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# Structural highs formation and their relationship to sedimentary basins in the north Sicily continental margin (southern Tyrrhenian Sea): implication for the Drepano Thrust Front

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A re-processed multi-channel profile (MS 104A) and a high-penetration crustal profile (Crop M6A) have been interpreted in order to reconstruct the structural setting and the Oligocene-early Miocene to Recent times kinematic evolution of the north Sicily continental margin and to constrain the position of the Drepano Thrust Front. Data we present provide a three-dimensional perspective on the upper crustal setting across the Solunto High and its structural relationships with the adjacent Cefalù Basin. At the crustal scale, the north Sicily continental margin shows tectonics features typical of most subduction zones and of rifted continental margins. Crystalline rocks pertain to the Kabilian-Calabrian Units (KCU) are recognised in the Solunto High region and farther to the north. The KCU body is tectonically superimposed onto sedimentary rocks pertaining to the SMU and the Solunto High corresponds to the thrust sheet culmination. Its occurrence in the Solunto High demonstrate that the so-called Drepano Thrust Front extends from the western sector of the margin towards the east, connecting the Elimi Chain at the Calabrian-Peloritani sector. Continental collision was achieved in the (?) Oligocene - early Miocene and caused the superposition of the KCU crystalline rocks on the deep-water carbonate pertaining to the African plate. Contractional deformation persisted until the late Miocene resulting in the tectonic superposition of deep-water onto shallow-water carbonates pertaining to the African continental margin. Extension began in late Tortonian times, lasted till the

early Messinian and caused the opening of the Cefalù Basin and other basins further to the north. Late (?) Messinian – early Pliocene contractional and/or transpressional deformation results in a limited shortening across the margin and in a general uplift of the KCU in the Solunto High region. In the middle-late Pliocene, renewed extension determined further opening and subsidence of the Cefalù basin. Lithospheric breakup took place in the late Pliocene. Presently, the north Sicily offshore is a zone of compressive stress and the area north of Solunto High represents a zone of weakness.