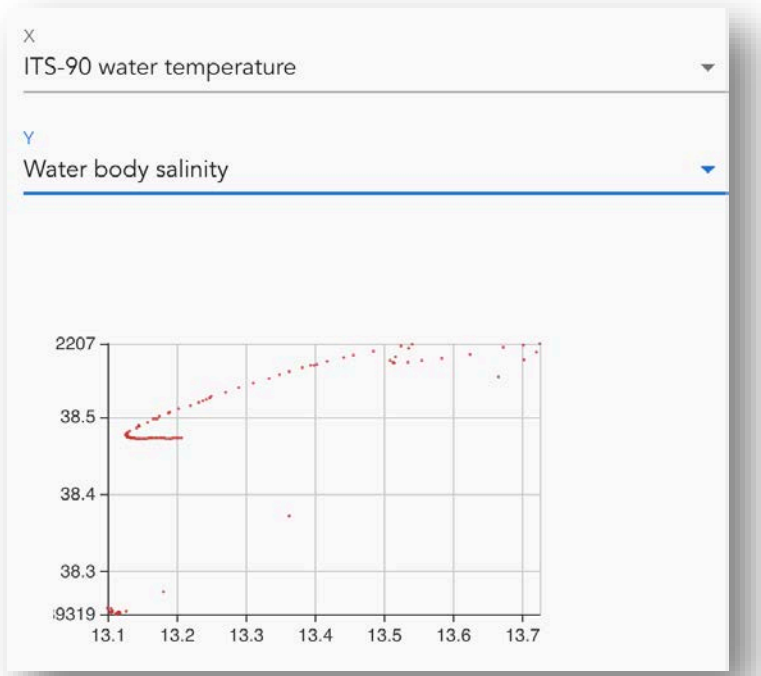
Animation

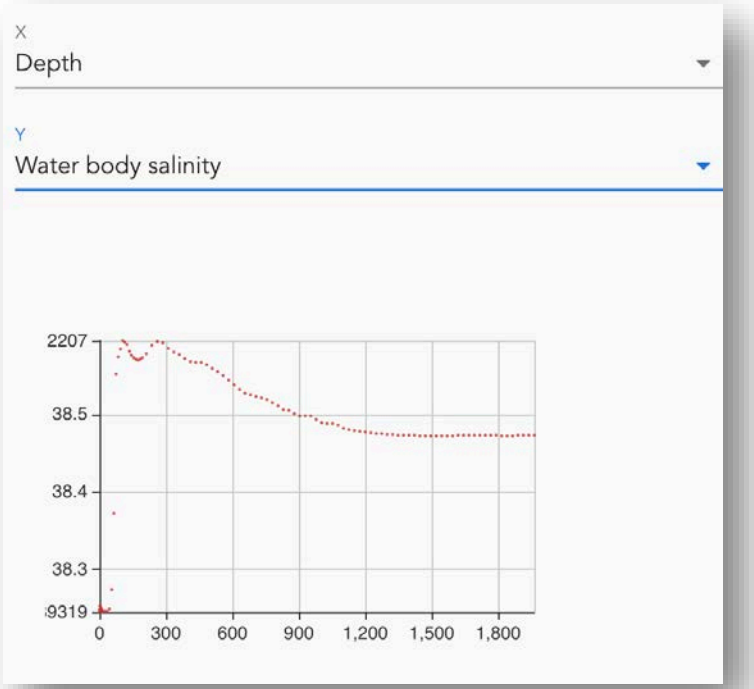
- Play
- Pause
- Configure

Open the chart side bar









Example charts

Questions & Feedback