

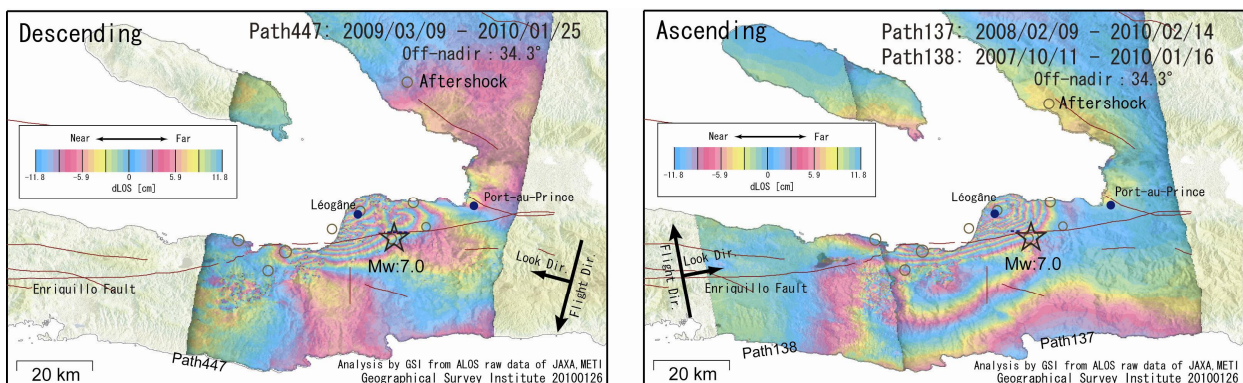
## Crustal deformation associated with the 2010 Haiti Earthquake, detected by InSAR analysis using ALOS/PALSAR data

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**Preface:** A catastrophic inland earthquake with  $M=7.0$  (USGS) struck Haiti on 12 January 2010, whose hypocenter is about 20 km distant from the capital of Haiti “Port-at-Prince” that suffered from severe damages. This earthquake could be associated with the reactivation of a part of the Enriquillo fault zone which runs over a length of 200 km in the south of Hispaniola island. To map the surface displacement associated with this earthquake, we conduct interferometric SAR (InSAR) analysis using ALOS/PALSAR data. We will report the crustal deformation obtained from the InSAR analysis.

**SAR data:** We analyze SAR data acquired from the Paths 137 and 138 (Ascending orbit) and Path 447 (Descending orbit) which are strip-map imagery with off-nadir angle of 34.3 degrees. We process the SAR data from a level-1.0 product using a software package GISAR. We use hole-filled SRTM3 DEM (Jarvis et al., 2008) to remove the topographic phase.

**Result:** SAR interferograms obtained show clear coseismic deformation due to the 2010 Haiti earthquake. The major displacement distributes along the Enriquillo fault zone, which is distant (20-50km) from Port-at-Prince, suggesting that the major fault rupture did not occur in the proximity of Port-au-Prince. The result obtained from the descending orbit data shows about 70 cm shortening of slant range at maximum, located ~15 km west from the epicenter. The result from ascending orbit data shows a slant range shortening exceeding 70 cm, localized in the northern coastal zone with a steep displacement gradient. On the other hand, in the southern side about 40 cm lengthening of slant range is identified with a broader gradient than the northern side. A 2.5D displacement analysis shows significant upheaval of ~40 cm (quasi-UD component) near the city of Léogâne.



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