

# Approche Informatique de l'optimisation de code sur nympha

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## Modélisation opérationnelle en Méditerranée Optimisation du code MARS3D

Under the SOCOM project, the program MARS3D models the actual hydrodynamic situation of the north occidental Mediterranean Sea. This operational run is planned to be carried out everyday from 2006 for two years. A one-day operational run took 10 hours with 4 CPU on "nympha" at the computing center in Ifremer before this work. We have optimised the operational run using a shortend test-case which originally took 421 seconds to run. The graph below shows time cost for each step of the optimisation performed to the test-case.

Using machine specific optimisation execution time went down to 391 seconds. An environment variable for OpenMP parallelisation, OMP\_Schedule 'dynamic, 1' was introduced and the calculation time went down to 334 seconds. Furthermore, manual optimisations were performed using profiling tools. These tools will also be discussed during the talk. From all the manual optimisation, we won 67 seconds.

The program now runs 1.58 times faster.

