

**Climate changes- The environmental and socio- economic response
in the southern Baltic region
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How reliable are future projections of threats from the sea level rise?

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Czarna Woda mouth (photo by P. Domaradzki).

The aim of the study was the evaluation of the reliability of threats from the sea level rise (storm surge, inundation area). Southern Baltic waters, especially Hel – Karwia region were investigated. The future prediction of climate change was assumed as the 3 climate scenarios of IPPC downscaled to the regional condition of the Polish coastal zone. The threats from the sea level rise were presented by the 100-years flood (1% value of sea level) and inundation area.



Karwia during storm surge in January 2012
photo by T. Krywoszejew)

The dangerous sea level increase does not only destroy the human lives, but also generate the severe flooding in coastal areas. The changes in the direction and velocity of wind and associated with them sea level changes could be the severe threat for navigation, especially on the fairways of small fishery harbors. The most popular indicator of dangerous sea level is the calculated value of 100-years (return period) flood called 1% sea level. This value is defined as the exceedance probabilities of extreme water levels and is accurately evaluated to inform about risk- flood and erosion management, engineering and for future land-use planning.

Karwia, map of an inundation area under scenario A1B , A2 -results of the project KLIMAT

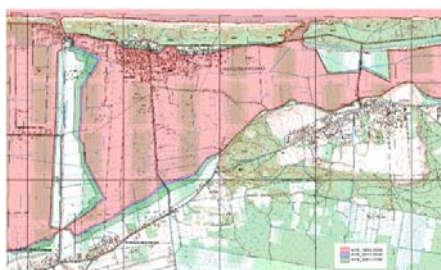
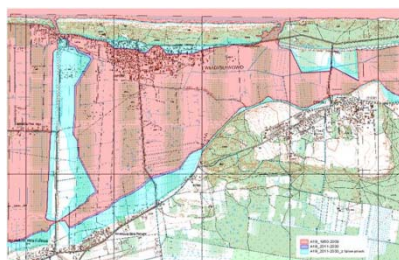


Fig. 2a Karwia, map of an inundation area , scenario A1B, 1950-2009, 2011-2030 and 2081-2100



.Fig. 2b Karwia, map of an inundation area, scenario AaB, 1950-2009, 2011-2030 with waves



Fig. 2cKarwia, map of an inundation area, scenario A2, 1950-2009, 2011-2030, 2081-2100 with waves and without waves

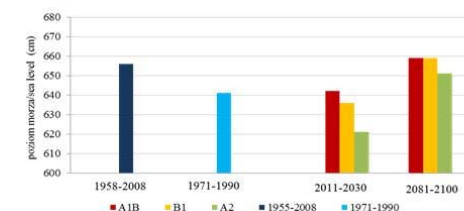


Fig.1 The values with exceedance probability 1% on the basis of calculation in the Hel –main reference and scenario periods 2011-2030 and 2081-2100 for scenarios A1B (red), B1 (yellow) and A2 (green)