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Geodetic Implications of Haiti Earthquake Deduced from Satellite Altimetry and Gravity Data

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The availability of altimeter data from satellite observations has opened new perspectives in the Earth sciences. Radar altimetry data has been used to derive gravity and its variations over the world's oceans and an excellent tool for mapping sea floor structures, including tectonics, sea mounts and rifts. On the other hand, the Gravity Recovery and Climate Experiment (GRACE) satellite mission has widely demonstrated its sensitivity to ongoing mass redistribution within the various sub-systems of the earth.
The destructive earthquake hits Tahiti on January 12, 2010, indicates huge mass redistribution attributed with regional seismo-active tectonic. Satellite altimetry data used to determine gravity field of seismo-active faults attributed with the earthquake and the fault extension and rifting. Short wavelength of gravity field satellite-based gravity data enhance small-scale features and show clearly tectonic settings responsible for the seismic activity. Meanwhile, temporal gravity variations before and after the earthquake has been computed using data from GRACE. Analyzed data from GRACE indicate significant mass redistribution related to the seismic activity.
The current study indicates that, integrated satellite altimetry and gravity data are a valuable source of data for studying geodynamic