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The Fracture analysis in the Northeastern Coastal Area of Taiwan

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Taiwan is located at the convergent zone between the Eurasian plate and the Philippine Sea plate. Such a condition produces a series of geological structures striking along the northeast-southwest direction in the northeastern Taiwan. The coastal terrain is dominated by wave-cut platforms with many complex fractures, which may be associated with a fault structure throughout different time stages. Some secondary fractures may be created or continuous along existing ones with different directions.

The unmanned aerial vehicle is used to take pictures above the wave-cut platform and the fracture lines are drawn for analyzing the pattern. Then with the field work data, the fracture geometry are consolidated into certain patterns to confirm the location of the existing fault system. The study also uses the principle of cross-cutting relationships and fault evolution to establish the fracture-formed sequence in this area. Preliminary results find that the fractures in the investigation area can be separated into at least three different time stages.

In the first stage, a series of northwest-southeast fractures were formed. The fractures in the second stage linked the adjacent fractures in the first stage together and formed block shapes. In the third stage, N12˚E Riedel shear developed with a N18˚W-S18˚E maximum compressive principal stress(σ1).With previous stages fractures produced the damage zone and formed the fault structure.