

RECENT SURFACE DEFORMATION AND ITS GEODYNAMIC INSIGHTS FOR THE ILAN PLAIN: AN EXTENSIONAL BASIN IN NORTHERN TAIWAN OROGENIC BELT

Chung-Pai Chang ^{a, b*}, Chu-Chun Kang ^{a, b}

^a Center for Space and Remote Sensing Research, National Central University, Jhongli, Taiwan

^b Institutes of Geophysics, National Central University, Jhongli, Taiwan

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ABSTRACT: In the northeastern tip of Taiwan orogenic belt, the Ilan Plain is filled by Quaternary alluvial material and is almost equilateral triangular in shape and moderately tilted to the east. Different opinions about the formation of this plain and its relationship to the Okinawa Trough have been proposed in the last few decades. In this study, we analyzed the present-day surface deformation of the Ilan Plain, aiming at deciphering its relationships with the regional geodynamic setting. Our approach is mainly based on surface displacements revealed by Persistent Scatterers InSAR (PSI). When combined with the previous geodetic measurements, and existing geophysical data such as seismic activity, our PSI-derived rates of surface displacement indicate that there is convincing area of active subsidence, located in the southern part of the plain and characterized by a rate of about 18 mm/yr. In our seismotectonic model, the Choshui Fault is related the opening of the Ilan Basin and presently borders the area of active subsidence associated with the opening of the Okinawa Trough. Within this context, the reactivation of the Lishan Fault from the north to the south that may be seen as a zipper-liked fault thus plays a major role in the collapse of the orogen.