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Identifying Urban Water Management Strategies Using the Urban Budyko Landscape

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Urban areas worldwide are faced with the impacts of global and climate change, including land degradation, increasing competition for resources due to population growth and resource-intensive urban lifestyles. In spite of these pressures, urban managers still tend to choose unsustainable supply-oriented water management strategies to meet urban demand, increasing water availability at the city level rather than focusing on the maintenance of intra-urban water infrastructure and demand-management measures. Here, we propose the Urban Budyko Landscape, which is a translation of the hydrological Budyko framework to urban water supply systems. It presents a simple method for assessing urban water supply systems in analogy to hydrological catchments and highlights the different roles of supply- and demand-management of water and water-related urban services. We apply the method to 50 urban water supply systems worldwide. Results show how cities can be grouped into different categories characterized by varying levels of urban water supply security, demand management, water use and water waste. These results are relevant for addressing the global urban water challenge, as it provides a simple method for comparing cities worldwide, as well as for urban managers seeking for more sustainable water management strategies.