



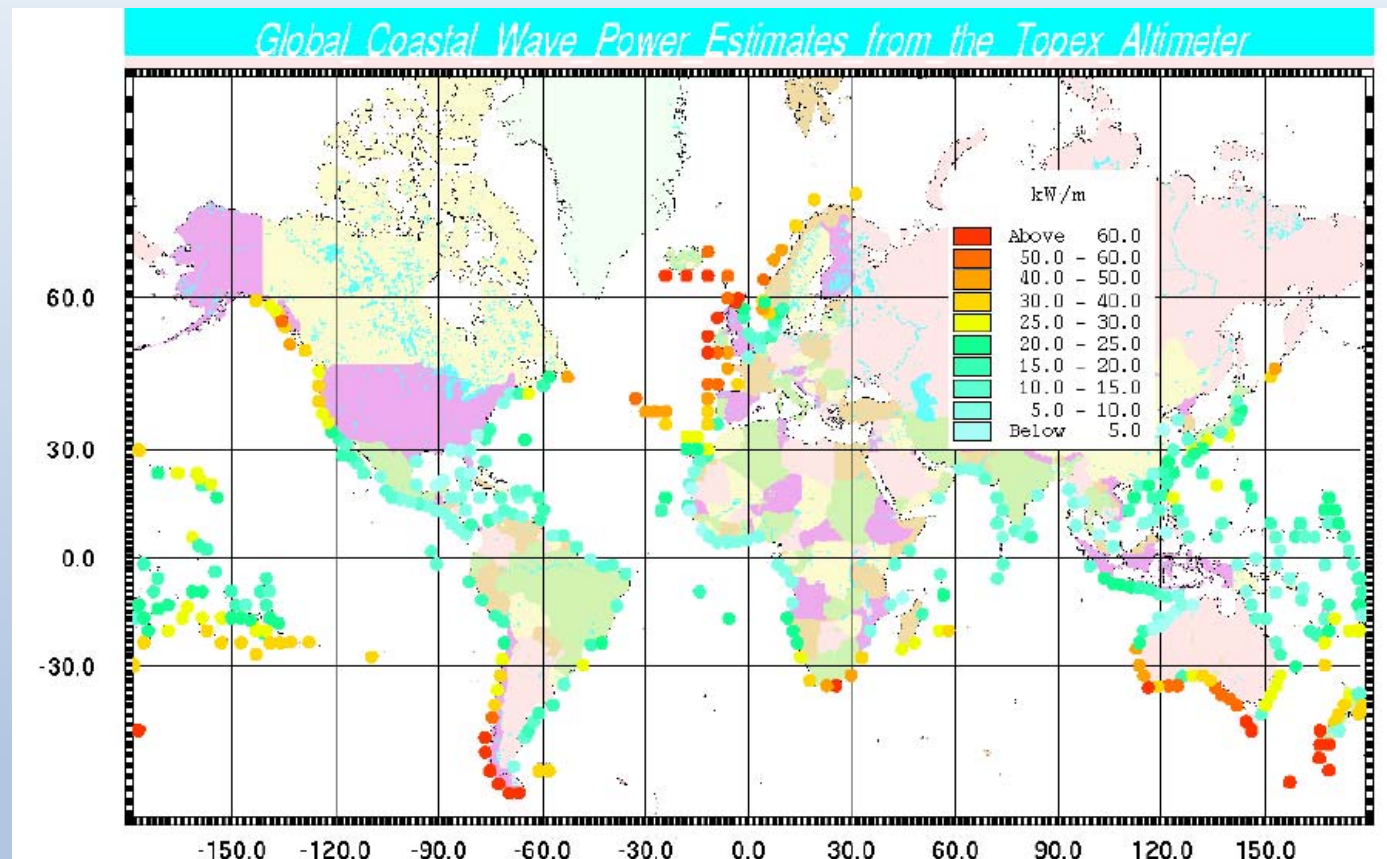
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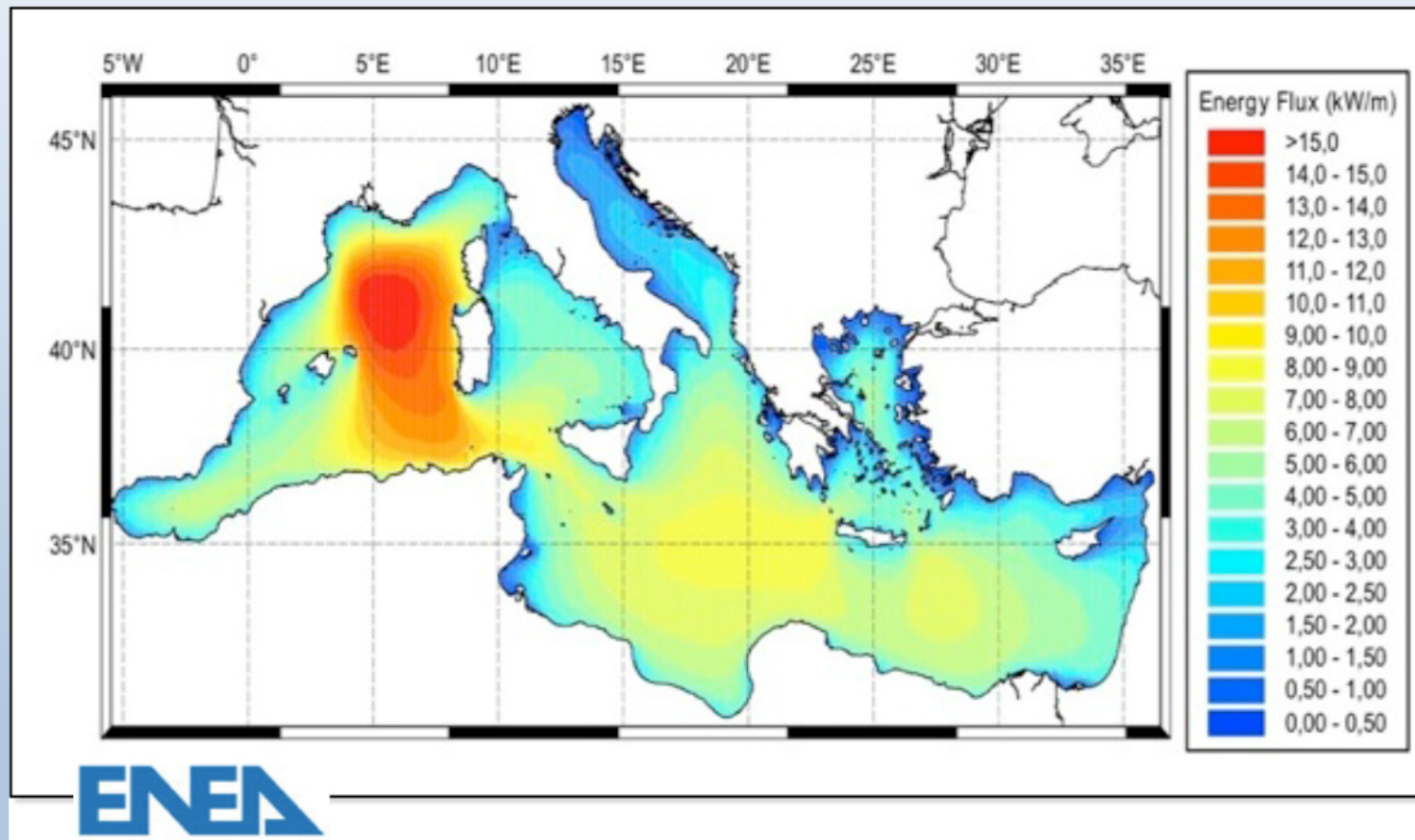
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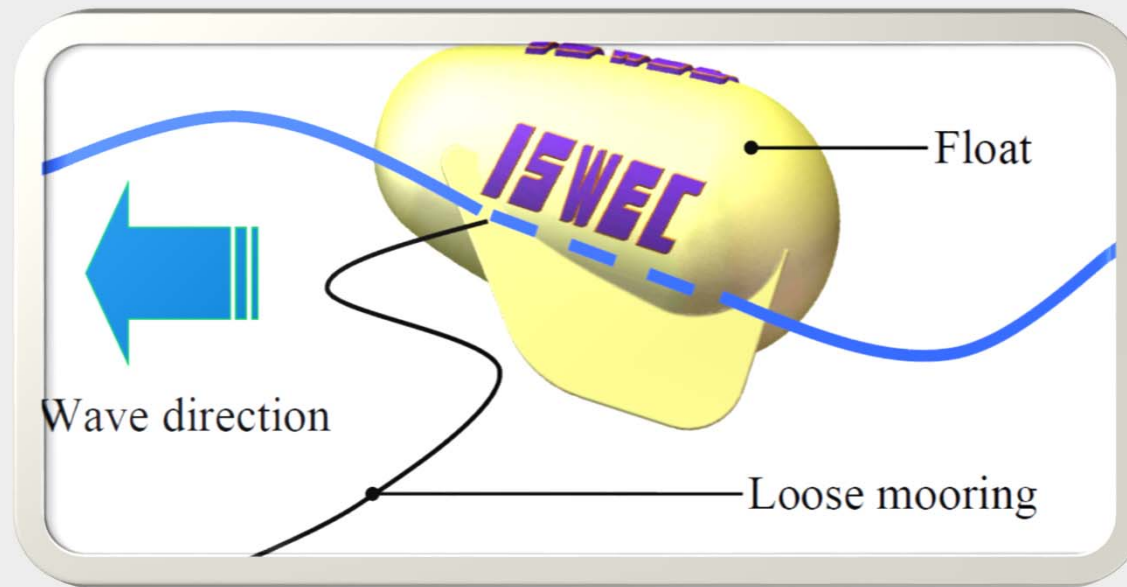
Wave Power Group

Global Average Wave Power Levels



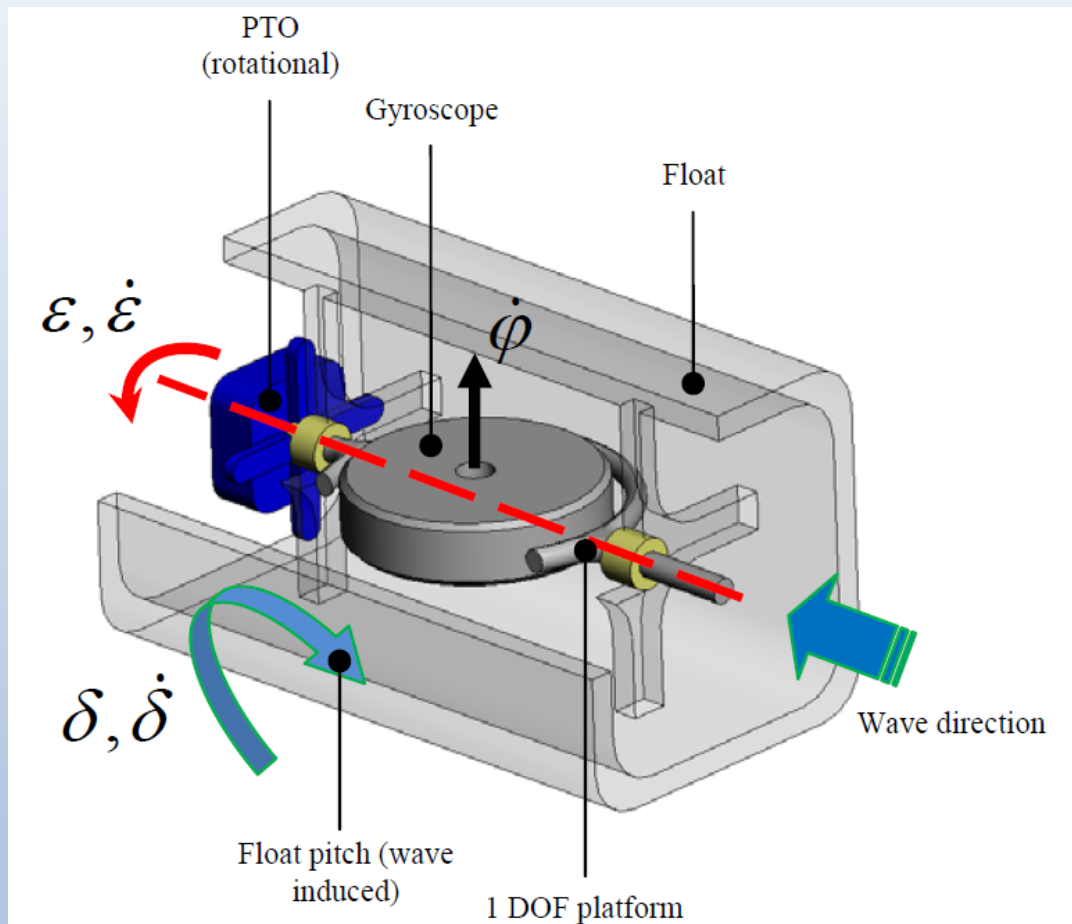
Mediterranean Average Wave Power Levels





ISWEC (Inertial Sea Wave Energy Converter) is a system able to convert wave power into electrical power thanks to gyroscopic effects. ISWEC is mainly composed of a buoy loosely moored to the seabed. Inside the buoy a gyroscopic system transforms the hull motion into electricity.

ISWEC doesn't need to use mechanical moving parts exposed to sea water or spray to produce power.



The pitching motion δ of the buoy combined with the spinning velocity of a flywheel carried inside the buoy creates a torque along the precession coordinate ε . The gyroscopic torque drives a PTO system producing electricity.

The 1 DOF device must be aligned towards the incoming wave to harvest power.



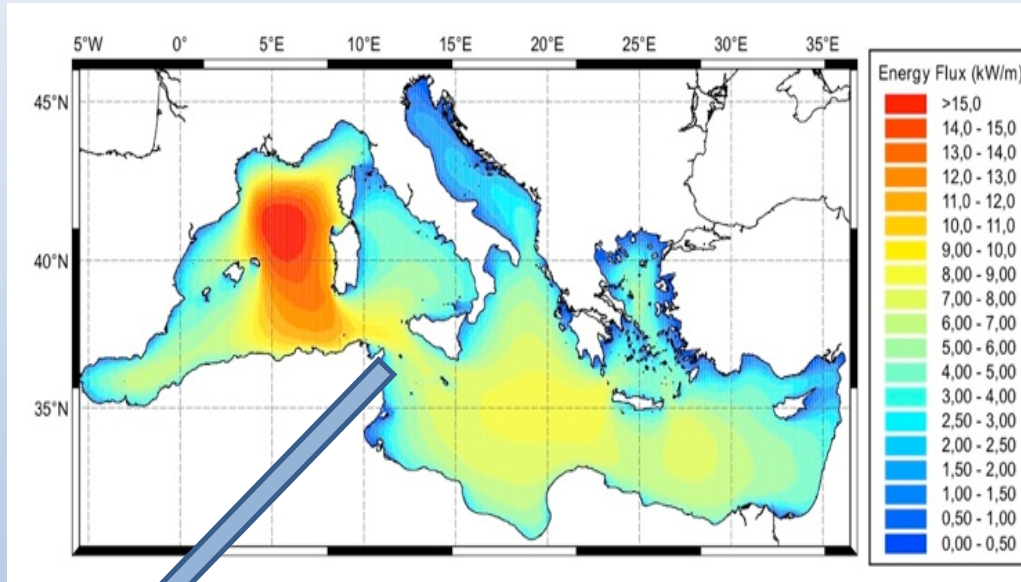
1:8 Prototype tank test
CNR-INSEAN Wave Tank

The system exploits the angular momentum of a spinning flywheel to drive a generator and convert wave power into electric energy

Cavalcando l'onda lunga

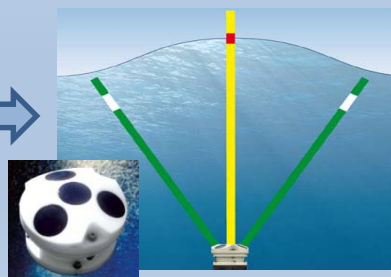
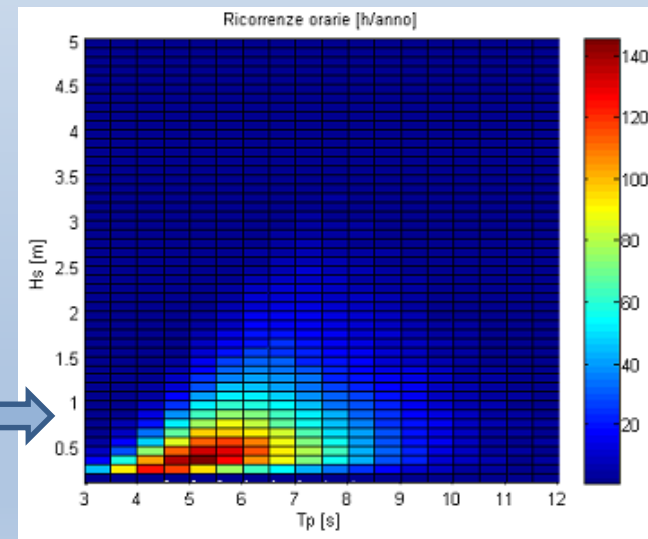
PROGETTAZIONE FULL SCALE

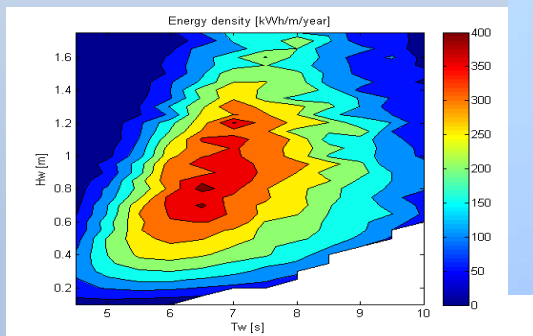
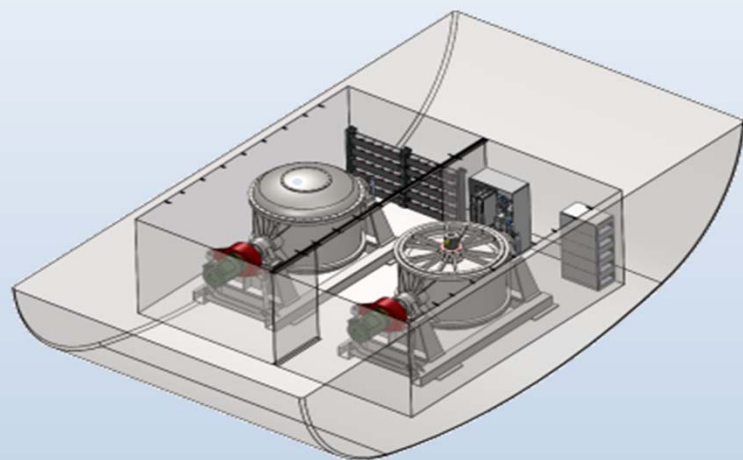
Analisi della risorsa



Modello

Scattering Table





Costruzione

Massa

- Scafo: 60 t
- Gyro: 60 t
- Zavorra: 180 t
- Totale: 300 t

Sviluppo

Dimensioni fuori tutta

- Larghezza: 8 m
- Lunghezza: 15.3 m
- Altezza: 4.5 m
- Pescaggio: 3 m

Area marina

- Lat 36° 49' 39" N
- Long 11° 55' 20" E

Sperimentazione

- | | |
|-----------------------------|-----------------|
| Risorsa presso Pantelleria: | 62.5 MWh/m/year |
| Producibilità: | 250 MWh/year |

Gyroscopic unit under construction

Gyro bearings
lubricating circuit

Gyroscope

Gearbox &
PTO

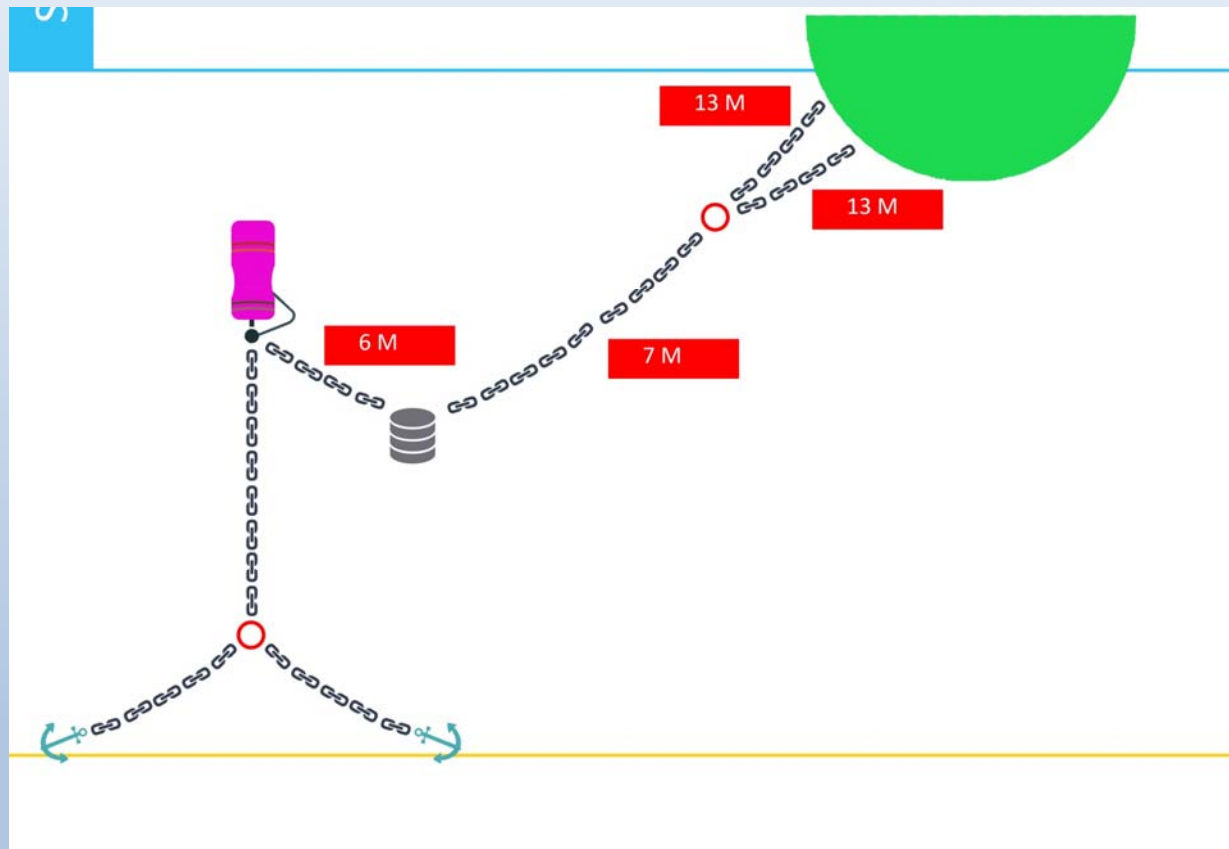
Sea water
cooled
resistances



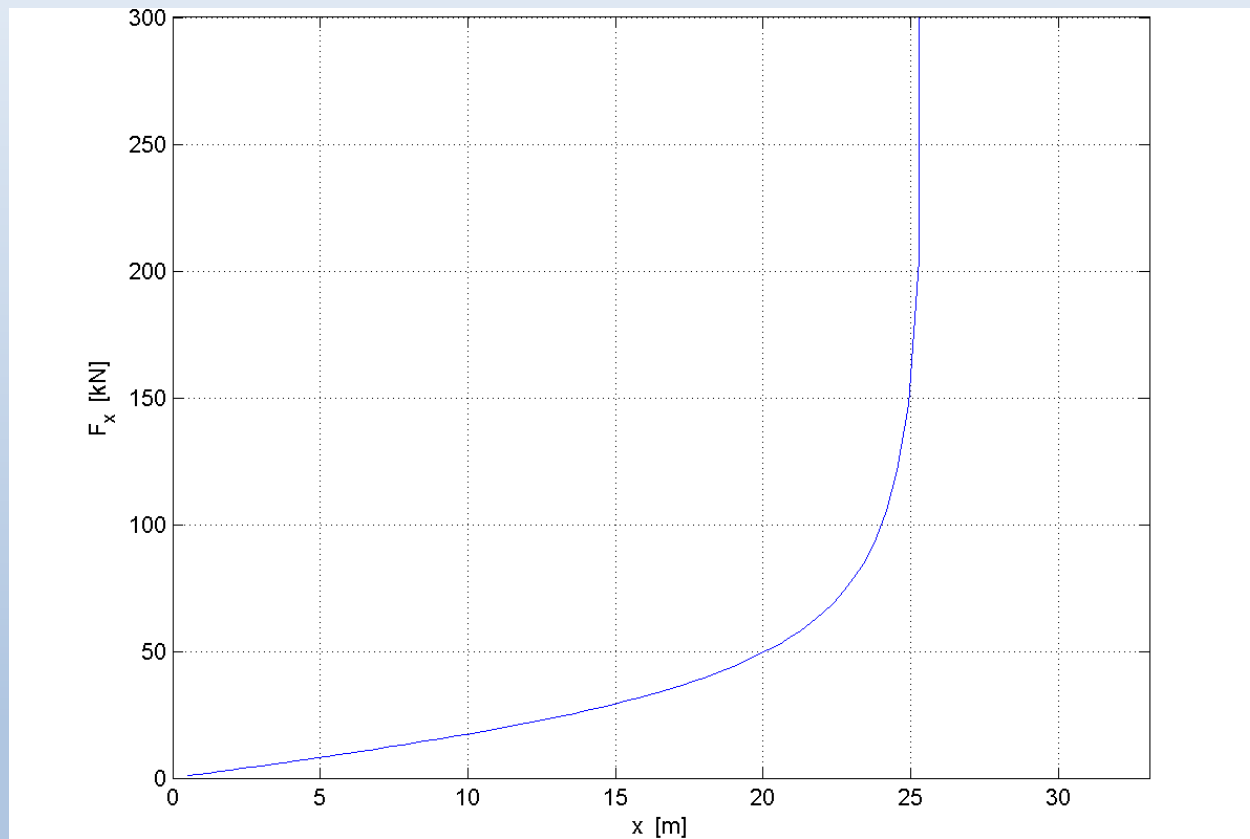


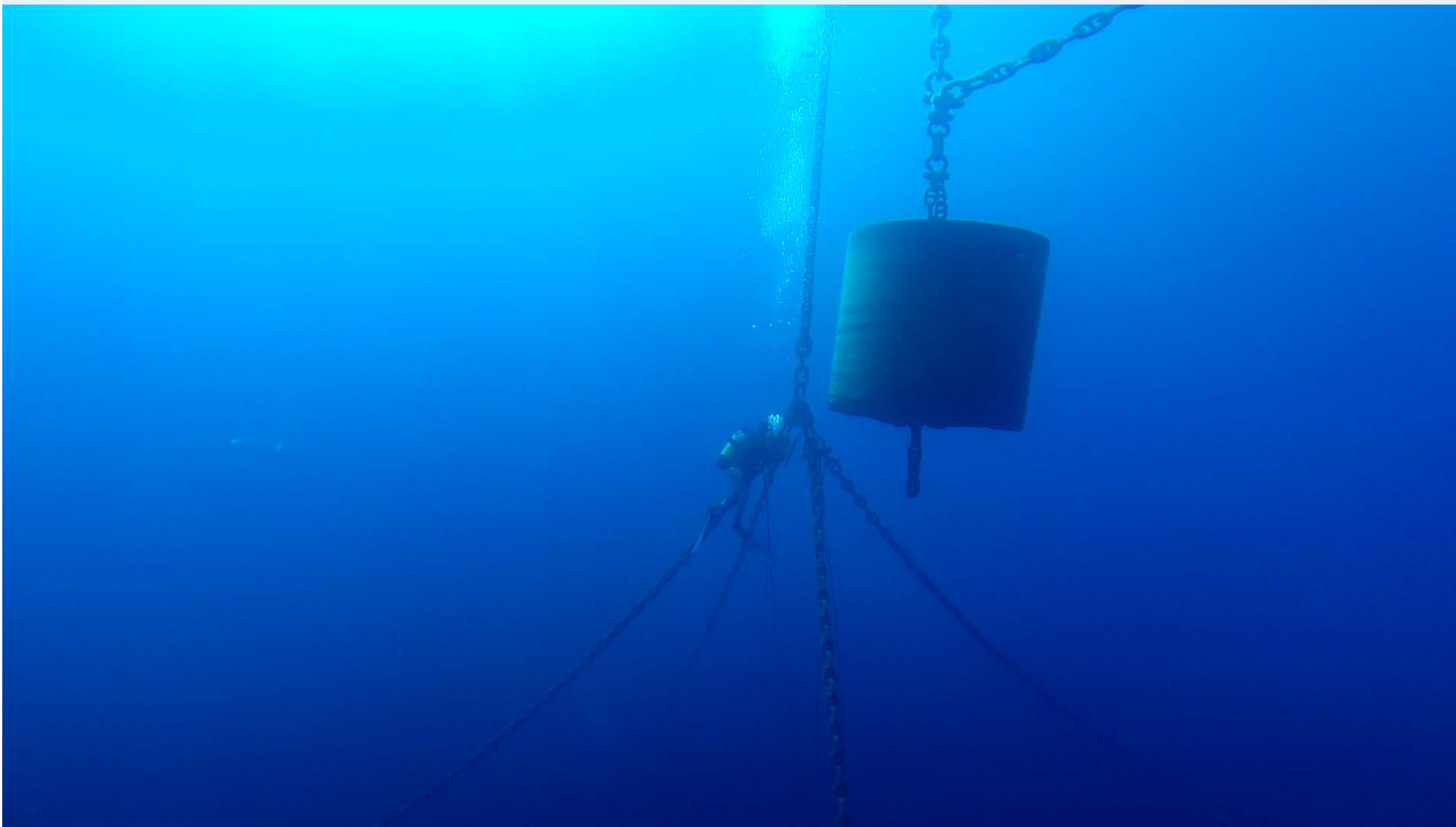


Mooring Layout

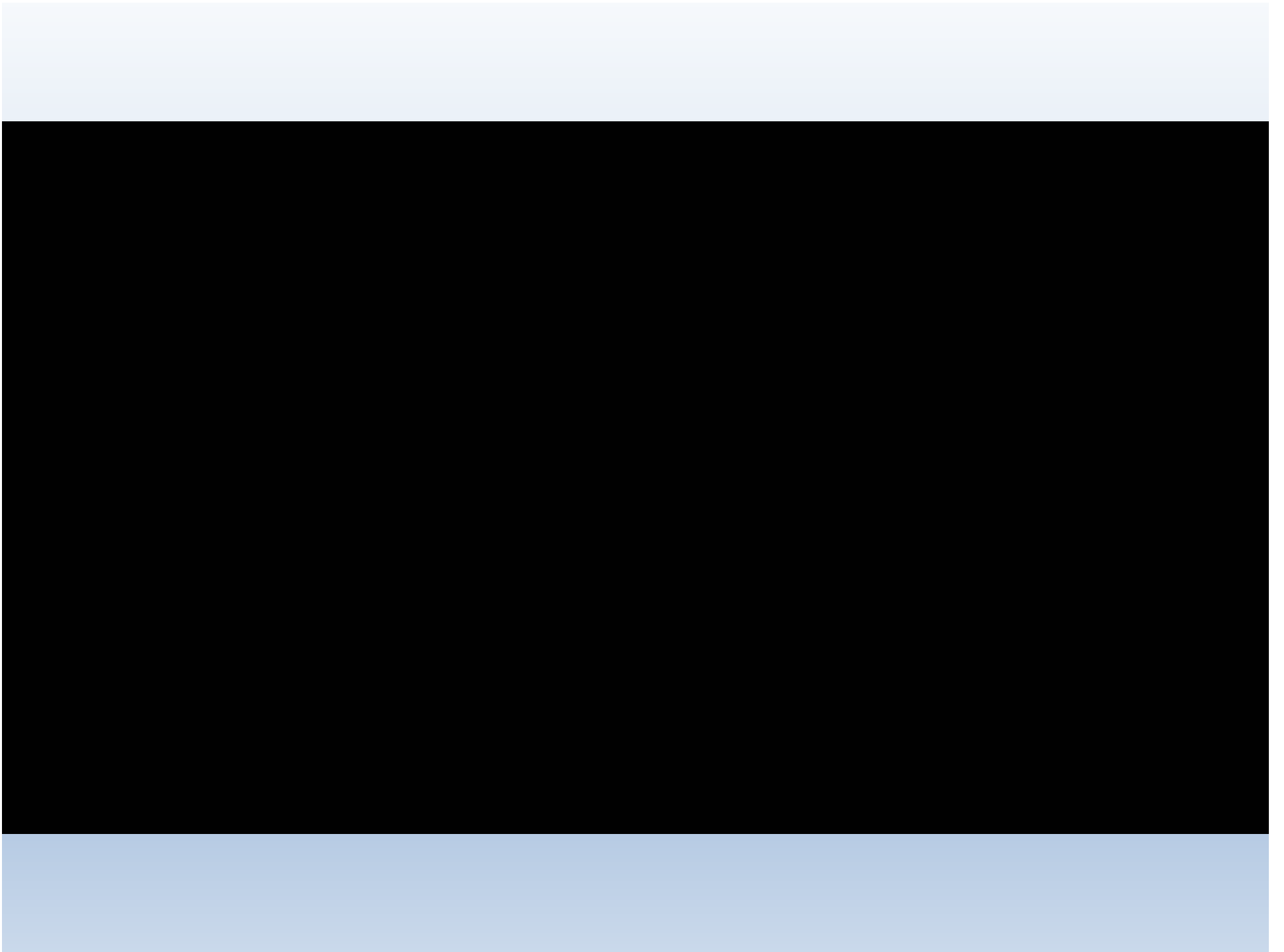


Non Linear hardening characteristics









Andamento temporale dell'Altezza Media Significativa (H_s).

