

Potential applications of InSAR for continuous and systematic monitoring of the Ridgecrest seismic activity

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Abstract:

On 4th July, 2019 Searles valley, California was struck with an EQ with a magnitude (Mw) 6.4, happened 18 Km ENE of Ridgecrest and 13 Km WSW of Trona. Further, within 36 hours from above event on 5th of July 2019, the region had experienced several aftershocks with one event even having higher magnitude. These include three momentous aftershocks which were felt in and around the Naval air weapons stations China lake having Mw of 5.4, 6.4 and 7.1. Later studies concluded that two conjugate faults, one oriented roughly NW-SE and the other one oriented towards NE-SW was ruptured because of the event happened on 4th July, 2019. Further, the Mw-7.1 aftershock had once again ruptured both the above faults, which intensified the occurrence of further aftershocks. Since then, a significant number of aftershocks has been already occurred with an average Mw in the range of 2-4. Later, scientists from USGS estimated that there is a possibility of about 34000 more aftershocks in near future, probably within the next six months. Considering the ongoing activity discussed above, present work attempts continuous monitoring of the region based on InSAR data from Sentinel 1 in terms of deformations, likely to be occurred during probable future earthquakes. This will help in understanding the overall dynamics of the fault system as well as the response of the system to these aftershocks and so on. These observations will further be verified with strong motion data form the region.

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