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### **The Danube Deep-Sea Fan Functioning in a Freshwater Environment**

The Blason2 survey completed the results obtained in 1998 on the Danube deep sea fan in the Black Sea. Principal channels were mapped using multibeam echosounder system together with high-resolution seismic reflection profiles and piston cores.

The mosaic realized provided an insight of the complete channel-levee system of the Danube fan. This fan developed probably in a semi-freshwater basin with a water level about 100 m lower than today. Sediments supplied by the Danube were transported to the basin through the Viteaz canyon. Channel avulsion was common in the middle fan. Each phase developed in breaching the thinner left levee, building of a unit of HARP, followed by initiation of a new meandering leveed channel.

This system presents northward migration phases with successive bifurcations influenced by the asymmetry between levees. Locations of HARPs and channels after bifurcation are controlled by the pre-existing bathymetry, confined between the high of the youngest channel-levee system to the south, and the steep relief of the Dniepr fan to the north. The HARP deposits consist of fine-to-very-fine sand with mud clasts. Sparse occurrences of reworked benthic foraminifers indicate a much shallower sediment source while the rare ostracod specimens characterize a semi-freshwater-to-brackish basin.

It seems clear that sea level fluctuation is at the origin of the control of the Danube fan activity but the evolution of the last channel-levee system suggests that the primary control of channel avulsion and sand delivery is probably autocyclic and in that case (freshwater giant lake) only hyperpnicity acts.