Name-Surname	Foteini Baladima
Thesis Title	*Study of the air sea interaction processes - Design and implementation of an algorithm for roughness length*
Supervisor	G. Kallos, Professor
Summary	The main objective of this thesis work is to examine the impact of sea surface waves – and particularly the effect of roughness length – on the Marine Atmospheric Boundary Layer (MABL) and in the wave field. A coupled atmospheric (RAMS/ICLAMS) – wave (WAM/ECMWF(wave)) modeling system has been used. A new parameterization of roughness length that takes into account the nature of waves (wind-waves and swell) has implemented and tested. It follows the experimental expressions of the Charnock parameter for swell and wind waves that have been derived by Carlsson et al. (2009), and takes into account the energy spectrum computed by the WAM model. In order to assess the impact of the new parameterization in the wave and in the wind field, two case studies have been carried out: the first with one-way coupling (in the North Atlantic area) of the atmospheric with the wave model and the second one with two-way coupling (in the North Sea area). Both formulas for roughness (Janssen and new parameterization) have been used. The results showed that the new parameterization gives in principle lower roughness length, higher energy field and higher significant wave height. The wind field within the MABL is not affected significantly for both parameterizations
Key words	Roughness length, RAMS-WAM, wind wave, swell, energy spectra
Evaluation committee	G. Kallos, Professor S. Sofianos, Assistant Professor G. Galanis, Associate Professor