



One network may hide others – toward a comprehensive scenario for neogene superimposed valley networks along the English Channel

Fabien Paquet, Isabelle Thinon, Eric Lasseur, Justine Briaïs, Olivier Dugué, Bernadette Tessier, Virginie Gaullier

► To cite this version:

Fabien Paquet, Isabelle Thinon, Eric Lasseur, Justine Briaïs, Olivier Dugué, et al.. One network may hide others – toward a comprehensive scenario for neogene superimposed valley networks along the English Channel. 26ème Réunion des Sciences de la Terre - RST, Oct 2018, Lille, France. hal-01808735

HAL Id: hal-01808735

<https://hal-brgm.archives-ouvertes.fr/hal-01808735>

Submitted on 6 Jun 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

**One network may hide others – toward a comprehensive scenario for neogene
superimposed valley networks along the English Channel.**

**Fabien PAQUET¹, Isabelle THINON¹, Eric LASSEUR¹, Justine BRIAIS¹, Olivier DUGUE²,
Bernadette TESSIER², Virginie GAULLIER³**

¹ BRGM – DGR/GBS, 3 avenue Claude Guillemin BP36009, FR-45060 Orléans, FRANCE. *Courriel* : f.paquet@brgm.fr

² UMR 6143 M2C, 24 rue des tilleuls, Université de Caen Normandie, 14000 Caen cedex, FRANCE.

³ UMR 8187 LOG, Université de Lille, UFR Sciences de la Terre, SN5, 59655 Villeneuve d’Ascq, FRANCE.

The English Channel has been an area of intense geological investigation for decades, spanning various subjects such as structural and basin evolution between variscan and alpine orogenic cycles or sediment transport over a wide platform under tidal and storm currents. Among these subjects, one specific and noticeable feature of the English Channel is the occurrence of a complex network of channels with clear morphological expression at the seabed. Since the beginning of the 20th century, and more pragmatically since the 1970s and the development of high-resolution seismic acquisition, this network has been the focus of several studies that proposed various scenarii for its origin and age. The existence of two superimposed networks had already been proposed in the late 70’s by Alduc. Since 2007, in the framework of the geological mapping of the French continental shelf, BRGM and collaborators (University of Caen Basse-Normandie/UMR M2C; University of Lille 1/UMR LOG,...) acquired a dense grid of very high resolution marine seismic data. Interpretation of these data (i) confirms that several networks are superimposed, and (ii) details the real complexity and discontinuity of the older network(s) associated to the “Fosses de la Manche” system. Finally, thanks to high quality oil exploration seismic data, we were able to reveal a local unexpected increase of bedrock incision and associated sedimentary fill up to c. 350 m. These observations and subsequent implications for networks origin (fluvial or tidal) and development are discussed with respect to regional geological settings and controlling parameters. Their significance in terms of source-to-sink features is a key aspect as the English Channel is certainly an important zone of sediment transfer during Neogene, collecting from a large catchment and delivering to the Western Approaches, the Celtic Sea and the Bay of Biscay abyssal plains. Drilling selected targets to provide groundtruthing sounds now like the obvious next step.