



Name: **Yann Moguen**

Email: [yann.moguen@univ-pau.fr](mailto:yann.moguen@univ-pau.fr)

Partners/Funding: E2S UPPA, chaire HPC-Waves

Status: Enseignant-Chercheur contractuel - started in March 2021

## Nearshore Wave Modeling

### Context

The Chaire HPC-Waves focuses on the theoretical and numerical development of nearshore wave models with attention to high performance computing. The goal is to improve accuracy and speed of numerical wave models to obtain a representative and complete description of coastal wave processes and a better understanding of runup, impact on structures, as well as potential resources for MRE extraction. Our work is complemented by field and laboratory studies. In close collaboration with the Communauté d'Agglomération Pays Basque, the Chaire helps finding integrated solutions for mitigation of wave-driven coastal hazards and investigating local MRE potentials.

### Details

The tasks involve the development of numerical models, benchmarking and user-oriented documentation of the numerical codes developed within the Chaire, as well as data archiving, management, and statistical analyzes of computed and measured data.

More specifically, the following topics, related to my previous activities on the development of algorithms and schemes for the simulation of flows at any Mach number, are developed:

- Control of the level of dispersion after finite difference discretisation of the Nowgu and Serre-Green-Naghdi equations
- Low diffusion flux schemes
- Implicit method for Boussinesq models at all level of the Froude number
- Non-reflective boundary conditions

My work also consists in setting up a Gitlab project to improve collaboration between people developing and using the Chaire's tools.