



## **Integrative assessment of 20th century climate change observations: Identifying needs and barriers in adaptation to climate change-related hazards in urban areas**

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Global urban land is a focal point of economic activities and home to more than half of the world's population. The concentration of population and human assets in cities renders them particularly prone to natural and climate change-related hazards such as flooding, heat extremes, water scarcity, and drought. These threats for human livelihoods and health call for effective risk management and adaptation measures. This is especially true for the Global South, that is often particularly vulnerable to the impacts of climate change due to numerous socio-economic, demographic, and institutional factors. Moreover, it will likely face a further increase of vulnerability due to excessive urban growth projected for the next decades. Consequently, to develop effective adaptation and mitigation strategies, risk management should take both dominant drivers of global change, i.e. climate change as well as urbanization, into consideration.

The management of the aforementioned hazards and adaptation to climate change requires adaptation needs, or conversely adaptation gaps, to be identified. Amongst other information, this requires knowledge about the magnitude or severity of climate change at local level. However, the relevant body of scientific knowledge is often fragmented, or even lacking on this level. This poses barriers to adaptation, e.g., by hampering the exchange of knowledge between stakeholders, ultimately hindering the implementation of required measures.

Based on change observations over the 20th century and supported by selected case cities from around the world, this study investigates likely impacts of climate change on the global urban land in an integrative manner to identify urban hotspots of climate change. In doing so, and to address the lack of knowledge at local level, stakeholders are provided with a common perspective on trends and risks that are likely related to climate change.

Simultaneously, findings are discussed in the context of urbanization as a possible indicator for problems that might be faced in risk management. From there, it will be argued that a co-management of both, urbanization and climate change, is urgently needed. This is on the one hand to enable adaptation and management strategies to resonate between urban locations and to make use of synergies provided by specific adaptation measures in regard to risk management, urban development and human health. On the other hand, relevant anchor points for future research are highlighted. In so doing, urban adaptation action shall be facilitated.