LUND UNIVERSITY

Institute of Technology
Dept. of Water Resources Engineering

Coastal flooding and erosion - documented trends and possible impacts from climate change

By

Hans Hanson
Department of Water Resources Engineering,
Lund University, Lund Sweden

An estimation of future annual high water levels, usually referred to as normal high water (NHW), in Öresund and the southwest Baltic Sea is presented together with a discussion of probable consequences for the Falsterbo Peninsula in south Sweden. Sea level measurements made in the area since 1945 are studied and it is shown that the NHW level has risen by an average of some 0.5 cm per year during the last 51 years and around 0.75 cm per year if only the last 25 years are evaluated. An extrapolation of the data showed that the NHW level in 2050 with a probability of 50% can be expected to be around 148 cm above the present mean sea level (MSL). With a probability of 10%, the NHW level will reach 174 cm above present MSL.

The peninsula is very low-lying, mainly below 3-m, and it consists of easily erodible beach sand. Thus, it is very sensitive to increasing sea levels. To visualize possible future rising sea impacts, a scenario using a high-resolution digital elevation model (DEM) is presented. This model shows that a sea level at +150 cm would result in inundation of much of the properties on the peninsula.

Beach nourishment as a counter measure against sea-level-rise related coastal erosion is also discussed, being a much more efficient coastal protection strategy that hard structures. Beach nourishment is also discussed from a socio-economic perspective where the importance of touristicly well-functioning beaches is demonstrated.

Postal address Box 118 S-22100 Lund Sweden
Visiting address *1 John Erikssons vag Lund*
Phone +46 46-222 0000 +46 46-222 8987
Fax +46 46-222 4435
E-mail Hans.Hanson@tvrl.lth.se
http://aqua.tvrl.lth.se/hh/hans.htm