Geo-iNQUIRE

Virtual Training Course

# Tsunami-HySEA:

## Introduction & tips on installation (II)

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# Tsunami-HySEA

- Access to the Computing Services
- Graphical output
- Example in the Mediterranean
- T-HySEA webplatform.

# Connection with the VM or Computer Services

Normally the access to the Computer Services uses SSH protocol.

General access:

ssh -XY username@computer_name

Windows: Putty
OS-X: Terminal
Linux: Terminal

# Connection with the VM or Computer Services

Tips:

How to enable a graphical user interface (X-Windows or X11)?

Windows: Putty + Xming or MobaXterm
OS-X: Terminal + XQuartz
Linux: Terminal + X11

# Connection with the VM or Computer Services

In our case we can use:

-Web based ssh service provided by Google Cloud (no graphical interface)

- Gcloud tool with graphical connection.

Example:

./gcloud compute ssh --ssh-flag="-X" --zone "us-central1-a" "tsunami-hysea" --project "civic-abode-420411"

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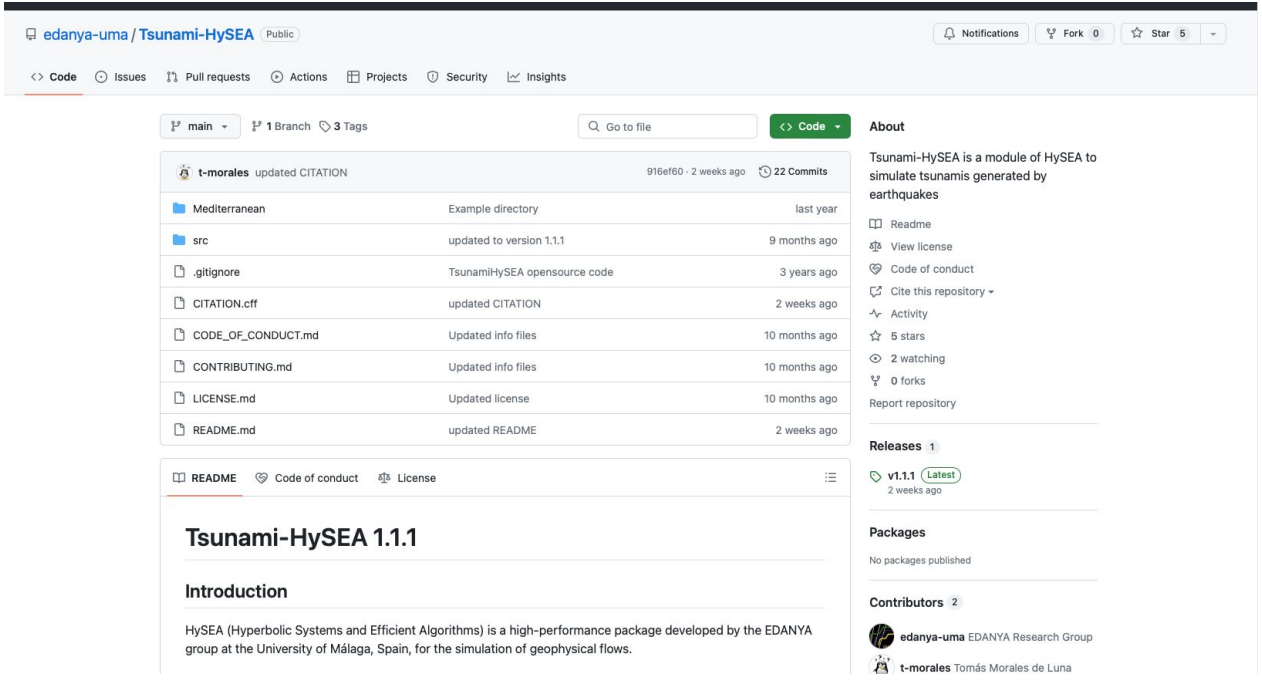
# Tsunami-HySEA: open source version



# Tsunami-HySEA: open source version

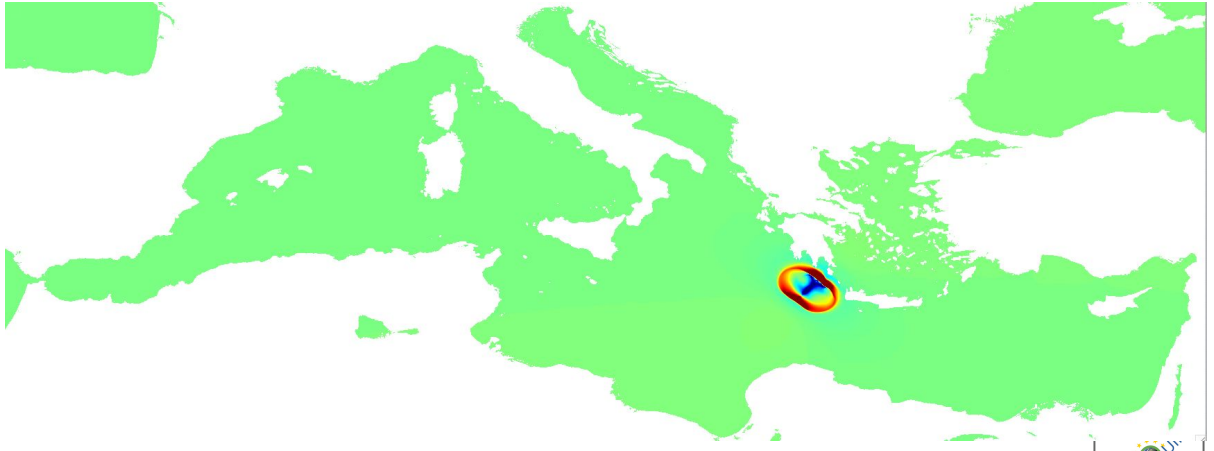
| Tsunami-HySEA open source | | | | |
|---|---|---|---|---|
| **Version** | **Subversion** | **Subsubversion** | **Release date** | **Main features** |
| 1 | 1 | 0 | abr-23 | Added the possibility to initialize the tsunami source with standard Okada |
| | | | | Added time series |
| | | | | Added reading of meshes in grd format |
| 1 | 1 | 1 | jun-23 | Corrected initialization of numPuntosSave in Problema.cxx so that it is always initialized |
| | | | | Corrected the precedence bug with the & operator in getKernelBlockSize |
| | | | | Fixed "length" in the help text when running the program without arguments |
| | | | | Added "Time series: yes/no" when displaying problem information |
| | | | | Added "return 1" if there is not enough GPU memory when reserving d_positionsVolumesSaved |
| | | | | Added initialize etaMinSavedPoints (and etaMax) in the else of the if after initTimeSeries |
| | | | | Moved start of timer to before getDeltaTIInitialLevel0 |
| | | | | Changed the value of "comments" and "references" from "" to " " in the output NetCDF files |
| | | | | Print Okada values in the output NetCDF files with 4 decimal places |

Current version of Tsunami-HySEA v4.3.1

# Running computations with Tsunami-HySEA

Example included in this version of HySEA:

- Mediterranean.grd
- mediterranean.txt



# Running computations with Tsunami-HySEA

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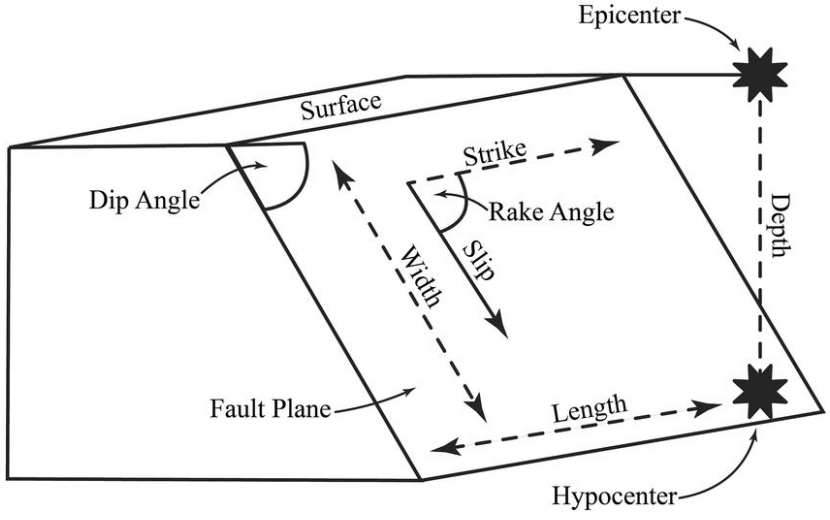


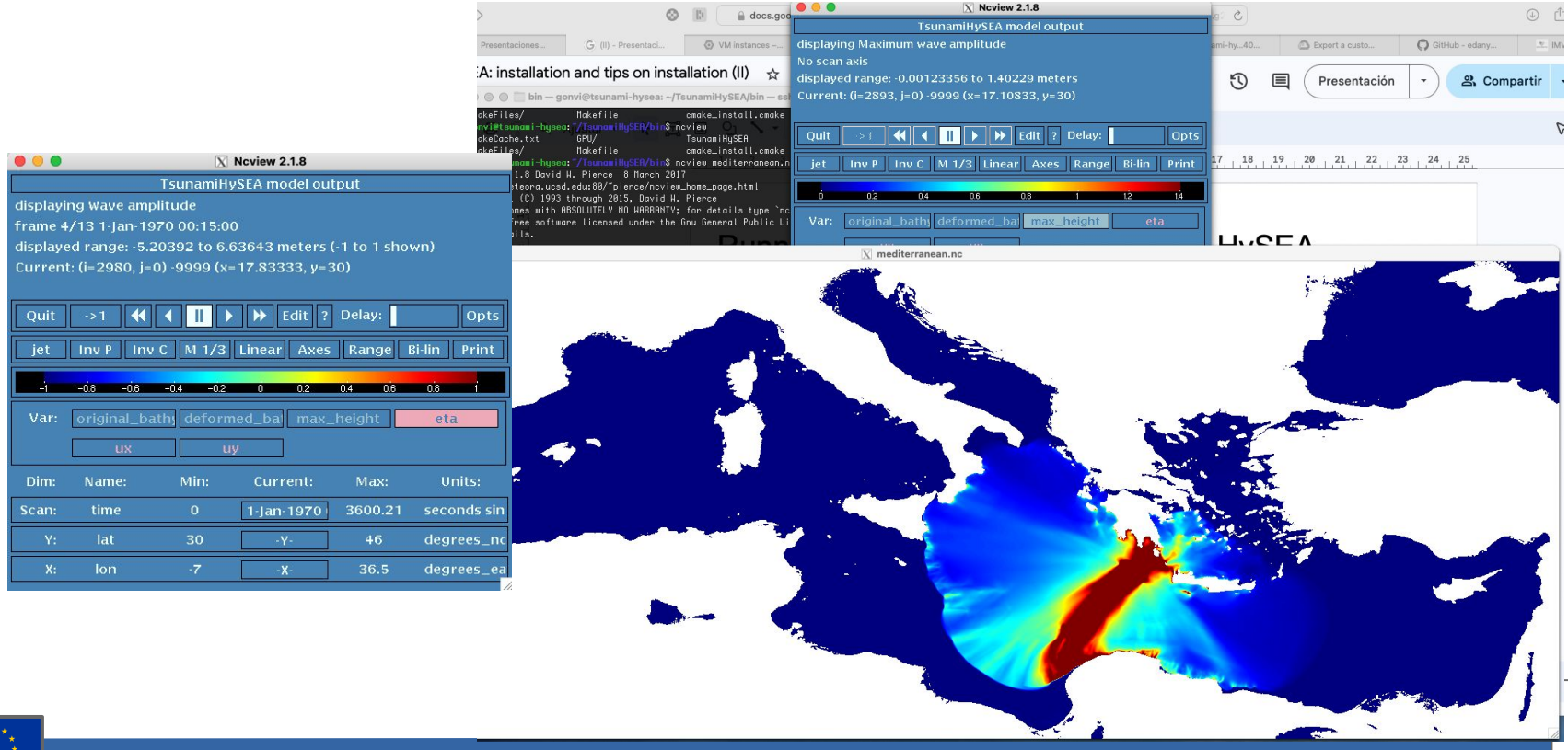
# Running computations with Tsunami-HySEA

bin — gonvi@tsunami-hysea: ~/TsunamiHySEA/Mediterranean — ssh ◂ gcloud.py compute ssh --ssh-flag=-X...

IW mediterranean.txt (Modified) Row 1 Col 36

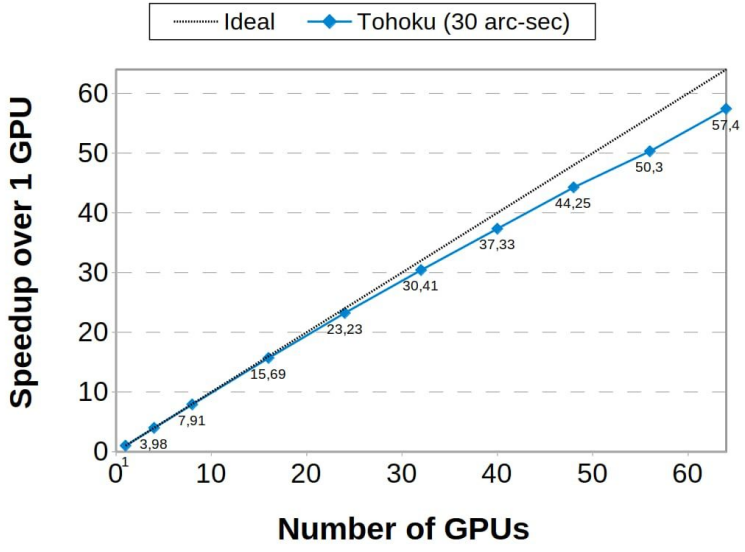
```
Mediterranean          # Experiment name
Mediterranean.grd      # Bathymetry file name
1                      # Initialization type (0: From file, 1: Standard Okada)
22.30 35.70 16.33 100.0 50.0 313.0 35.0 90.0 8.40  # Lon-epicenter Lat-epicenter Depth-hypocenter Fault-length
mediterranean          # NetCDF file prefix for level 0
1                      # Number of levels
1                      # Upper border condition (1: open, -1: wall)
1                      # Lower border condition
1                      # Left border condition
1                      # Right border condition
14401.0                # Simulation time (sec)
3600                   # Saving time of NetCDF files (sec) (-1: do not save)
0                      # Read points from file (0: no, 1: yes). Used for time series
0.5                    # CFL
5e-3                   # Epsilon h (m)
20                     # Threshold for the 2s+WAF scheme (m)
0.2                    # Stability coefficients for each level, starting from level 0
0.03                   # Water-bottom friction (Manning coefficient)
100                    # Maximum allowed velocity of water
100000                 # L (typical length)
1000                   # H (typical height)
```

# Running computations with Tsunami-HySEA

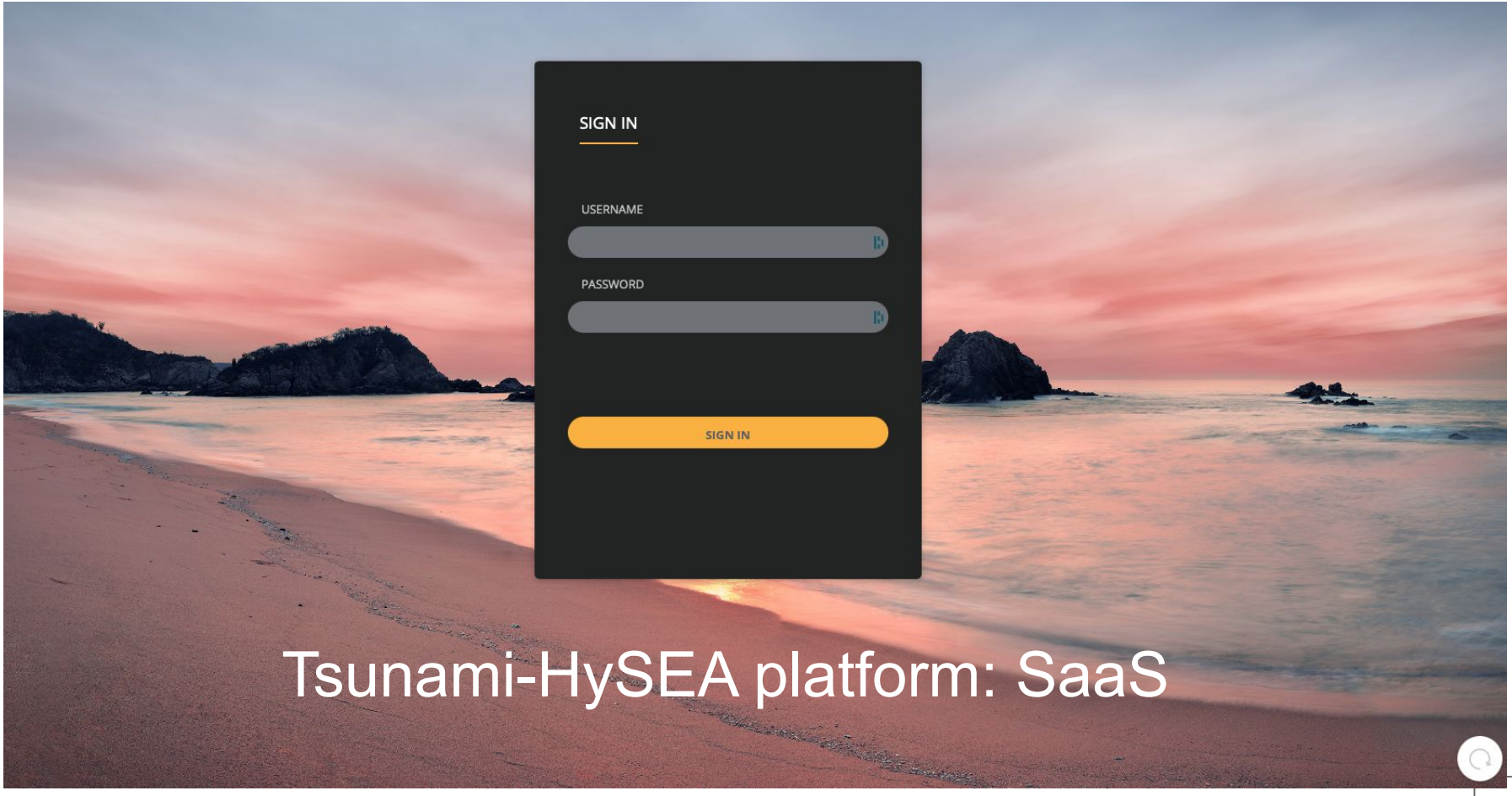


# Other Tsunami-HySEA features

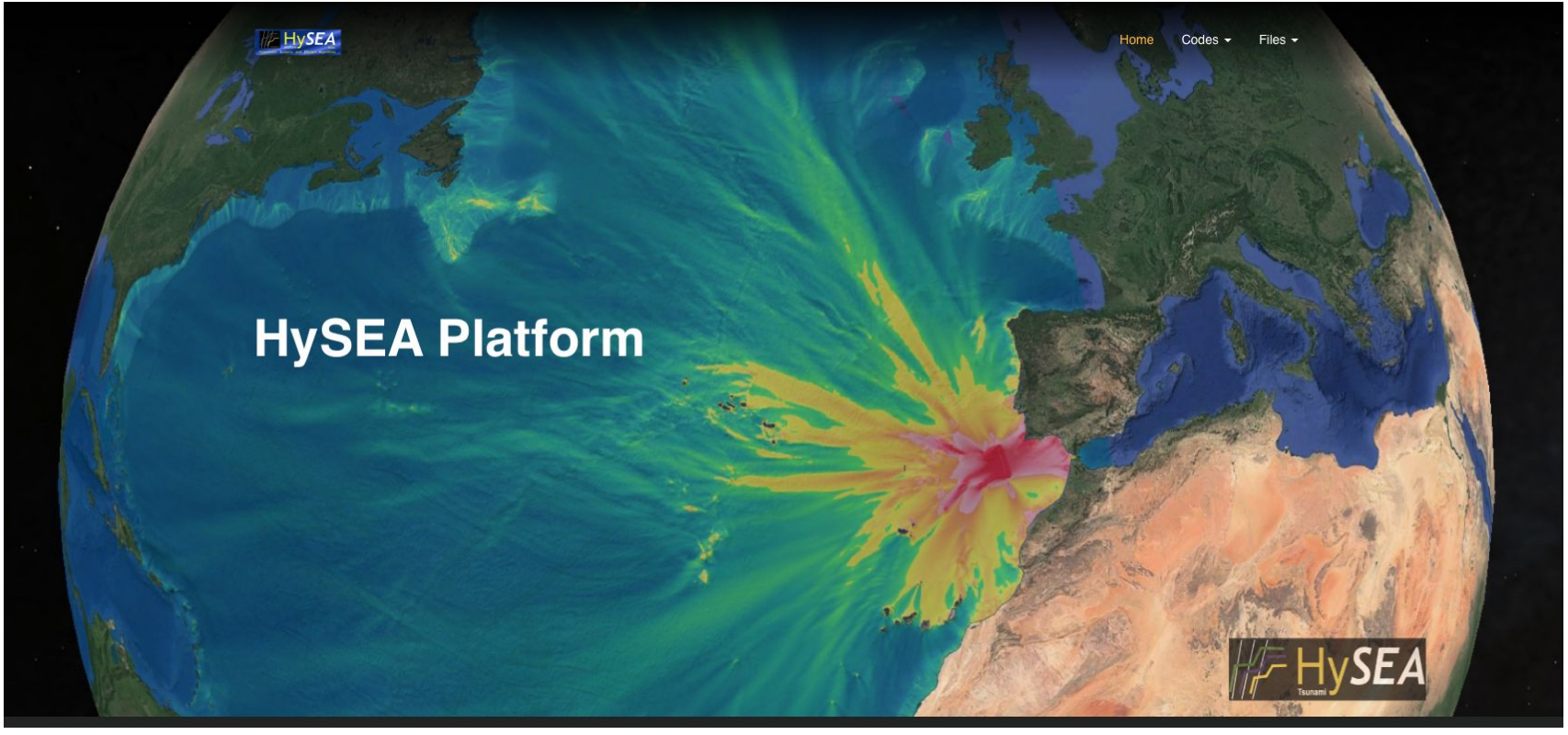
- MultiGPU (load balancing)
- Multi-Okada
- Nested Grids
- MonteCarlo version
- Async-writing, Variable friction, Gaussians, Triangular faults, Kajiura filter, etc…




Example in the whole Pacific with a 336,8M cells grid




# Tsunami-HySEA platform: SaaS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Files
HySEA Platform
HySEA
Tsunami

# Thank you for your attention!

Geo-INQUIRE is a joint effort of 51 institutions

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