

## Abstract

The goal of this final task is to measure the parallel performances using OpenMP for surface gravity waves simulation. The mathematical model used is a non-hydrostatic 2D with a closed domain encompassing a water wave with staggered grid scheme [6, 4]. Here, the non-hydrostatic model is used to describe fluid flow. The discretization of pressure, horizontal and vertical velocity given in staggered grid in Arakawa grid. Prediction and correction steps are used as well as S.O.R methods for obtaining convergent numerical solutions. The results are shown in two profiles, the surface waves and pressure profile. The two measurements of parallel computing which are speedup and efficiency are presented.

**Keywords:** Parallel measurements, surface gravity waves, Arakawa grid, speedup, efficiency, OpenMP.