1036-76-76   **Arnaud Goullet*** (`goullet@adm.njit.edu`), Department of Mathematical Sciences, University Heights, Newark, NJ 07102, and **Wooyoung Choi**. *Numerical studies on the evolution of nonlinear water waves and their validation with laboratory experiments.* Preliminary report.

Accurate modeling of surface wave dynamics in the ocean is a difficult task due to the complex nonlinear interaction between different wave components and a lack of understanding of various physical processes such as wave breaking and wind-wave interaction. Here we study a set of nonlinear evolution equations for the surface elevation and velocity potential fields derived using an asymptotic expansion technique and solve the system numerically using a pseudo-spectral method. Both regular and irregular surface wave fields are considered and our numerical solutions are validated with laboratory experimental measurements. (Received January 11, 2008)