

The Golo System of Eastern Corsica: A Quaternary Source-to Sink-System

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The linked system of the Golo River, its delta, the continental shelf, north and south Golo Canyons and a series of submarine fans in the Corsica Trough and Golo Basin provides a unique opportunity to study the linkages between terrestrial, shelf and deepwater environments. The Golo River has its headwaters in the mountains of Corsica that rise to an elevation of over 2700 meters above sea level. The modern river has built a delta that is about 10 kilometers from the heads of the North and South Golo Canyons. The modern shelf in this area is no more than 12 kilometers wide. Currently the deepwater systems are largely inactive with the youngest, sandy, deepwater deposits dated at 14,000 to 18,000 years before present.

The Golo system is an especially attractive laboratory for source-to-sink studies as the entire depositional system from shelf to basin floor is quite compact (only about 30 kilometers across) and most of the sedimentary fill of the Golo Basin is derived from the Corsican (western) side of the basin with only a relatively small component derived from the Pianosa Ridge to the east. Moreover, the east Corsica margin is largely unaffected by tectonic or soft-sediment deformation making it possible to correlate seismic reflections between the shelf and basin floor and establish a stratigraphic framework linking these systems.

In June 2008, a joint research program between Total, Ifremer and ExxonMobil acquired 2950 kilometers of high-resolution, multi-channel (400 Hertz peak frequency) seismic data, high-resolution bathymetry and ultra-high resolution CHIRP seismic data. This data grid with a variable 400 - 800 meters spacing extends from the shelf in about 30 meters of water to the basin floor in about 800 meters of water. It is possible on the seismic data to trace reflections from the basin floor up the slope to the shelf-slope break in about 120 meters of water. While it is currently possible to link the modern and ancient shelf, slope and deepwater deposits by seismic correlation and mapping, the absolute ages of the older systems are poorly constrained. To define the absolute age of our seismic stratigraphic framework, a program of cutting long (up to 150 meters) cores is planned for the fall of 2009.