



Investigation of the shelf break and continental slope in the Western part of the Black Sea using acoustic methods

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The Black Sea is a large marginal sea surrounded by a system of Alpine orogenic chains, including the Balkanides–Pontides, Caucasus, Crimea and North Dobrogea located to the south, northeast, north and northwest, respectively (Dinu et al., 2005). The north-western part of the Black Sea is the main depocentre for sediment supply from Central Europe via the Danube River, but also from Eastern Europe through the Ukrainian rivers Dniepr, Dniestr and Southern Bug (Popescu et al., 2004).

The shelfbreak is located at water depths of 120–140 m southward of the Danube Canyon, and up to 170 m northward of the canyon possibly due to recent faulting which is very common in this area. The continental slope is dissected by numerous canyons, each of which is fed by several tributaries. The Danube Canyon (also known as Viteaz Canyon) is a large shelf-indenting canyon located in the north-western Black Sea and connected to the youngest channel-levee system of the Danube Fan (Popescu et al., 2004).

The acoustic methods are a useful way for investigate the shelf break and the continental slope giving us information about landslides on the continental slope, the topography of the investigated area, the sedimentary zones affected by instability and to quantify the geometry of the underwater landslides.

The measurements made on the continental slope from north-western part of the Black Sea gave us the possibility to make a digital terrain model.

After processing the data the model offer information about the main access ways of the sediments through gravitational slide on the submarines canyons, with forming of turbidity currents, debris flows and also other transport/transformation phenomena of the sediments on the continental slope like submarine landslides and submarine collapse.

References

- Dinu, C., Wong, H.K., Tambrea, D., Matenco, L., 2005. Stratigraphic and structural characteristics of the Romanian Black Sea shelf. *Tectonophysics* 410, 417–435.
- Popescu, I., Lericolais, G., Panin, N., Normand, A., Dinu, C., Le Drezen, E., 2004. The Danube submarine canyon (Black Sea): morphology and sedimentary processes. *Marine Geology* 206, 249– 265.