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Paleomagnetic and rock-magnetic variations of climatic and environmental changes recorded by late Pleistocene sediments from the Adriatic Sea

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In the framework of Eurodelta and Promess-1 project we present paleomagnetic and rock-magnetic results from six cores collected in the Adriatic Basin. Five cores (Prad2-4; Prad1-2; KS02-246; CSS00-23 and AMC99-01) were collected in the central Adriatic along a transect from shallow water to 250 m water depth, on the floor of the Meso-Adriatic Depression whereas an additional core (CSS00-7) was retrieved in the southern part of the basin. The long borehole Prad1-2 (180 m wd) represents a continuous record of sedimentary sequences deposited during the last four glacial-interglacial cycles whereas the other cores recovered sedimentary successions that formed during the last glacial-interglacial transition or solely the last kyr of sea level high stand. The latter cores are on the shelf and provide an expanded section of the HST above the maximum flooding surface.

Paleomagnetic measurements (NRM, ARM, IRM) on U-channel samples were carried out at the laboratory of the University of California at Davis using an automated 2G Enterprises cryogenic magnetometer. After AF cleaning, the NRM directions show a characteristic and primary magnetization of sediments with a constant normal polarity for all the sections but an interval of about 15 cm observed at 35.91-36.06 mbsf in Core PRAD1-2 yielding a reverse polarity. A preliminary age-depth model for this core suggests the possible correlation of this interval to the Iceland Basin excursion (IBE) reported in the literature with an age of about 188 kyr BP. The rapidly deposited sediments recovered from the other cores show variations in declination and inclination

representing secular variations of the Earth magnetic field. The observed features can be compared with secular variation records from other marine and lacustrine cores as well as with lava flows of well established historical age. These results allow develop a detailed age-depth model that will help reconstruct the history of sedimentation in the interval under study.

Rock-magnetic parameters indicate a homogeneous magnetomineralogy dominated by fine-grained magnetite. Variations in both concentration and grain-size related magnetic parameters reflect changes in sediment supply during the glacial-interglacial stages, as well as changes in environmental conditions, including the formation of sapropel layers clearly identified by selective dissolution of magnetic grains. Several peaks observed in the concentration related parameters particularly evident on cores PRAD1-2 and Core CSS00-7 can be correlated with the presence of volcanic ash layers and will be used for a detailed study of the tephrastratigraphy of the core.