
# Short-term sedimentary evolution and morphodynamic processes of the upper part of the Capbreton submarine canyon

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The Capbreton canyon stands out by its deep incision through continental shelf and slope and its present turbidity activity. The head of the canyon is disconnected from the Adour River since 1310 AD but is located close enough to the coast to allow a direct supply by longshore drifting. Gravity processes in the canyon body are well described, but many questions remain for the head and the upper part of the Capbreton submarine canyon such as: Do any others supply sources of the canyon exist (lateral supply)? Which processes provide sediment transfer from the head to the canyon?
Our study is based on the analysis and comparison of eight multibeam bathymetric survey acquired between 1998 and 2018. This data set covers the same area of the upper part of the canyon and allows the comparison and morphologic follow-up of this outstanding dynamic area. This proximal dataset is completed by two distal bathymetric surveys on a meander at 1500m water depth acquired in the canyon in 2015 and 2016. The morphological evolutions in the upper part of the canyon over the last 20 years especially affect the floor of the talweg and the canyon head. Times of flat talweg are observed, succeeded by periods of talweg surincision (low lateral terraces and narrow talweg). The surincisions are induced by regressive erosion and are evidenced by regressing knickpoints suggesting a return to the equilibrium profile. But, first accurate volume quantification in the canyon talweg has been undertaken. This underlines an alternation of filling and erosive period in the canyon axis and a continuous sediment deposition in the canyon head during the last 20 years. Times of flat talweg (1998) suggest a filling associated with a full emptying of the canyon head, and periods of talweg surincision (2010 to present day) might be associated with a partial emptying of the canyon head.
Recent surveys show that regressive erosion is higher around the flanks meanders where key morphodynamic processes are generated. Those hypotheses will be discussed, especially for the deeper part of the canyon, in the light of currentmeter data (ADCP) recorded during winters 2015 and 2016 at 555, 900 and 1500m water depth in the canyon. Analysis of these currentmeter data is in progress and may reveals some interesting points.

**Mots-Clés:** Capbreton canyon, time, lapse bathymetry, knickpoints, regressive erosion, volume quantification, morphodynamic processes

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