

ChEESE

HySEA Status

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EuroHPC
Joint Undertaking



Introduction

- T-HySEA: Tsunamis simulated by earthquakes.
- L-HySEA: Tsunamis simulated by landslides.
- Main functionalities: MPI-CUDA, nested meshes, asynchronous file writing, multiple Okada faults at any time, NetCDF output, time series.
- T-HySEA and L-HySEA open source versions available in the HySEA web page:

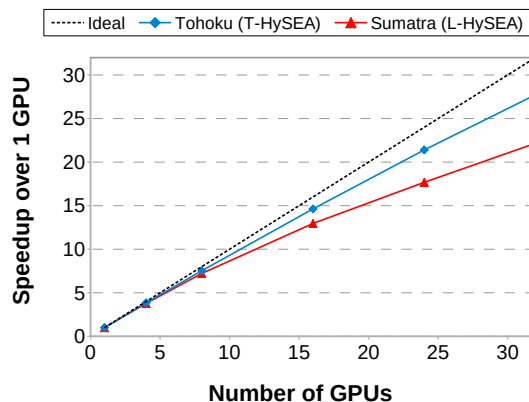
<https://edanya.uma.es/hysea/index.php/download>

- Main contact: Jorge Macías.
- People involved in WP2: Jorge Macías, Marc de la Asunción, Manuel J. Castro.



Current Performance

- Improved load balancing by recomputing the weights.
- Asynchronous transfers between CPU and GPU memories.
- Direct GPU to GPU memory transfers.
- Compressed NetCDF output in single precision except lon-lat.
- T-HySEA Monte Carlo version allowing multiple simulations, one per GPU.
- Scaling at Marconi-100 (NVIDIA V100):



Portability

- T-HySEA and L-HySEA are implemented in MPI and CUDA.
- Currently only NVIDIA GPUs are supported.
- A porting to SYCL is planned to support GPUs of different vendors.
- No current mini-apps.

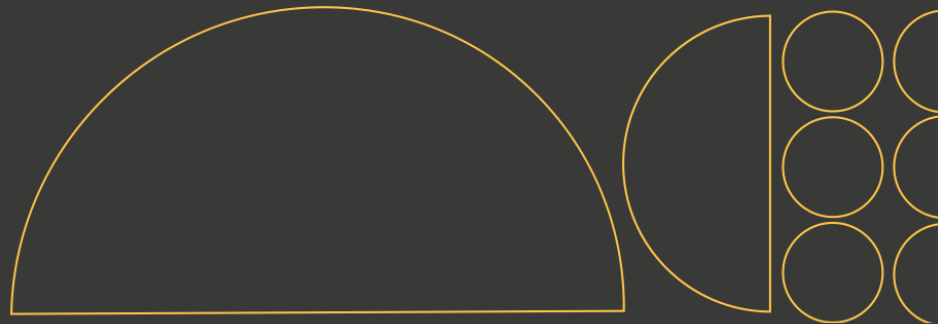


Future Work

- A dispersive version of T-HySEA with nested meshes.
- Meteo-HySEA for the simulation of meteotsunamis.
 - In a later stage, coupling it with real atmospheric data.
- mini-HySEA app.
- PTHA in Pilot Demonstrator PD3 (WP5).



Thank you!



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<http://cheese2.eu>



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