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Mid to late Holocene environmental changes along the coast of western Sardinia (Mediterranean Sea)

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**MID TO LATE HOLOCENE ENVIRONMENTAL CHANGES ALONG THE COAST OF WESTERN SARDINIA (MEDITERRANEAN SEA)**Rita T Melis<sup>a\*</sup>, Anna Depalmas<sup>b</sup>, Federico Di Rita<sup>c</sup>, Francesca Montis<sup>a</sup>, Matteo Vacchi<sup>d</sup><sup>a</sup>Dipartimento di Scienze Chimiche e Geologiche, Università di Cagliari, Via Trentino 51, 02127 Cagliari, Italy, rtmelis@unica.it<sup>b</sup>Dipartimento di Storia, Scienze dell'Uomo e della Formazione, Università di Sassari, Via Zanfarino, 62, 07100 Sassari, Italy, depalmas@uniss.it<sup>c</sup>Dipartimento di Biologia Ambientale, Sapienza Università di Roma, Piazzale Aldo Moro 5, 00185 Roma, Italy, federico.dirita@uniroma1.it<sup>d</sup>Université P. Valéry Montpellier 3, CNRS ASM UMR 5140, Montpellier, France, matteo.vacchi@gmail.com**Abstract**

Multiproxy analysis composed of biostratigraphy and pollen analysis allowed reconstructing the palaeoecological and palaeoenvironmental evolution of the Tirso river coastal plain in Sardinia (NW Mediterranean) in the last 6 millennia. We demonstrated that interplay between littoral and fluvial processes have significantly controlled the environmental evolution of the area and have played a key role in the pattern of historical and prehistorical settlements of this wide portion of western Sardinian coastline. At the end of Neolithic period (ca. 6.0 to 5.5 cal. ka BP) the area close to the shoreline was most likely characterized by large coastal lagoons intermittently connected to the open sea. Such saltwater influence is corroborated by faunal and pollen assemblages found in the landward portion of the Tirso coastal plain up to 2 km inland from the modern shoreline. Our data robustly document the end of the transgressive trend at ca. 5.5 cal. ka BP, and a dominant fluvial sedimentation since Final Neolithic period. At this time, a progradational trend started, causing the seaward migration of shoreline and, consequently, of the barrier-lagoon system. The major landscape modification tracked along the last 6 millennia may also explain the low density of historical and prehistorical remains in the Tirso coastal plain, especially if compared to the nearby rocky area of Sinis Peninsula densely inhabited since the Neolithic. Our data further provide new insights into the Relative Sea Level (RSL) evolution in this sector of the Mediterranean. In particular, we improved the mid-Holocene RSL record in Sardinia, where only scarce data were previously available.

**Keywords:** Holocene; coastal plains; palaeoenvironmental reconstructions; pollen; Sardinia; Western Mediterranean.

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