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## Neogene Sedimentary Processes of Submarine Channels, West Off Ireland\*

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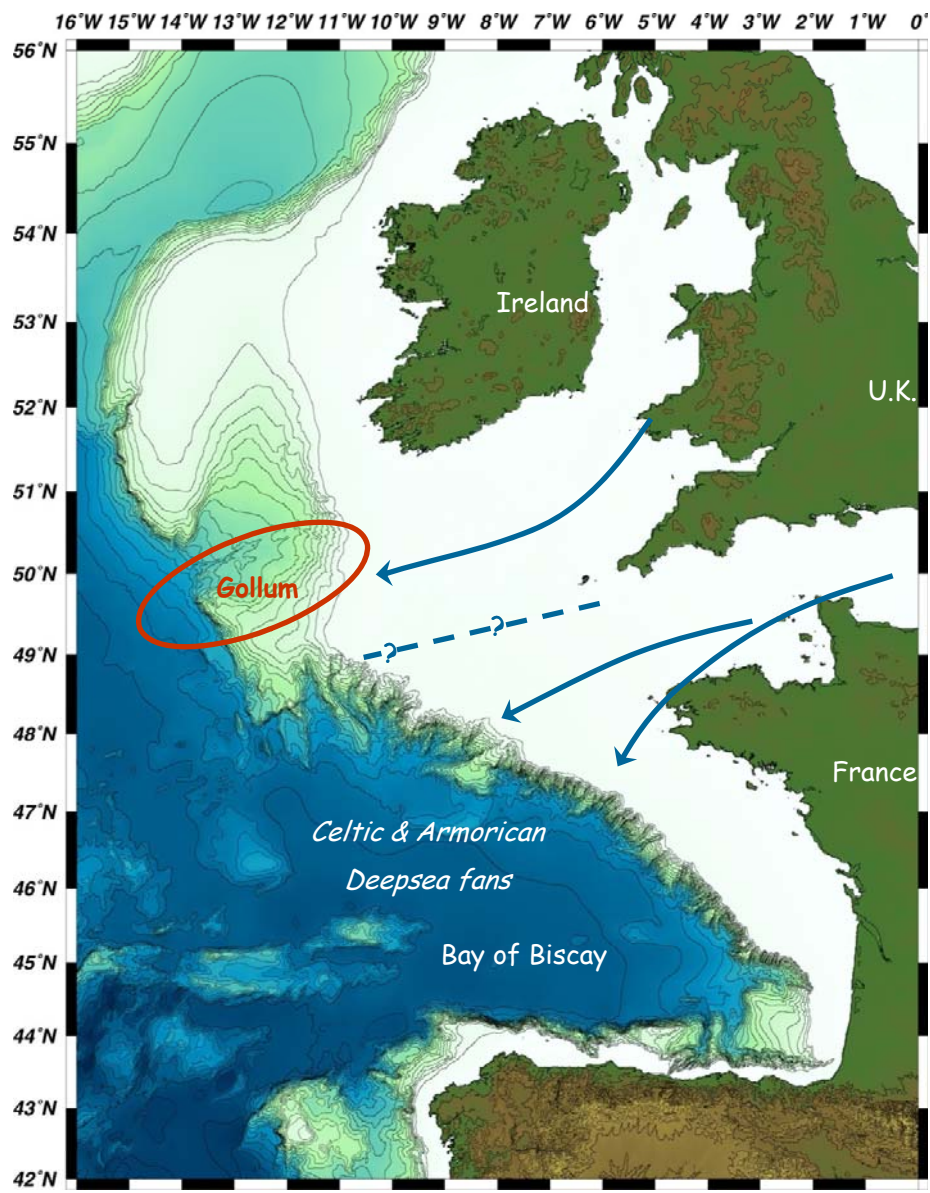
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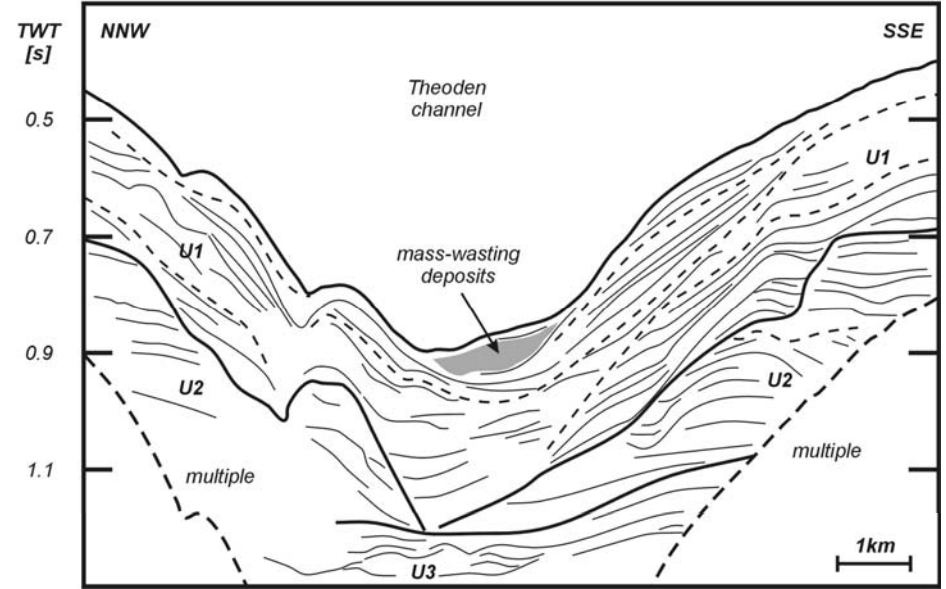
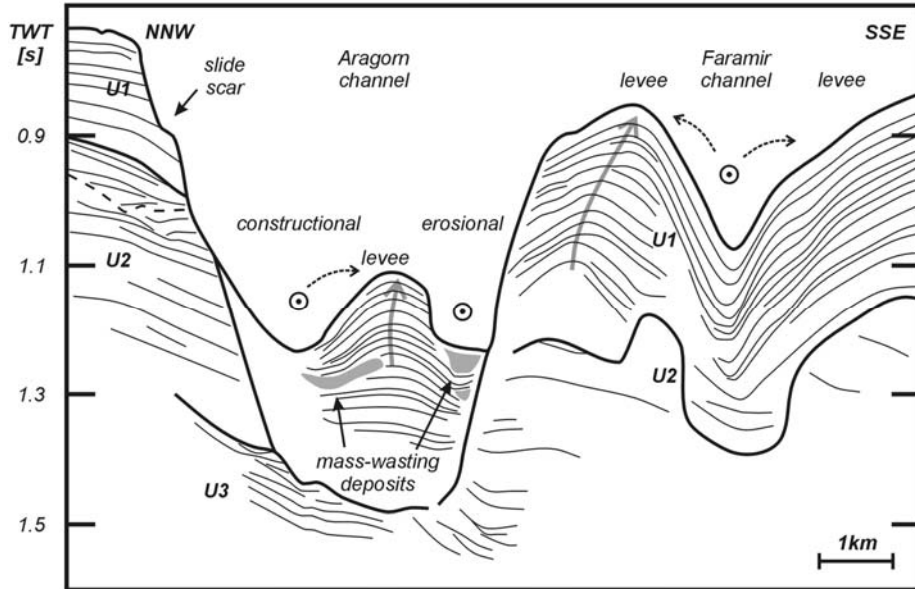
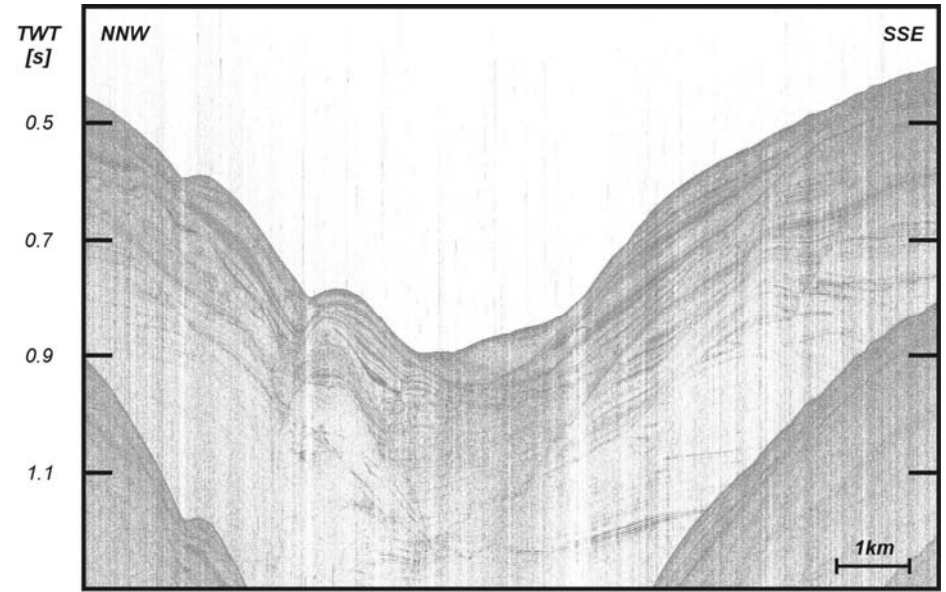
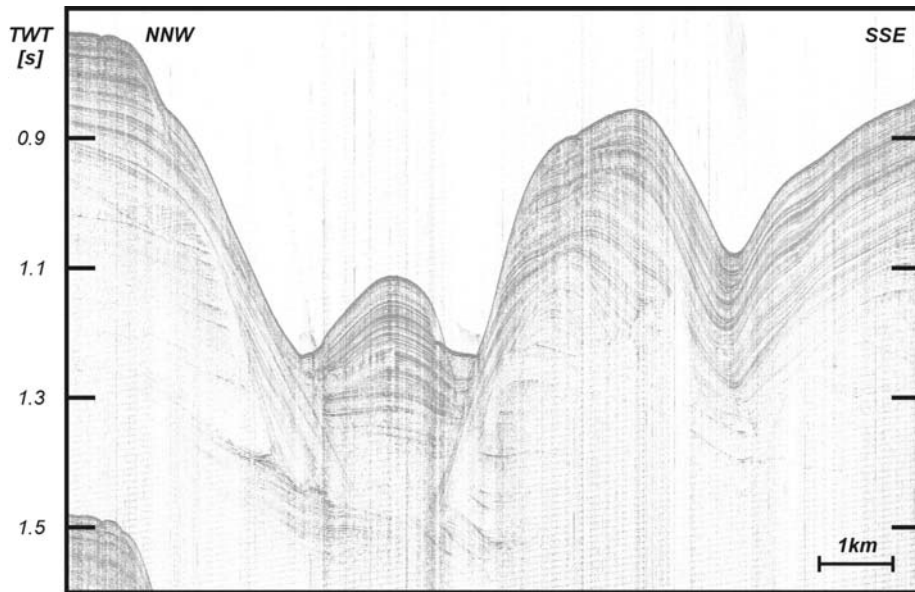
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### Abstract

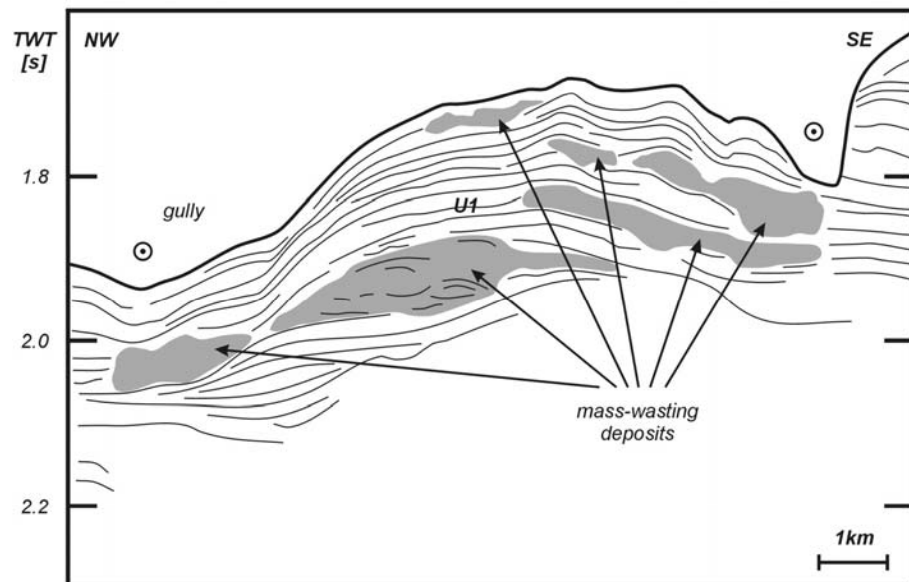
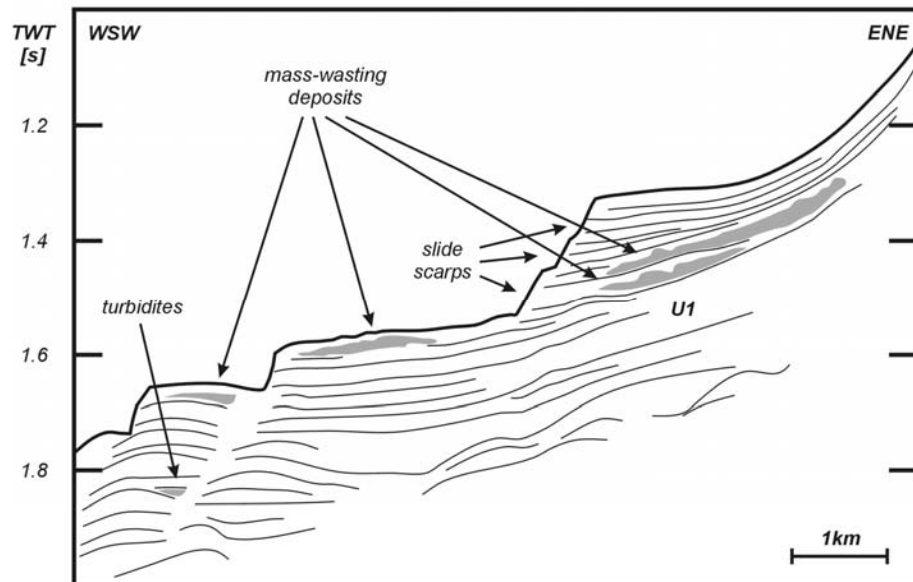
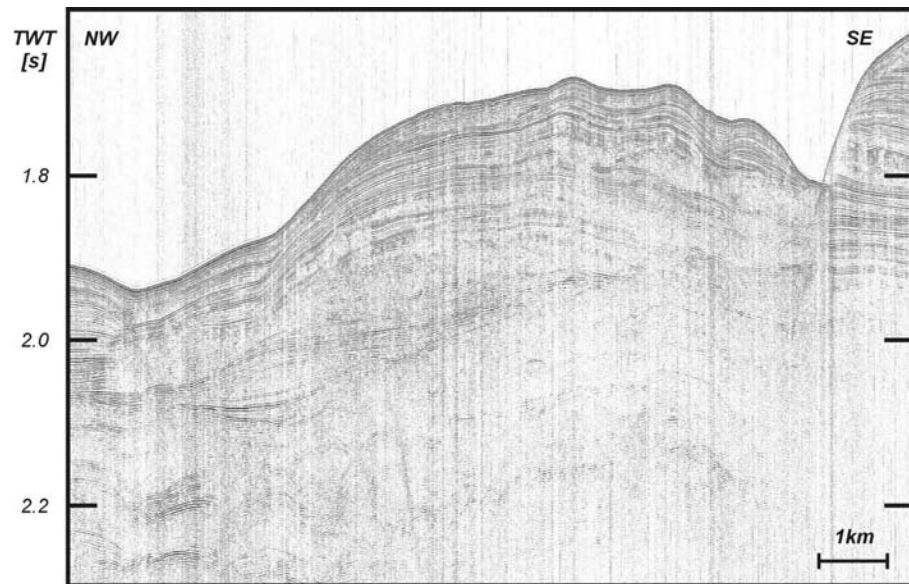
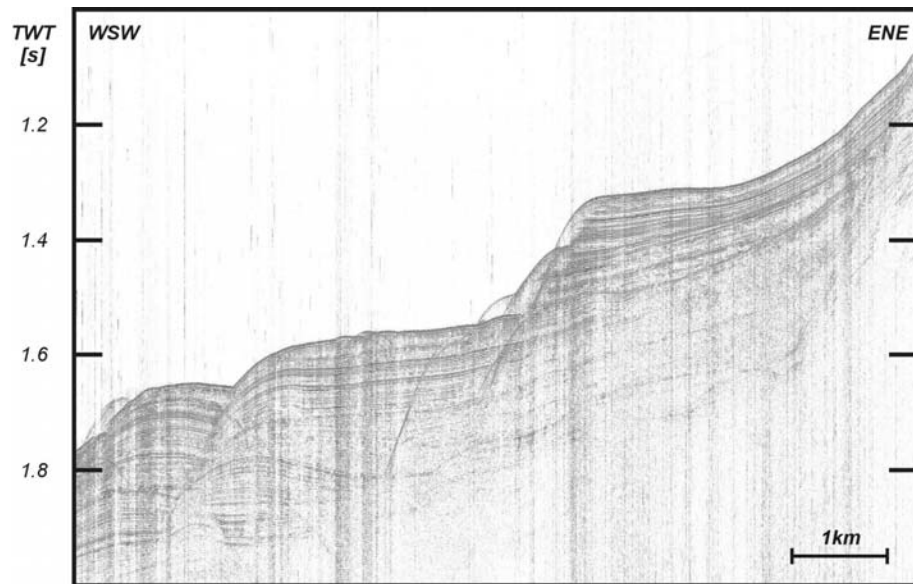
The Gollum Channel System is the only major downslope sediment supplying system on the Irish Atlantic margin. A decade ago, its structure and development was still poorly understood, compared with its counterparts on the Celtic and Armorican margins. A variety of data, collected from 1999 to 2006, has shed a new light on the upper reaches of this system. These data allowed two different channel settings to be distinguished clearly. The main Gollum channel system is characterized by several deeply incised canyons with numerous slide scars on their flanks. Their pathways seem to be influenced by a structural control, creating a bayonet-shaped course. Upstream of this structural feature, the channel floor deposits are characterized by thick acoustically transparent units, suggesting ponded turbidites or mass-wasting deposits. A long piston core, however, only yields a small number of fine-grained turbidites in a muddy hemipelagic host sediment. This implies that this system has known a relatively low activity during Quaternary times. Moreover, at the abyssal end of the slightly sinuous Gollum channel, only a weakly developed deep-sea fan is found, confirming a low-sediment supply. In the northern part of the system, on the other hand, the Kings channels show an entirely different situation. Here the channels are broad and smooth with relatively gentle flanks. Along the longitudinal axis of the northernmost channel, an intra-channel levee is observed, suggesting a relatively higher bottom current activity compared with the southern Gollum channels. The most remarkable feature, however, is a large field of mass-wasting deposits and escarpments. This calls for a dramatic phase of slope instability within the Neogene. Until now, little evidence is found for the cause of this event. The evidence of pockmarks north of this area could invoke the mediation of fluid migration.



Location map.



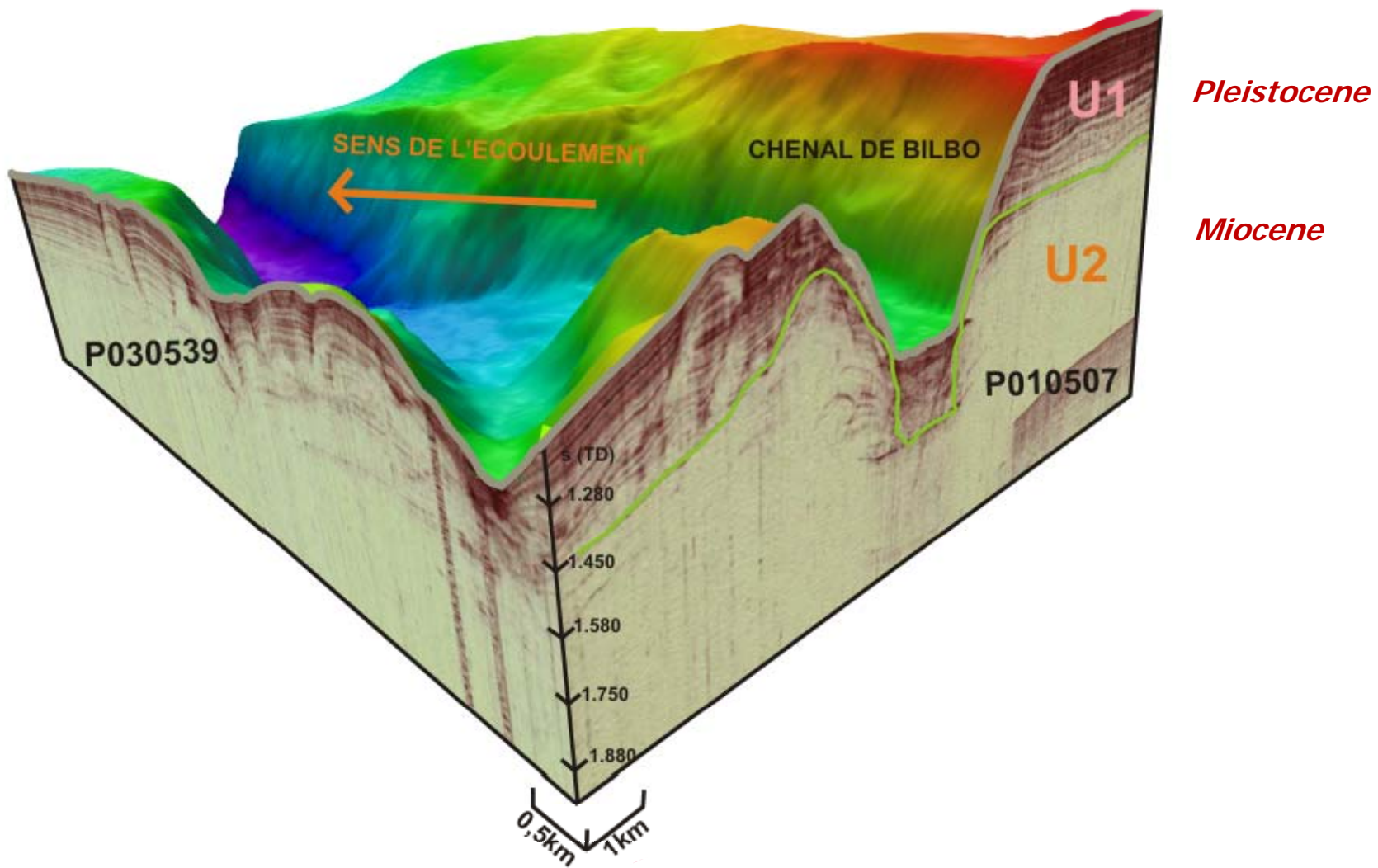
Channel stratigraphy.



Downslope deposits.

SSE

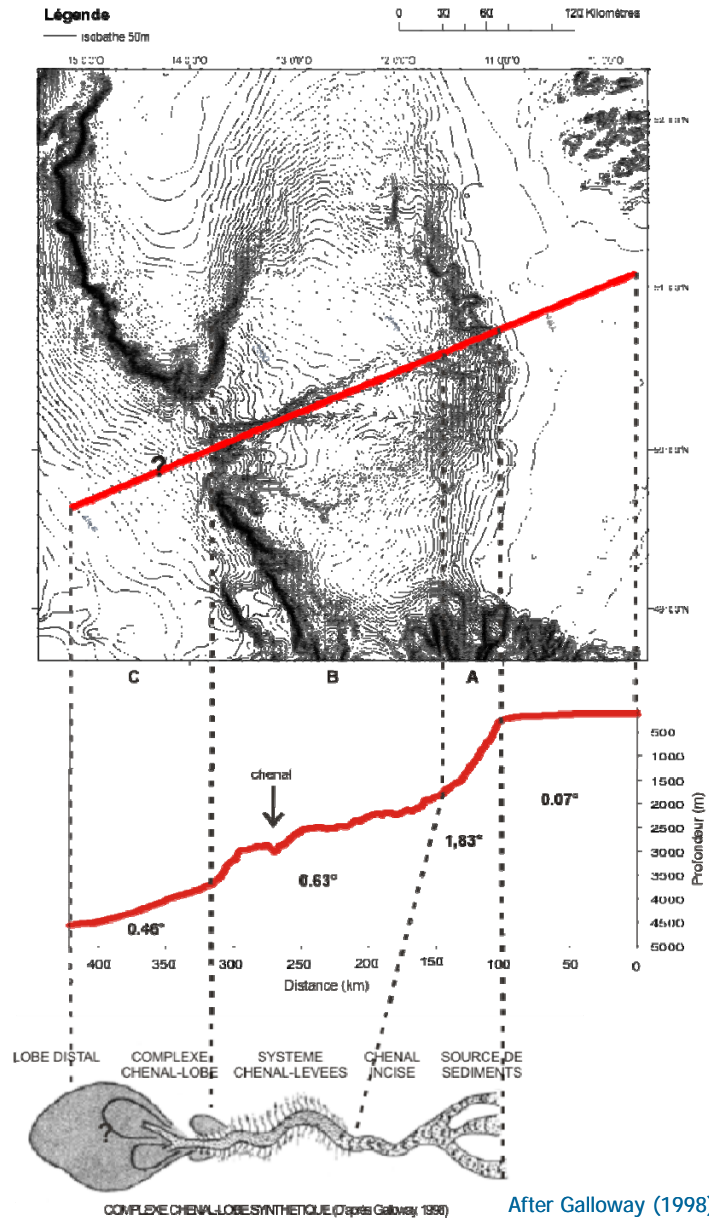
NNW



*Pleistocene*

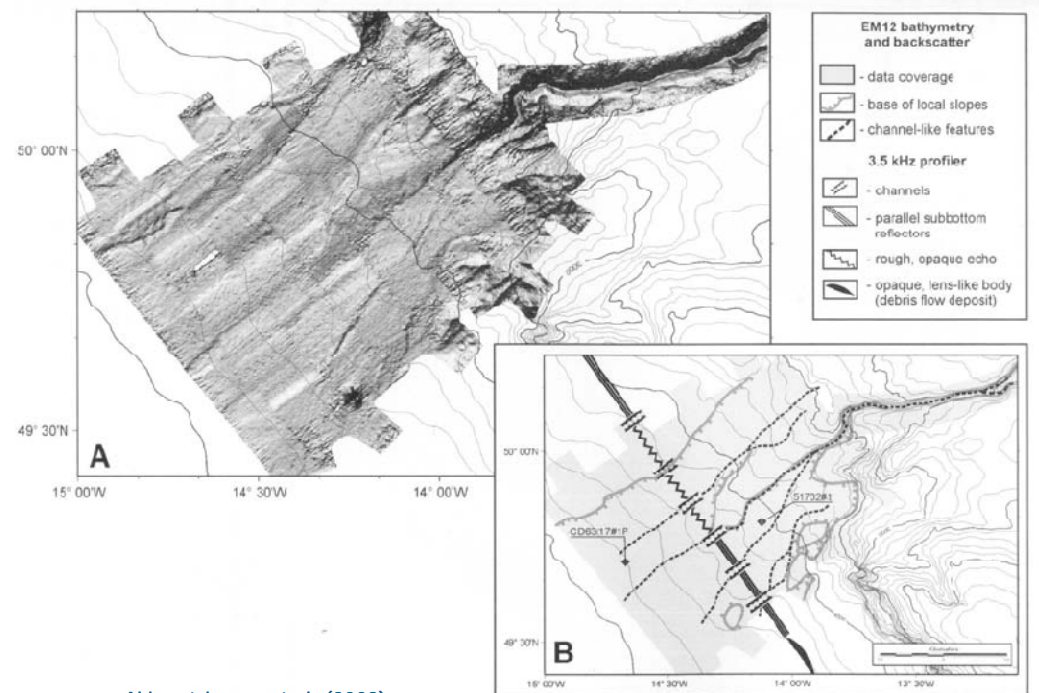
*Miocene*

Channel architecture.

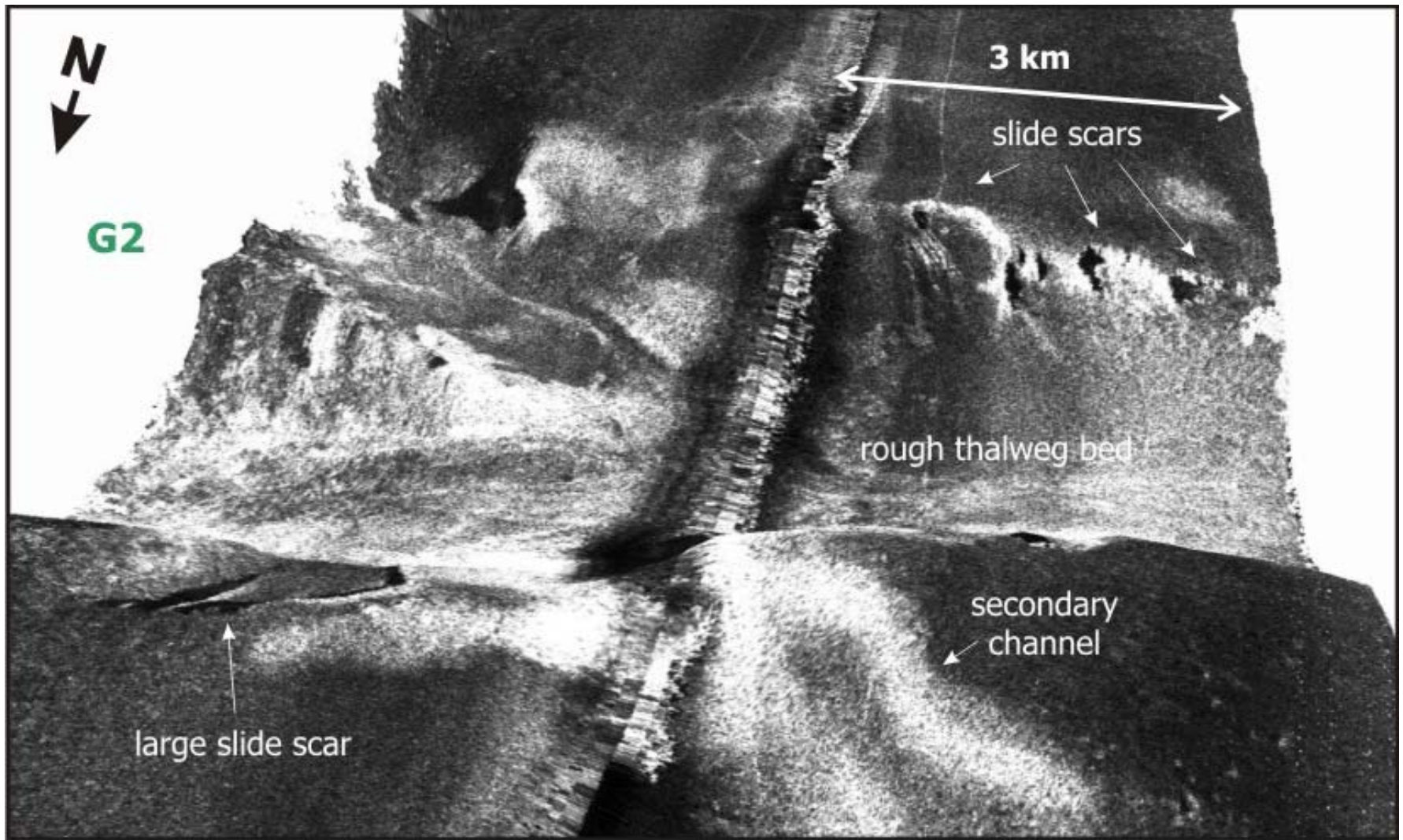


## Middle & lower slope

- Convergence to 1 meandering Gollum channel
- Loss of channel morphology at entry of Porcupine Abyssal Plain
- Weakly developed deepsea fan:
  - Bottom-current reworking
  - Low sediment supply



Gollum channel from source to sink.



Gollum channel sedimentary processes. SSS over Gollum channel G2.

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