



## **Insights on Stromboli and Mount Etna deformation from 3D Finite Element models**

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The interpretation of deformation recorded at Mount Etna and Stromboli during quiescent or paroxystic phases requires a new class of numerical models to deal with complexities such as anelastic rheologies or slip on pre-existing discontinuities. We present scripting procedures aimed to create high quality finite element discretizations of Mount Etna and Stromboli. We develop meshes using hexahedral elements to ensure an excellent balance between computational efficiency and accuracy. We take advantage of the potentialities of CUBIT (<http://www.cubit.sandia.gov>) which allows to easily model complex surfaces such as those derived from high resolution digital elevation models of Stromboli and Mount Etna. Meshes are characterized by variable elements resolution spanning from tens of meters in proximity of highly deforming areas to few hundreds of meters along model boundaries. We also show the effects of material and structural heterogeneities embedded in the volcanic edifices on different kind of potential sources of deformation.