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Using WUDAPT to explore urban exposure to climate hazards in selected cities

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The World Urban Database Access Portal Tools (WUDAPT) project acquires, stores and makes available climate-relevant data on cities globally. This urban information is organised into three levels of detail (L0, L1 and L2), each representing progressively more precise information on the form and function of cities. L0 data is based on the Local Climate Zone (LCZ) classification scheme, which is used to categorise urban (and surrounding non-urban) landscapes into types using publicly available data and software and the knowledge provided by a network of urban experts. Each LCZ type is linked with ranges of values that describe properties of the urban landscape, such as the green proportion, mean building height, impervious fraction etc. In other words, a LCZ map of a city and its surroundings is also a framework for assigning parameter values that can be used to assess urban exposure and run climate models to examine urban impacts. Currently, L0 data exists for cities located across a range of latitudes, climates and topographies. The WUDAPT data provides a geographical framework for examining both the impact of the urban landscape on local climate and the impact of global and regional climate changes on the urban landscape. In this paper we use this WUDAPT L0 data to examine exposure to natural hazards for three cities: Mumbai, Sao Paulo and Beijing. The results show the value of a detailed and consistent description of urban landscapes for assessing and managing aspects of risk