

## ABSTRACT

Climate change, either because of disturbances caused by humans , either because of geological cycles , has been quite clearly understood and has given serious signs which indicate a severity of the phenomenon.

Climate change is expressed in the open sea and coastal zone through a series of impacts, the most important of which are:

- The sea level rise
- The increase frequency of extreme weather events
- The increase of the consequent erosion rates on soft sandy beaches
- important secondary effects on the coastal environment

These factors are expected to affect large parts of the coastal zone and an important part of the Integrated Coastal Zone Management .

The first part of the thesis focuses on the environmental effects of climate change on ports, while the second part investigated the increase in sea level observed in the S and SE Aegean, in the winters of the years 2009 -2010 and 2010-2011 , which is due the phenomenon of meteorological tides.

The meteorological tides caused by the action of the wind on the surface of the sea, as the wind pushes the water surface to dry resulting in the accumulation of water near the shore . In this work, severe weather , long south and southwest of the winds of the order of (7 - 8 Bf) led to an increase in sea levels. The rise in sea level combined with wave action devastated infrastructure ( roadways , sea walls) .

The object of this research work is to help protect three coasts of the island by the action of waves coupled with rising sea levels, and the Coastal investigation to assess the impact on the shoreline after the implementation of the proposed protection works . The three coasts held to investigate are: Coast Eftalou , Petra and Thermis. This work involves the shore Thermis .

**Keywords** :climate change, coastal structures, sea level rise, coastal erosion, wave modeling