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## Messy Maps: Qualitative GIS for Urban Flood Resilience

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We present a methodology to include qualitative aspects of flood resilience such as emotion, social connections and experience into urban planning using qualitative GIS. The geographic information system (GIS) has become ubiquitous in urban planning and disaster risk reduction, but often results in resilience being conceptualised and deployed in highly technocratic and quantitative ways. Yet in the urban Global South, where the rate of informal growth often outstrips our ability to collect spatial data, the knowledge infrastructures used for resilience planning leave little room for participation and consideration of local experience. This presentation outlines two interlinked projects ('Why we Disagree about Resilience' and the follow-on 'Expressive Mapping of Resilient Futures') experimenting with qualitative GIS methodologies to map resilience as defined by informal settlement residents. We show examples from two case study cities, Nairobi (Kenya) and Cape Town (South Africa), with applicability across the urban Global South. Four map layers were generated: (i) flood footprints showing the detailed spatial knowledge of floods generated by locals; (ii) georeferenced, narrated 360° StorySpheres capturing differing perspectives about a space; (iii) spatial social network maps showing residents connections to formal and informal actors before and during floods; (iv) multimedia pop-ups communicating contextual details missing from traditional GIS maps. We show that for informal settlements, many locations and aspects of resilience have vague or imprecise spatial locations, and that placing markers on a map makes them visible in ways that planners can begin to engage with. We discuss challenges such as privacy, legacy and participation. Although challenges remain, we found openness by city-level actors to use qualitative forms of evidence, and that the contextual detail aided their retention and understanding of resilience. The 'messy' maps we present here illustrate that in the era of big data and metrics, there is a space for qualitative understanding of resilience, and that existing knowledge and spatial data infrastructures have potential to be more inclusive and holistic.