

GeoSciFramework : Pioneering Early Warning Systems Through Big Data And Machine Learning

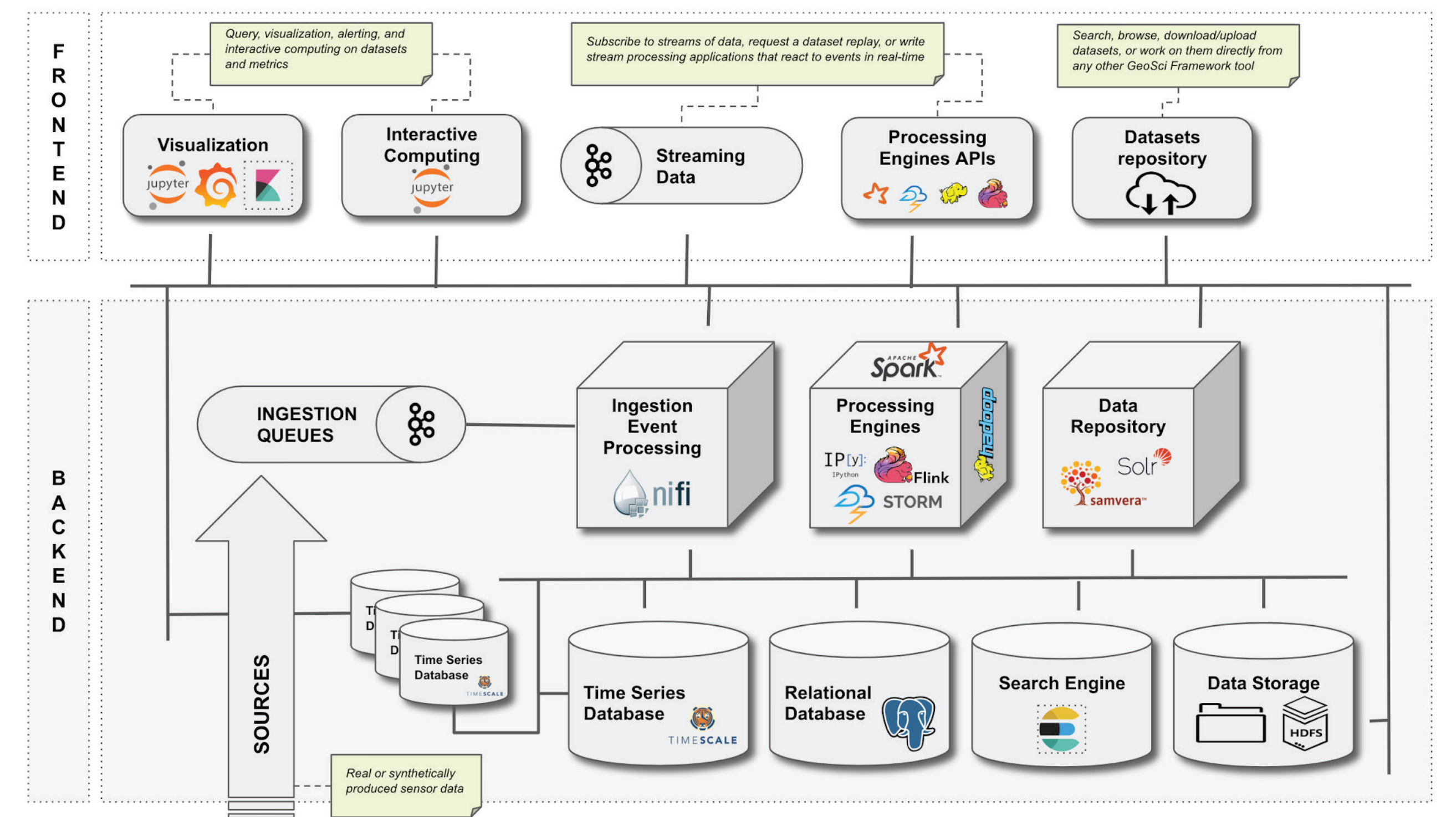
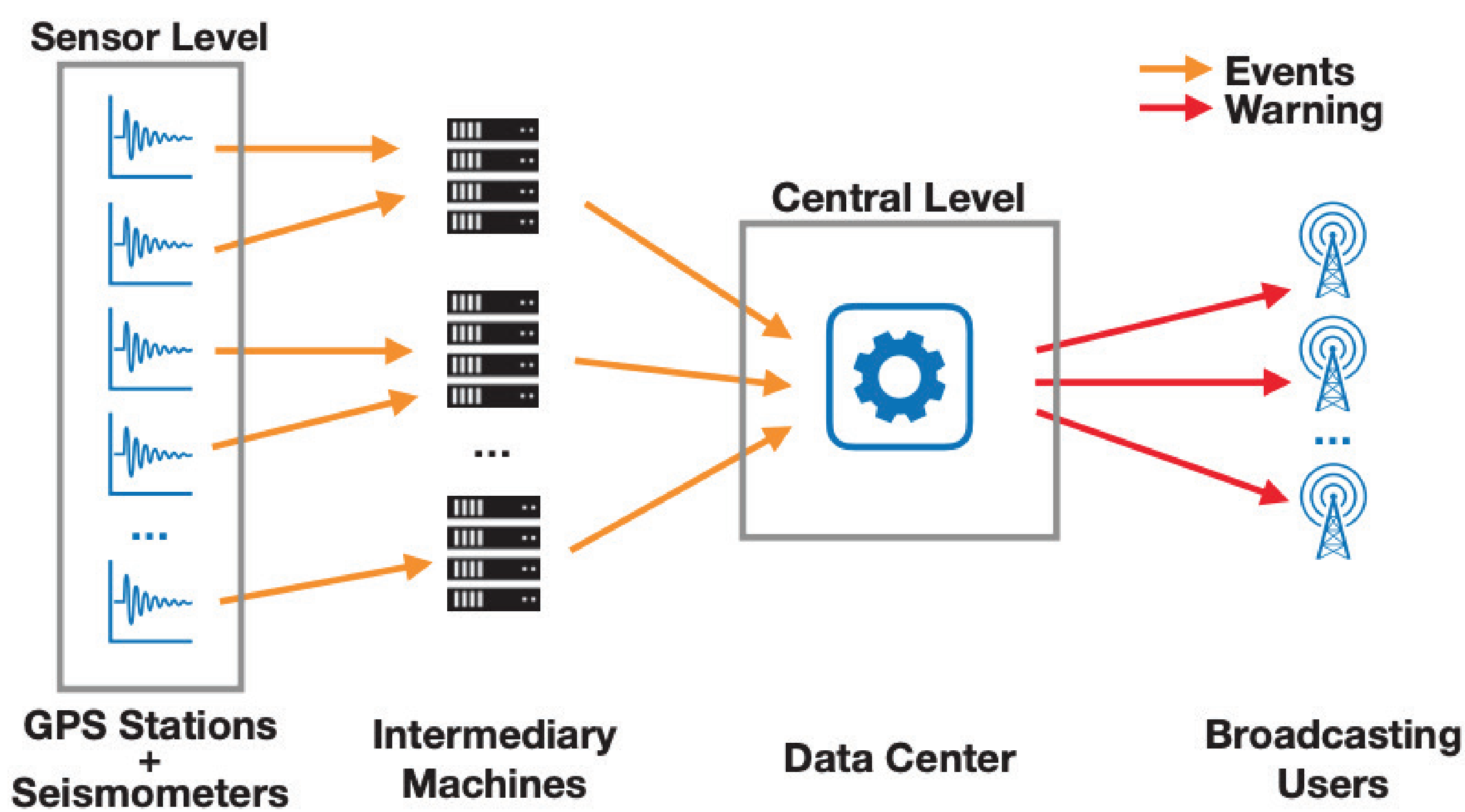
Saleem Alharir- Ivan Rodero- Manish Parashar



Our Aim

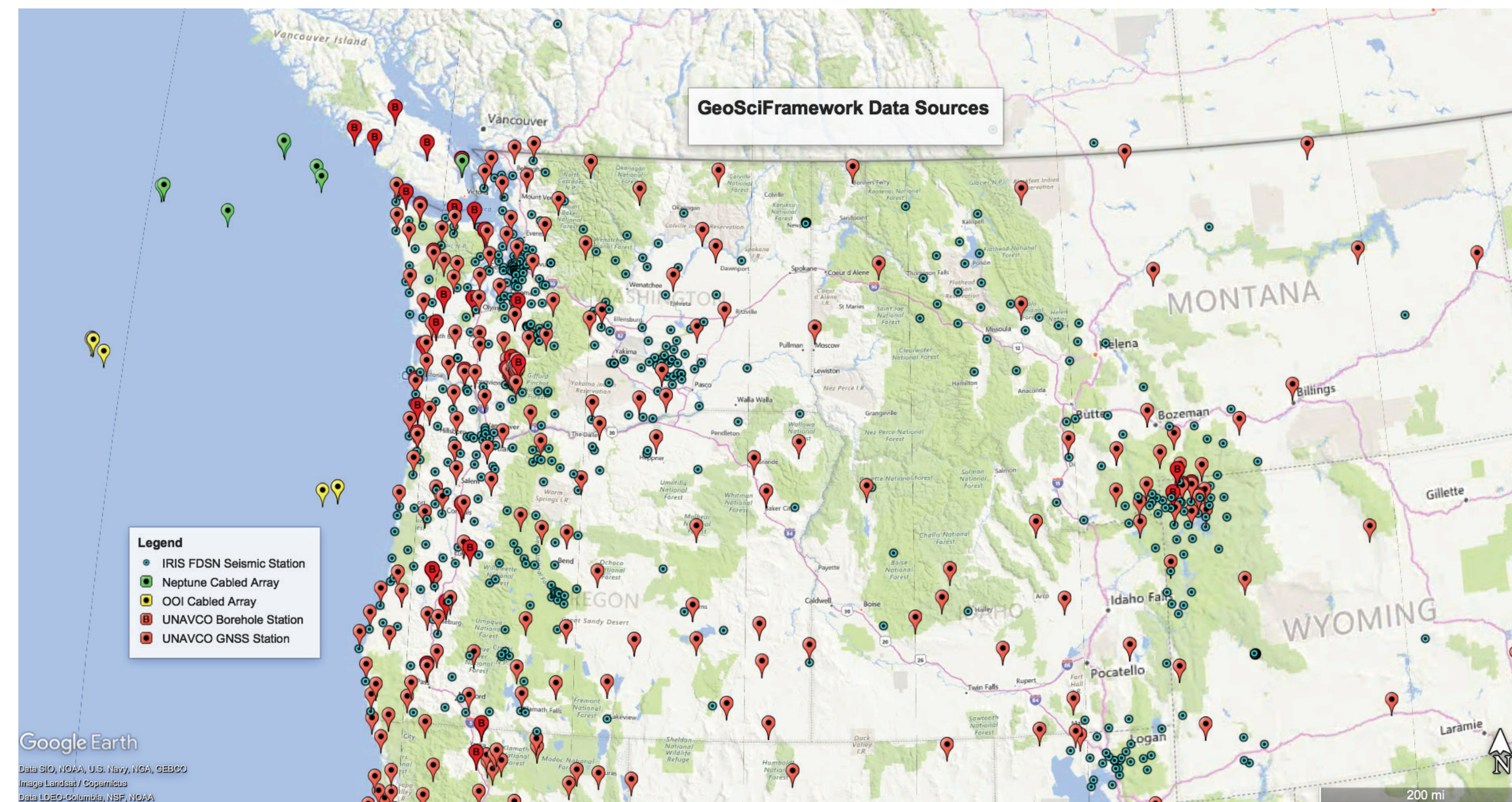
The GeoSciFramework project aims to transform how we forecast responses to natural disasters like earthquakes and tsunamis by using advanced computer analysis and learning from big sets of data. We're gathering information from all over the world, using special tools that can sense changes in the Earth, to help keep communities safe and learn more about how our planet works.

Project Overview



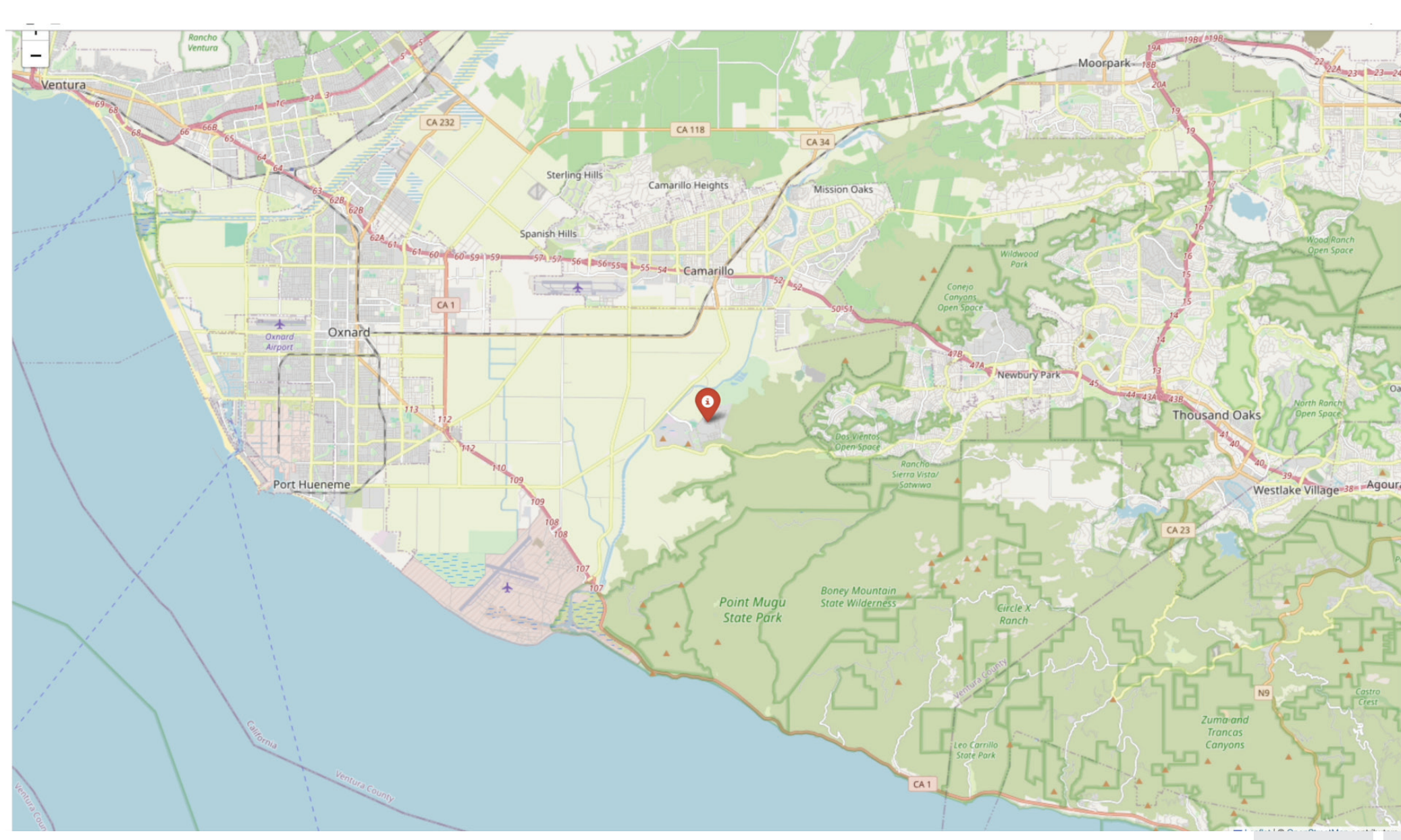
High-level architecture and data workflow for the Earthquake Early Warning System. (from Fauvel, et al. 2020)

This map depicts the GeoSciFramework's array of data collection points across the Northwestern United States, featuring GPS and seismic stations, borehole stations, and cabled arrays.

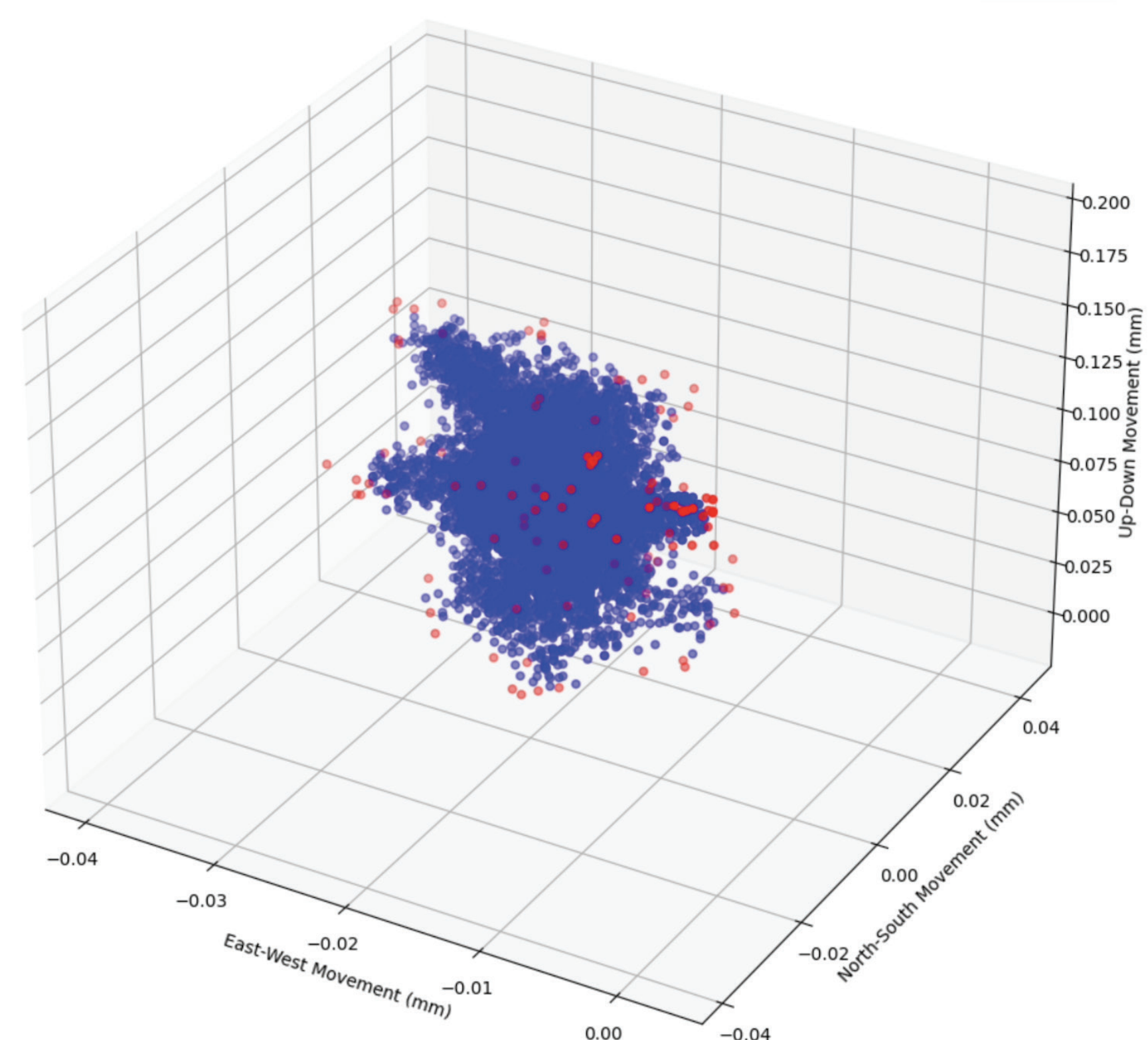


The spread of instruments is indicative of a comprehensive network for monitoring geological activity such as earthquakes and volcanic eruptions.

Workflow of the current Deployment

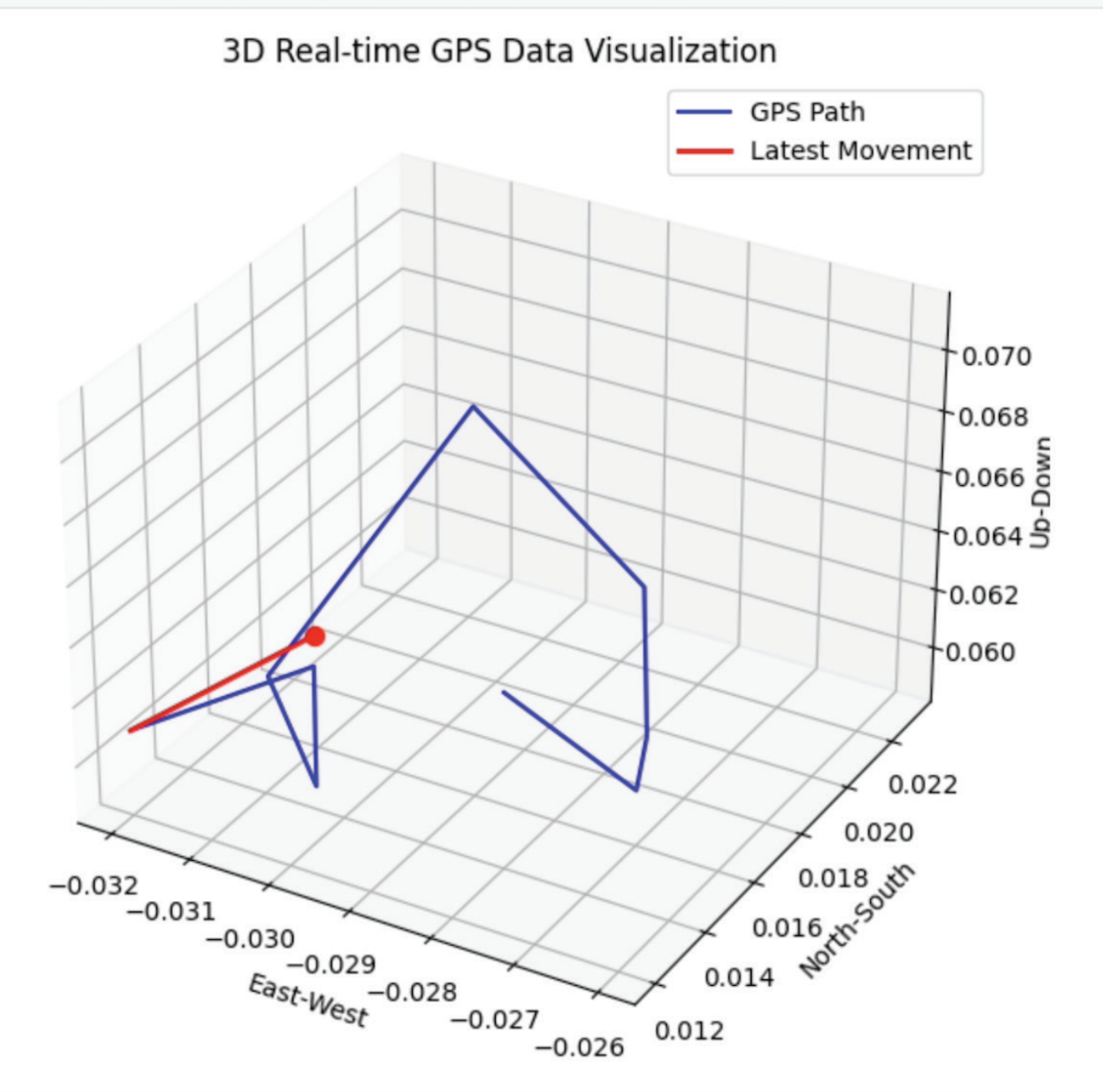


Locating the station on the map



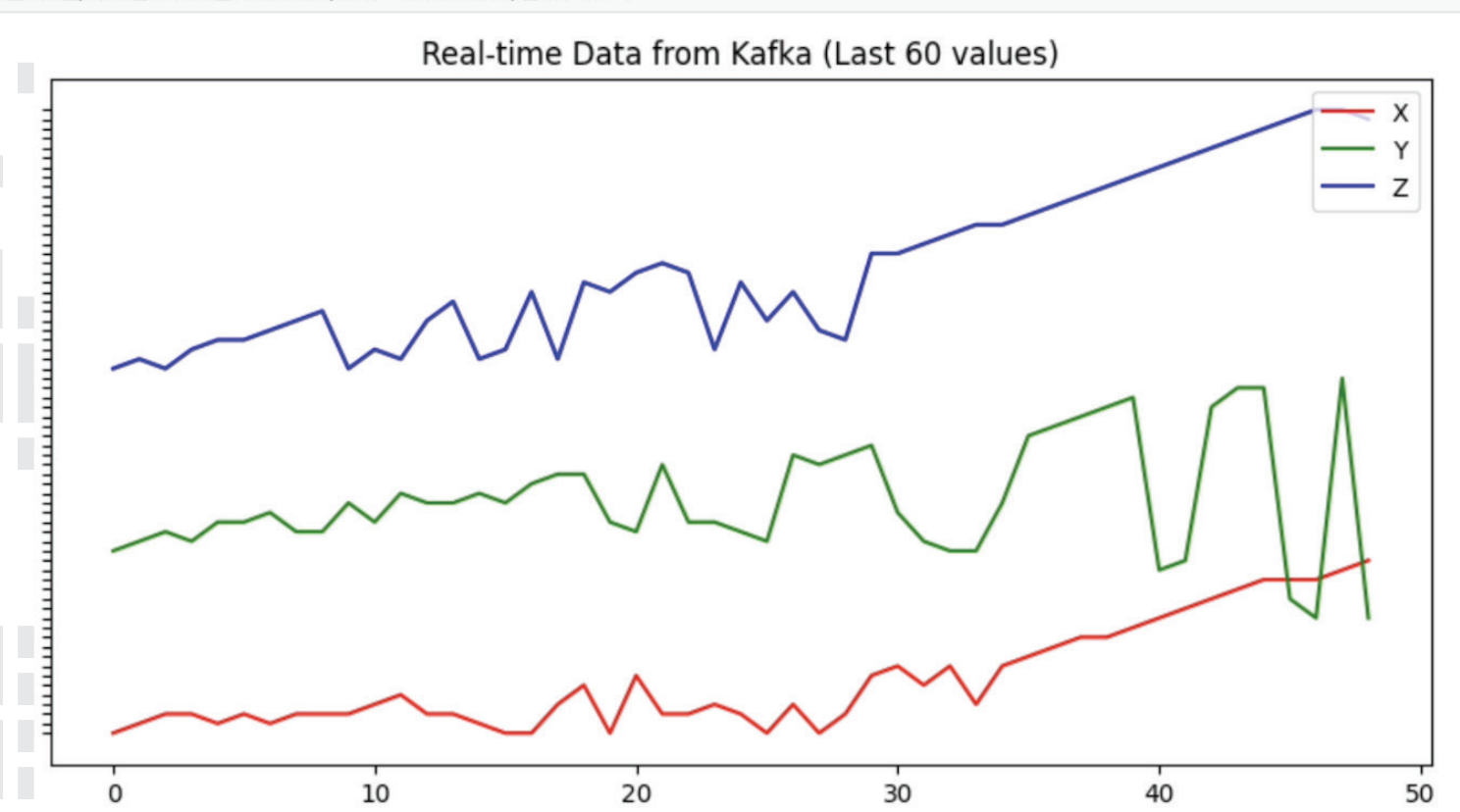
Running an ML to detect anomalies

```
from ndpearthscope import consume_and_plot_kafka_data_3d
consume_and_plot_kafka_data_3d(topic, bootstrap_server)
```



Get the RealTime data and Visualize it in 3D Space

```
#!: from ndpearthscope import consume_and_plot_kafka_data
consume_and_plot_kafka_data(topic, bootstrap_server)
```



Get RealTime Data and Visualize the movement from East-West, North-South and Up-Down