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CONTROL ID: 938585

TITLE: Storm surges – a globally distributed risk, and the case of Hamburg

PRESENTATION TYPE: Assigned by Committee (Invited)

SECTION/FOCUS GROUP: Union (U)

SESSION: U16. Extreme Natural Events: Modeling, Prediction and Mitigation. (INVITED only. See NH20.)

AUTHORS (FIRST NAME, LAST NAME): Hans von Storch[1, 2]

INSTITUTIONS (ALL): 1. Institute of Coastal Research, GKSS, Geesthacht, Germany.
2. KlimaCampus, University of Hamburg, Hamburg, Germany.

Title of Team:

ABSTRACT BODY: For most coasts, storm surges represent the major geo risk. A map of these risks shows that the phenomenon is really a global phenomenon. However, when discussing dynamics, risks, adaptation, future perspectives as well as aggravating local factors, the situation is mostly perceived as a regional or even local phenomenon.

In the talk first the different manifestations of storm surges, mainly at mid latitudes and in the tropics are discussed; the historical perceptions of such events are touched upon, projection for the future presented and issues of management and adaptation discussed.

In a second part, a specific situation is discussed, namely the case of Hamburg since 1750. This case is particularly interesting, because specific analysis has been done for past variability, possible future developments; local perceptions of risk and un-conventional mitigation measures. For the time prior to 1850, coastal defence failure was a regular phenomenon; from about 1850-1960 coastal defence was hardly challenged, and after the 1962 storm surge heights rose to levels never recorded before. The most likely causes for this change are modifications of the Elbe estuary, related to coastal defence and improving the shipping channel. Anthropogenic climate change may lead in the future to even higher storm surges (mainly because of increased sea level). While for the foreseeable future, conventional measures will be sufficient for ensuring coastal defence, a mitigation option of local mitigation of high water levels seems to be available. This may be achieved though the "tidal Elbe project", which was designed to reduce upstream river sediment transport.

INDEX TERMS: [4247] OCEANOGRAPHY: GENERAL / Marine meteorology, [1637] GLOBAL CHANGE / Regional climate change, [4546] OCEANOGRAPHY: PHYSICAL / Nearshore processes, [6344] POLICY SCIENCES / System operation and management.

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Additional Details

Previously Presented Material: 40% - see

von Storch, H., G. Gönnert, and M. Meine, 2008: Storm surges – an option for Hamburg, Germany, to mitigate expected future aggravation of risk. Env. Sci. Pol. 11: 735-742 doi 10.1016/j.envsci.2008.08.003,

and

von Storch, H. and K. Woth, 2008: Storm surges, perspectives and options. Sustainability Science 3, 33-44; DOI 10.1007/s11625-008-0044-2

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