



## **Answering the right question – integration of InSAR with other datasets**

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The capabilities of satellite Interferometric Synthetic Aperture Radar (InSAR) are well known, and utilized across a wide range of academic and commercial applications. However there is a tendency, particularly in commercial applications, for users to ask ‘What can we study with InSAR?’. When establishing a new technique this approach is important, but InSAR has been possible for 20 years now and, even accounting for new and innovative algorithms, this ground has been thoroughly explored.

Too many studies conclude ‘We show the ground is moving here, by this much’, and mention the wider context as an afterthought. The focus needs to shift towards first asking the right questions – in fields as diverse as hazard awareness, resource optimization, financial considerations and pure scientific enquiry – and then working out how to achieve the best possible answers.

Depending on the question, InSAR (and ground deformation more generally) may provide a large or small contribution to the overall solution, and there are usually benefits to integrating a number of techniques to capitalize on the complementary capabilities and provide the most useful measurements. However, there is still a gap between measurements and answers, and unlocking the value of the data relies heavily on appropriate visualization, integrated analysis, communication between technique and application experts, and appropriate use of modelling.

We present a number of application examples, and demonstrate how their usefulness can be transformed by moving from a focus on data to answers – integrating complementary geodetic, geophysical and geological datasets and geophysical modeling with appropriate visualization, to enable comprehensive solution-focused interpretation. It will also discuss how forthcoming developments are likely to further advance realisation of the full potential satellite InSAR holds.