MARINE TRANSGRESSION AND ITS EFFECTS

Summary

The paper assesses the current state of knowledge about marine transgressions in the past and the contemporary sea-level rise as a result of a global change in the climate, *viz*. its warming. Next, the main tectonic and climatic causes of absolute and relative changes in the sea-level are considered. Marine transgressions controlled by climate are caused by melting of glaciers, inland ices and permafrost. Warming of ocean water due to rise of atmospheric temperature is the next reason of sea level rise and marine transgression. In consequence, low lying areas, like river deltas, coastal alluvial plains, sandy barriers and coral islands are flooded. The tendency and rate of the sea-level rise over the last 150 years is discussed against the background of what we know about the recent geological past, namely the end of the last Pleistocene Glaciation, during which the rate of sea-level change was much more rapid than today. Great marine transgression was the result of disappearance of inland ices, ice caps, and permafrost since 20 thousands years. In consequence, many areas were flooded and coast lines were shifted some tens and hundreds kilometers. The rate of the present day sea-level rise is abot 3.3±0.4 mm r^1 and seems to be accelerated. Our knowledge of the past warns us that a rise in the sea-level of 0.5 m over the next one hundred years is a real danger for all low lying areas which are dense populated. In turn, an estimation is made of the sea-level rise by the year 2100, and the physical effects of this process on coastal zone. In the Polish coastal zone the threatened area include 1720 km^2, mainly in the Vistula River Delta and in the Lower Odra valley in the vicinity of the Szczecin Haff. The paper closes with a discussion of the choise of responses to the danger for the coastal zone posed by the sea level rise that are open to man.