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*'Understanding volcanoes and society: the key for risk mitigation'*



## **Urban Design for cities in volcanically active regions: exploring the possibilities of Sentinel-2**

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All we do from now on is positioned in the context of 'climate change' and for future generations. However 'changing climates' have always existed, but it's only now do we value the importance of understanding our environment so as to survive without catastrophes. Of course designing cities located in volcanically active regions raises many challenges. Lahars and pyroclastic flows can devastate critical infrastructure and wide-spread ash fall can blanket proximal towns leading to severe residential housing damage. Therefore, land use planning and urban design prior to volcanic activity must be conscious of the hazards associated with volcanic eruptions. This is now made possible by satellite instruments which enable the quantification and monitoring volcanic hazards across vast spatial scales. The recent launch of the European Space Agency's (ESA) Copernicus constellation of satellites has opened up new opportunities to explore the role of satellite observations in urban design and city planning. The new Sentinel-2 platform provides imagery of up to 10 m spatial resolution and includes 13 spectral bands ranging from the visible to the shortwave infrared. These measurements permit channel combinations such as the Normalised Difference Vegetation Index (NDVI), which can be used to study the impacts of ash fall and river aggradation. Moreover, specialised channel combinations can also be used to assess the vulnerability of various city centres situated near active volcanoes. In this presentation we open a dialogue, ask questions and explore the possibilities of Sentinel-2 data for land use planning and urban design that is conscious of the natural environment. We focus on how thematic mapping may lead to pragmatic decisions for urban designers, landscape architects and city planners when faced with the challenges of designing cities in proximity to volcanoes.