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Forced Regression deposits shaped before the Black Sea Flood. Pseudo-3d very high resolution seismic data interpretation.

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An analysis of ASSEMBLAGE (EVK3-CT-2002-00090) very high-resolution seismic data demonstrates that the last climate change known during Holocene times was well recorded in the Black Sea basin. A 3D geometric interpretation of Chirp profiles acquired on the Romanian shelf shows that the lacustrine shelf deposits form an important basinward-prograding wedge system. On top of these is a set of sand dunes that delineates a berm-like feature around the isobath of -100 m. Landward of this dune field are small depressions containing Barkhan-like features. The upper part of the last prograding sequence is incised by anastomosing channels which ends in the Viteaz canyon. This incision phase and the dunes are built on the freshwater prograding wedge. 10 sequences were distinguished and analyses of cores retrieved from this area demonstrate that the first 8 sequences represent lacustrine prograding wedges, the ninth sequence is the dune system itself and the tenth is a marine mud drape.

The lacustrine prograding wedges witness a low water level characterised by forced regression-like reflectors. Their hinge point corresponds with the wave erosion surface mapped around the -100 m isobath on the multibeam mosaic. Dated cores recovered in the area give age control on this lowstand period, which lasted from 13 kyr BP to 8 kyr BP.

Preservation of the sand dunes and the occurrence of small, buried incised valleys mark a rapid transgression during which ravinement processes related to the water level rise had no time to erode the seafloor significantly. Around 7.5 kyr BP, the

present-day conditions of the surface waters of the Black Sea became abruptly established as a result of the rapid flooding of the Black Sea by Mediterranean waters, as shown by dinoflagellate cyst records and other data. Simultaneously, widespread sapropel deposition began both on the continental slope and in the deep basin. At 7,160 yrs BP, a sudden (within $<$760 yrs) inflow of a very large volume of marine Mediterranean waters occurred, resulting in an abrupt increase in salinity to their present-day euxinic values (Popescu et al., 2004; Popescu et al., submitted). Evidence for this inflow can also be found in the abrupt replacement of fresh to brackish species by marine species. Furthermore, hydraulic modelling shows that about 60,000 cubic metres of water per second must have flowed into the Black Sea basin after the Bosphorus sill was breached and that it would have taken 33 years to equalize water levels in the Black Sea and the Sea of Marmara (Siddall et al., 2004). Such a sudden flood would have preserved the lowstand markers on the north-western shelf of the Black Sea.