ISTerre
Institut des Sciences de la Terre

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Transient Surface Deformations Caused by the Gotthard Base Tunnel

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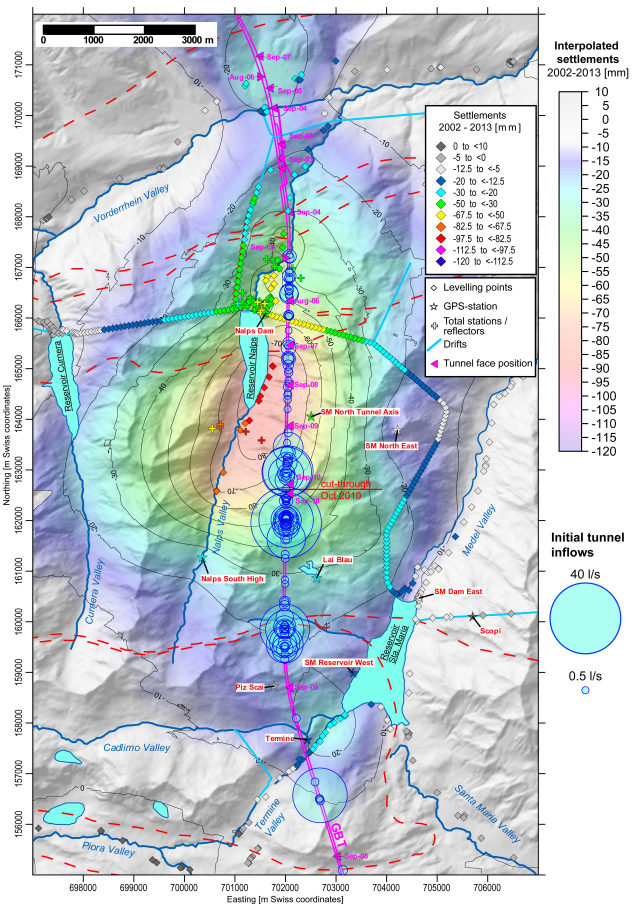
The Gotthard Base Tunnel (GBT) is a 57 km long and up to 2500 m deep railway tunnel which was constructed between 2000 and 2011 in the Central Alps of Switzerland. As drainage of fractured rocks by deep tunnels accompanied by significant decrease in groundwater pressure causes large scale deformations even in hard crystalline rocks, a comprehensive surface deformation and tunnel inflow monitoring system has been established and operated for more than ten years. This paper presents the unique results from this monitoring system and explains the observed hydro-mechanically coupled and transient rock mass behavior based on detailed assessments of geological, geomechanical and hydrogeological conditions and conceptual continuum models.



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