



The NEMO Ocean Model

- **Nucleus for European Modelling of the Ocean**
 - State-of-the-art modelling framework
 - Supports both research activities and forecasting services
 - Developed by a European consortium

(Source: <https://www.nemo-ocean.eu/>)

- **NEMO-OCE**
 - Models both the ocean thermodynamics and dynamics
 - Solves primitive equations
- **NEMO-ICE (or SI3)**
 - Models both the sea-ice thermodynamics and dynamics, brine inclusions and subgrid-scale thickness variations
- **NEMO-TOP**
 - Models the on- and offline oceanic tracers transport and biogeochemical processes using PISCES

- **NEMO is distributed with several reference configurations**
 - Easy initial testing for new users
 - Validation of new developments for experienced developers
- **Instructions are found in**
<https://forge.ipsl.jussieu.fr/nemo/chrome/site/doc/NEMO/guide/html/configurations.html>
- **The configuration selected for the competition is GYRE_PISCES**
 - Includes three components (OPA, SI3 and PISCES)
 - Does not require additional input files

- **GYRE_PISCES**
 - Idealized configuration of a system of double gyres in the Northern hemisphere
 - Beta-plane approximation
 - Regular 1° horizontal resolution, 31 vertical levels
 - Coupled with the PISCES biogeochemical (BGC) model
- **Running GYRE_PISCES as a benchmark**
 - Only two parameters need to be adjusted
 - Physical meaning of results is limited

- **Guidelines for building and running NEMO in the GYRE_PISCES configuration will be provided to the competing teams**
 - It includes instructions for required support libraries (HDF5, NetCDF, XIOS)
- **NEMO uses the MPI library for distributing the computational work and communicating among the processes**
- **Domain decompositions in NEMO are not arbitrary**
 - Not all values of the total number of MPI ranks result in a valid decomposition
 - If the total number of MPI ranks cannot be factored into a valid decomposition, NEMO will provide a list of suitable decompositions requiring nearby values of the invalid total number of ranks

Thank You

