



# Using EDITO Datalab

# 15-Minute Tutorial for Marine Researchers

## **From finding services to running analysis - everything you need to know!**

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**For all the code and examples, check out the workshop GitHub repository**



# What We'll Cover (15 minutes!)

-  **Find Services** - Navigate to [datalab.dive.edito.eu](https://datalab.dive.edito.eu)
-  **Configure & Launch** - Choose RStudio, Jupyter, or VSCode
-  **Run Analysis** - STAC search, Parquet reading, Zarr data
-  **Personal Storage** - Connect, upload, and manage your data
-  **Live Demos** - See it all in action!

Perfect for researchers who want to get started quickly! 



# Whats in the EDITO Datalab?

**EDITO** = European Digital Twin of the Ocean

## 🧭 A European infrastructure that provides:

- Cloud computing services for marine research
- Access to curated marine datasets
- Analysis-ready data formats (Zarr, Parquet, COG)
- Personal storage for your data

## 🌐 We'll look at 3 kinds of services:

- **RStudio** - Statistical analysis and visualization
- **Jupyter** - Machine learning and data exploration
- **VSCode** - Multi-language development



# Find Services

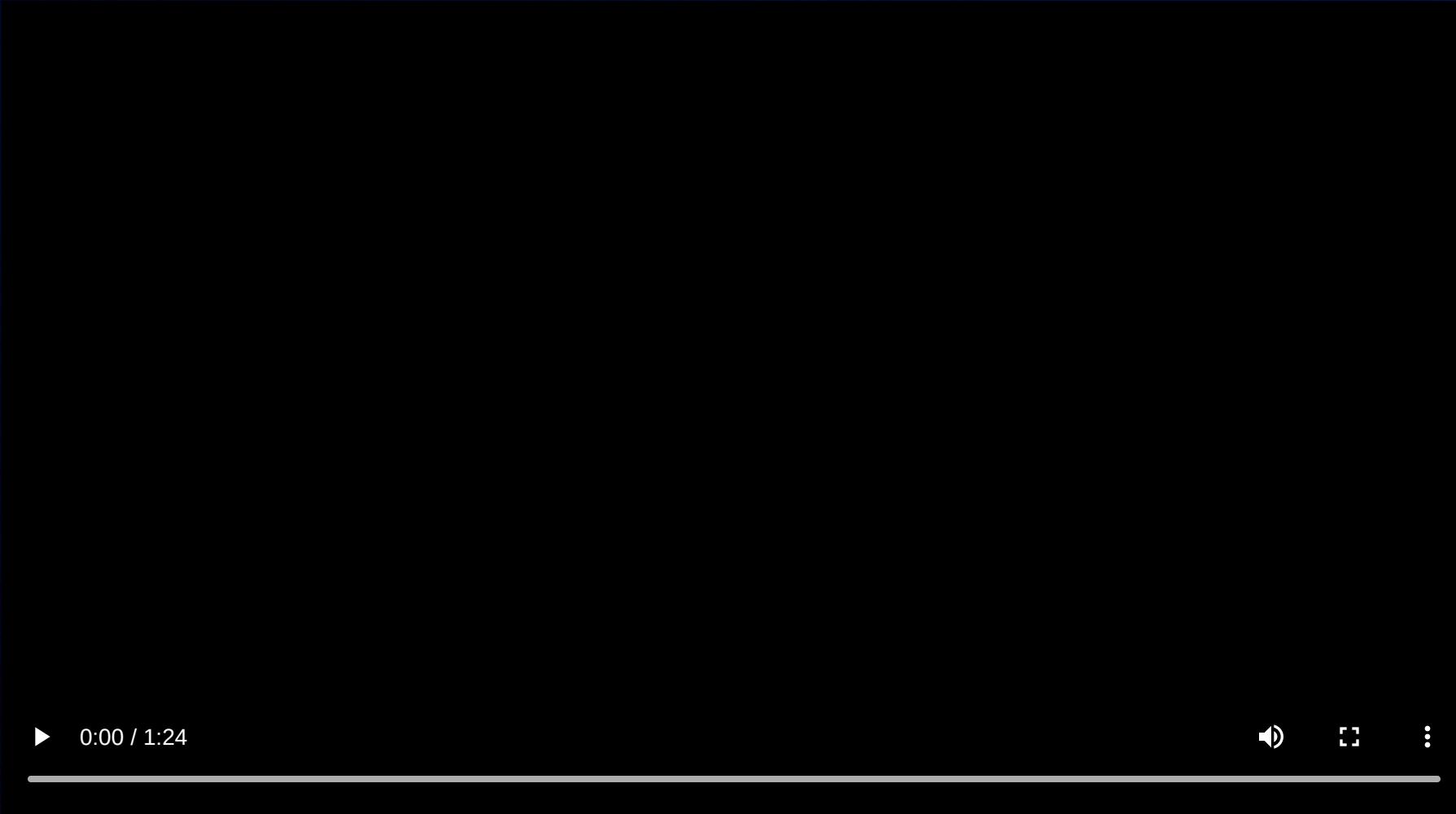
## Go to EDITO Datalab

Website: [datalab.dive.edito.eu](https://datalab.dive.edito.eu)

### What You'll See:

- Service catalog with available options
- Resource configuration options
- Launch buttons for each service
- Creating an autolaunch link (you can use this when you create [tutorials](#))

## 🎥 Navigating to [datalab.dive.edito.eu](https://datalab.dive.edito.eu) and browsing services



# ⚙️ Configure & Launch

## Choose Your Service

### RStudio Service

- **Perfect for:** Statistical analysis, spatial data, R users
- **Resources:** 2-8 CPU cores, 4-16GB RAM
- **Pre-installed:** R packages for marine research

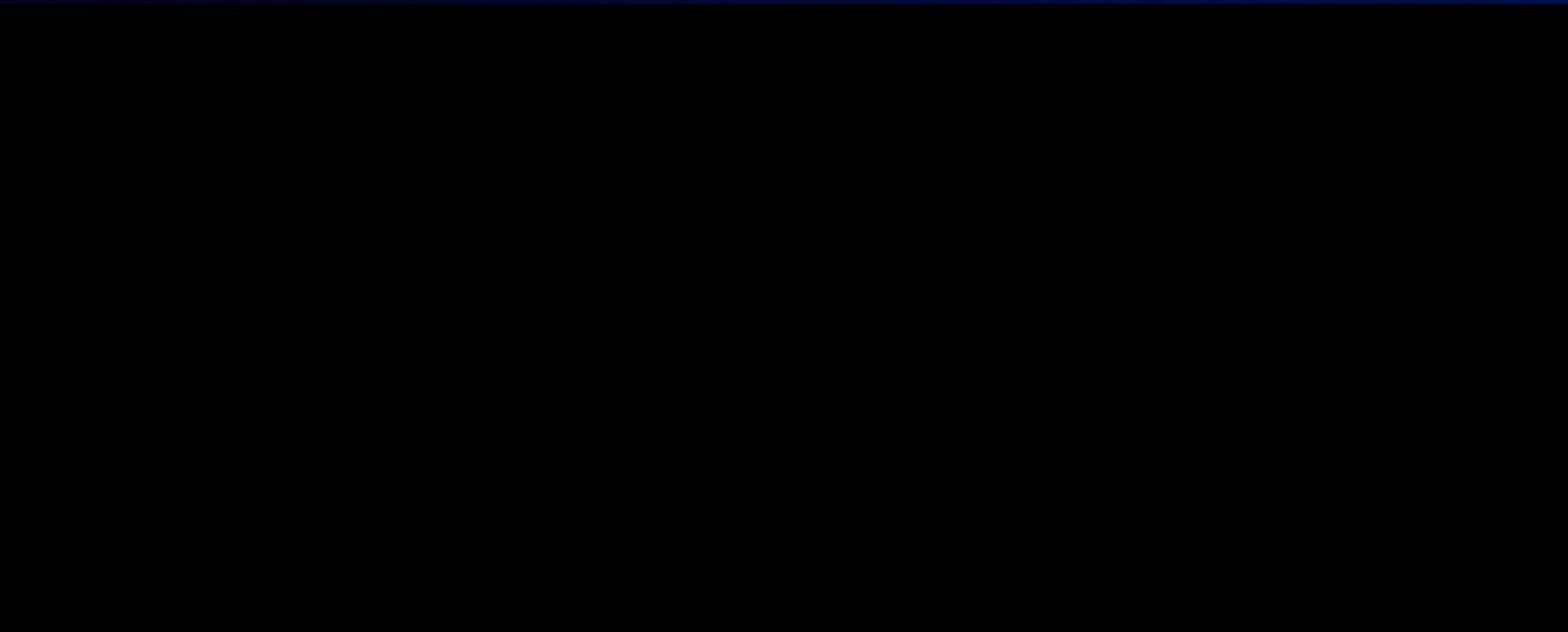
### Jupyter Service

- **Perfect for:** Machine learning, data exploration, Python users
- **Resources:** 2-8 CPU cores, 4-16GB RAM
- **Pre-installed:** Python packages (pandas, xarray, etc.)

## VSCode Service

- **Perfect for:** Multi-language projects, large codebases
- **Resources:** 2-8 CPU cores, 4-16GB RAM
- **Features:** Git integration, extensions, terminal

### 🎥 Launching VSCode Service in EDITO Datalab





# Run Analysis

## R Example - STAC Search & Parquet Reading

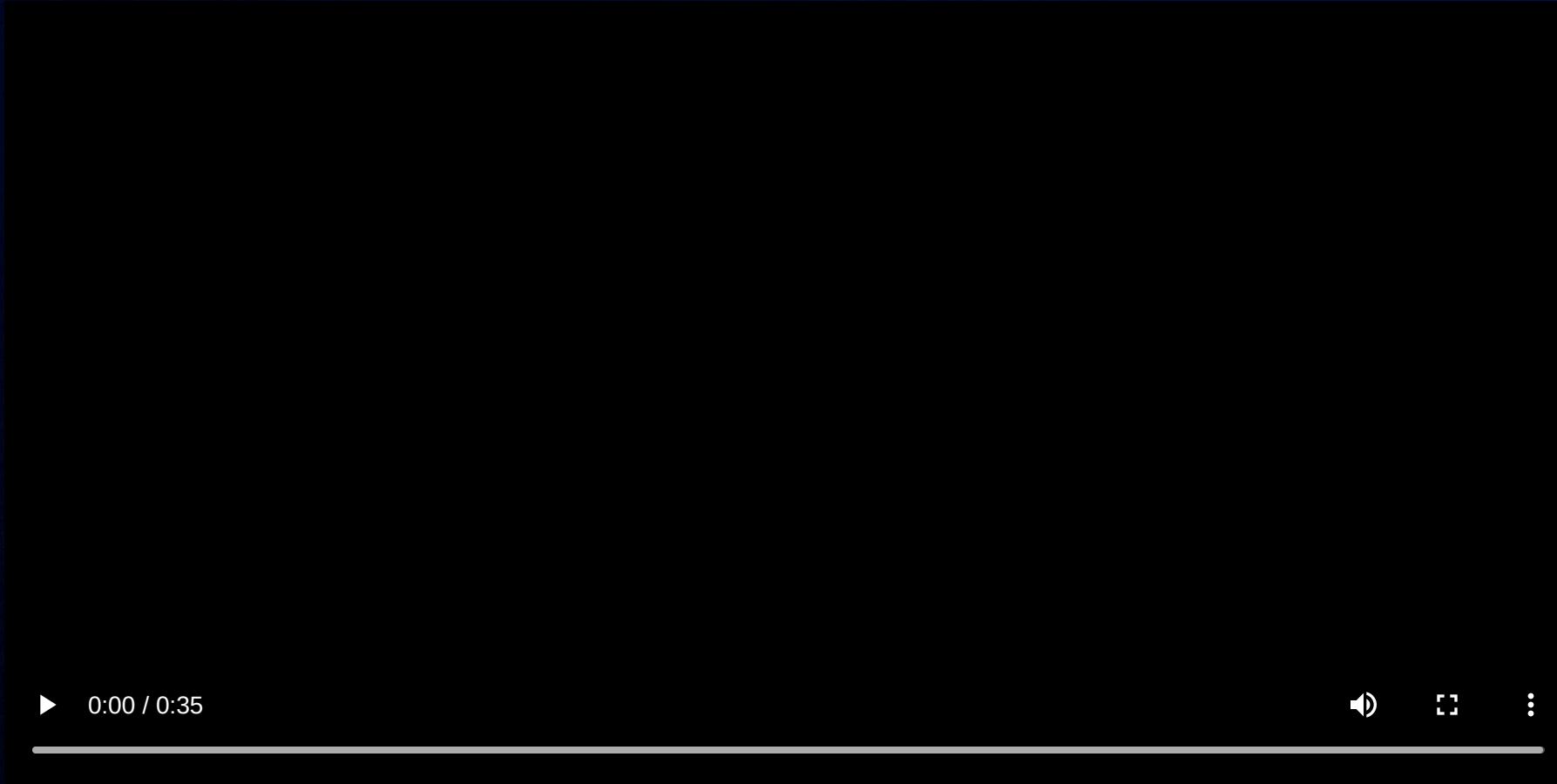
```
# Connect to EDITO STAC API
library(rstac)
library(arrow)
library(dplyr)

stac_endpoint <- "https://api.dive.edito.eu/data/"
collections <- stac(stac_endpoint) %>% rstac::collections() %>% get_request()

# Read biodiversity data
parquet_url <- "https://s3.waw3-1.cloudferro.com/emodnet/biology/eurobis_occurrence_data/eurobis_occurrences_geoparquet_2024-10-01.parquet"
biodiversity_data <- arrow::read_parquet(parquet_url) %>% head(1000)

# Filter for marine species
marine_data <- biodiversity_data %>%
  filter(grepl("fish|mollusk|algae", scientificName, ignore.case = TRUE))
```

## 🎥 Querying STAC using R in VSCode



# Python Example - Data Processing

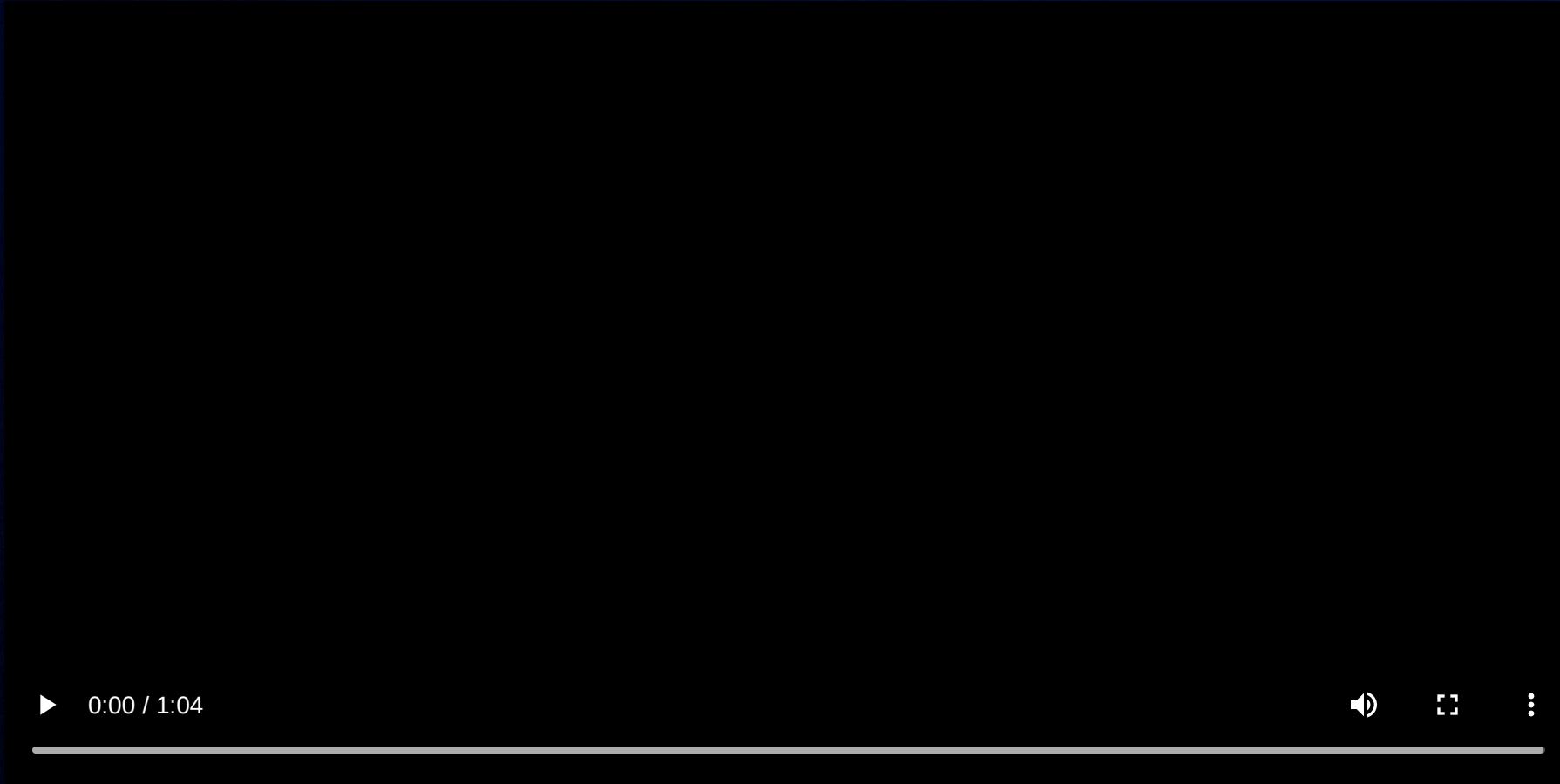
```
import pyarrow.parquet as pq
import s3fs
import pandas as pd

# Read parquet data
parquet_url = "https://s3.waw3-1.cloudferro.com/emodnet/biology/eurobis_occurrence_data/eurobis_occurrences_geoparquet_2024-10-01.parquet"
s3_path = parquet_url.split('s3.waw3-1.cloudferro.com/')[ -1]
fs = s3fs.S3FileSystem(endpoint_url="https://s3.waw3-1.cloudferro.com", anon=True)

parquet_file = pq.ParquetFile(s3_path, filesystem=fs)
biodiversity_data = parquet_file.read_row_groups([0]).to_pandas().head(1000)

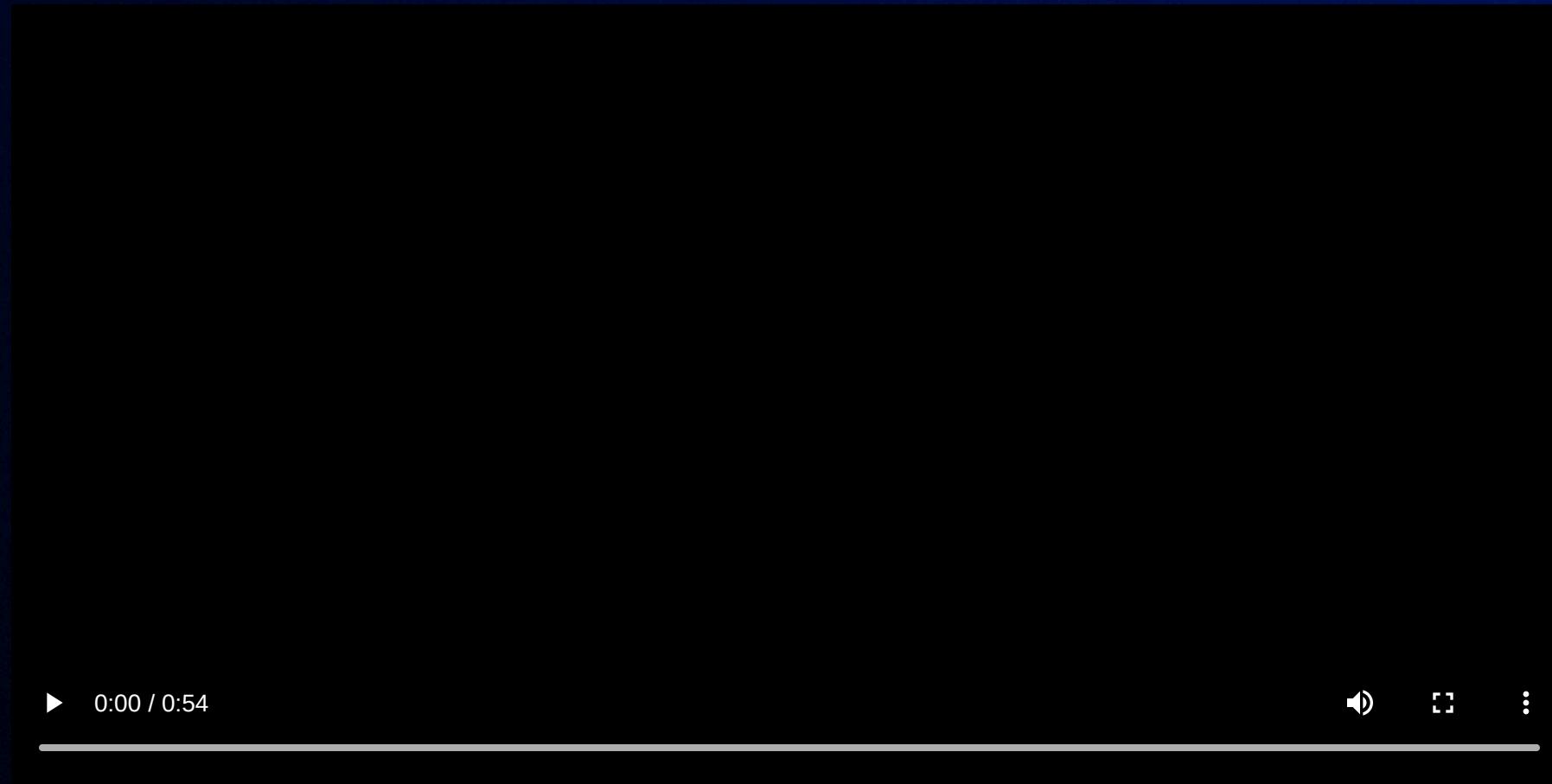
# Filter and process
marine_data = biodiversity_data[biodiversity_data['scientificName'].str.contains('fish|mollusk|algae', case=False)]
processed_data = marine_data.groupby('scientificName').agg({'decimalLatitude': 'mean', 'decimalLongitude': 'mean'})
```

# 🎥 Data Analysis using Python scripts



# Using your EDITO S3 Storage

🎥 Using MyFiles in an EDITO Service





# Saving into EDITO Storage

## Your Storage is Ready!

Your personal storage credentials are automatically available in EDITO services!

### R Example

```
# Check credentials and save data
if(Sys.getenv("AWS_ACCESS_KEY_ID") != "") {
  # Process and save data
  processed_data <- marine_data %>% group_by(scientificName) %>% summarise(count = n())
  write.csv(processed_data, "marine_analysis.csv", row.names = FALSE)

  # Upload to storage
  aws.s3::s3write_using(processed_data, FUN = write.csv,
                        bucket = "your-bucket", object = "marine_analysis.csv")
}
```

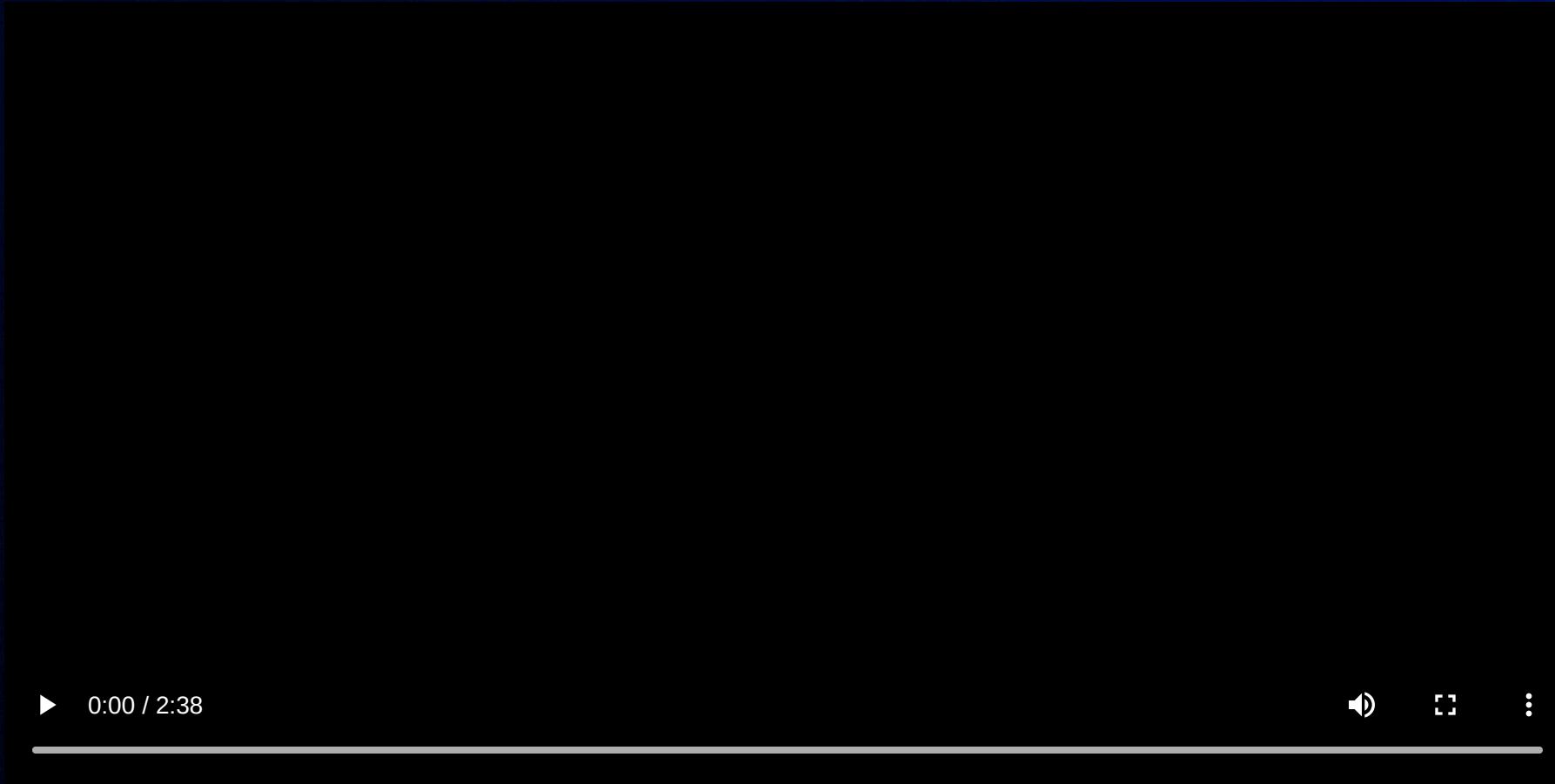
## Python Example

```
import boto3
import os

# Connect to storage
s3 = boto3.client("s3", endpoint_url=f"https://{{os.getenv('AWS_S3_ENDPOINT')}}",
                  aws_access_key_id=os.getenv('AWS_ACCESS_KEY_ID'),
                  aws_secret_access_key=os.getenv('AWS_SECRET_ACCESS_KEY'))

# Save and upload data
processed_data.to_csv('marine_analysis.csv', index=False)
s3.put_object(Bucket='your-bucket', Key='marine_analysis.csv',
              Body=processed_data.to_csv(index=False))
```

## 🎥 Save Data Analysis results to EDITO storage





# Complete Workflow

## 4 Simple Steps

1. **Find Services** → Go to [datalab.dive.edito.eu](https://datalab.dive.edito.eu)
2. **Launch Service** → Choose RStudio, Jupyter, or VSCode
3. **Run Analysis** → STAC search, read Parquet data, process results
4. **Save Data** → Upload to your personal storage (MyFiles)

## Key Benefits

-  **Marine Data** - Direct access to EDITO datasets
-  **Multiple Languages** - R, Python, and more
-  **Interactive** - Step-by-step guided workflows



# Try It Now!

## Get Started in 2 Minutes

1. Go to: [datalab.dive.edito.eu](https://datalab.dive.edito.eu)
2. Launch RStudio or Jupyter
3. Run the code examples from this presentation
4. Save your results to personal storage (MyFiles)

 **Questions?**

**Main docs and support**

Email: [edito-infra-dev@mercator-ocean.eu](mailto:edito-infra-dev@mercator-ocean.eu)

Documentation: [EDITO Tutorials](#)

Ready to dive into marine data analysis? 

