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COMPARING ANCIENT QUARRIES IN STABLE AND SLOWLY UPLIFTING COASTAL AREA LOCATED IN EASTERN SICILY, ITALY

ABSTRACT: SCICCHITANO G., SPAMPINATO C.R., ANTONIOLI F., ANZIDEI M., LO PRESTI V. & MONACO C., *Comparing ancient quarries in stable and slowly uplifting coastal area located in eastern Sicily, Italy*. (IT ISSN 0391-9838, 2018).

The coast of the Mediterranean still preserves several remnants of ancient coastal quarries that has been often used to provide insights on the sea-level changes occurred during the last millennia. The southeastern coast of Sicily (Italy) is characterized by the occurrence of more than fifty ancient quarries that have been detailed surveyed and studied from archaeological and geomorphological point of view. Most of these quarries are presently partial submerged and some of them for this reason have been used as marker of ancient sea level, providing important data on relative sea level change and tectonic mobility during the late Holocene. We selected six important and well known ancient quarries located in coastal sectors characterized by different tectonic rates of uplift, e.g. in a stable area (Marzamemi) and in a significant uplifted area (Augusta). The elevation of the deepest floors of the lowest level of the quarries has been measured by an invar rod with respect to present sea level, and corrected for tide at the time of surveys. These data were compared with predicted sea level rise curves for the Holocene using a glacio-hydro-isostatic model. The comparison with the curve for the southeastern Sicily coast yields a tectonic component of relative sea-level change related to regional uplift. Uplift rates ranging between ~ 0 and 0.4 mm/a have been estimated.

KEY WORDS: Mediterranean coast; coastal quarries; southeastern Sicily; relative sea-level changes; archaeological sea-level markers; coastal active tectonics.

RIASSUNTO: SCICCHITANO G., SPAMPINATO C.R., ANTONIOLI F., ANZIDEI M., LO PRESTI V. & MONACO C., *Confronto tra antiche cave localizzate in zone costiere stabili e in debole sollevamento della Sicilia orientale (Italia)*. (IT ISSN 0391-9838, 2018).

Le coste del Mediterraneo preservano varie evidenze della presenza di antiche cave di estrazione di pietra che sono spesso usate come indicatori del cambiamento del livello del mare durante gli ultimi millenni. Le coste della Sicilia sudorientale sono caratterizzate dalla presenza di più di cinquanta cave antiche che sono state mappate ed analizzate dettagliatamente da un punto di vista archeologico e geomorfologico. La maggior parte di queste cave sono attualmente sommerse e per questo sono state analizzate come indicatori del livello del mare durante l'Olocene. Abbiamo selezionato sei cave tra le più conosciute ed estese localizzate nell'area, alcune site in aree stabili (Marzamemi) ed altre site in aree a significativo sollevamento tettonico. Le altezze dei pavimenti più profondi dei livelli più bassi delle cave selezionate sono stati misurati e corretti per la marea. I dati sono stati comparati con una curva di predizione dei livelli del mare durante l'Olocene che tiene in considerazione della componente glacio-idro-isostatica, fornendo indicazioni sulla tettonica dell'area di Augusta intorno a 0,4 mm/a e confermando la stabilità dell'area di Marzamemi.

TERMINI CHIAVE: costa del Mediterraneo, cave costiere, Sicilia sud-orientale, variazioni relative del livello del mare, marker archeologici del livello del mare, tettonica attiva costiera.

INTRODUCTION

Archaeological sites in areas of small tidal range can provide significant information on relative sea-level change during the last millennia using man-made coastal structures whose successful functioning requires a precisely defined relationship to sea level at time of construction. Along Mediterranean shores, in particular, the increasing sophistication of human development has led to there being a number of archaeological remains that can be used to establish constraints on relative sea level (Flemming, 1969; Schmiedt, 1966; 1972; Caputo & Pieri, 1976; Pirazzoli, 1976; Flemming & Webb, 1986; Anzidei & alii, 2013; Lambeck & alii, 2004; Antonioli & alii, 2007; Scicchitano & alii,

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This study was motivated by discussions at the workshops of MOP-P-MEDFLOOD (INQUA projects 1203 and 1603P).