

A new geological map for the “ Baie de Seine -Pays de Caux ” area at the 1:250,000 scale – Sedimentary and tectonic evolution during Cretaceous

Fabien Paquet, Eric Lasseur, Isabelle Thinon, Renaud Couëffé, Massinissa Benabdellouahed, Olivier Dugué, Bernadette Tessier, S Courgeon, Alice Pelote, Justine Briaïs, et al.

► To cite this version:

Fabien Paquet, Eric Lasseur, Isabelle Thinon, Renaud Couëffé, Massinissa Benabdellouahed, et al.. A new geological map for the “ Baie de Seine -Pays de Caux ” area at the 1:250,000 scale – Sedimentary and tectonic evolution during Cretaceous. 25e Réunion des Sciences de la Terre, Oct 2016, Caen, France. 2016. <hal-01336745>

HAL Id: hal-01336745

<https://hal-brgm.archives-ouvertes.fr/hal-01336745>

Submitted on 23 Jun 2016

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.

**A new geological map for the « Baie de Seine - Pays de Caux » area at the 1:250,000 scale –
Sedimentary and tectonic evolution during Cretaceous.**

Paquet, F.¹, Lasseur, E.¹, Thion, I.¹, Couëffé, R.¹, Benabdellouahed, M.², Dugué, O.², Tessier, B.²,
Courgeon, S.³ and Pelote, A.³, Briaux, J.¹, Dupuis, C.⁴, Gaullier, V.⁵

To update the geological mapping over the French continental shelf that mostly dates back to the 70s-80s, BRGM has carried out series of studies and surveys since the early 2000s with the fruitful collaboration of several institutes (CNRS, Universities, Ifremer...) as the one started in 2007 with the University of Caen – Basse-Normandie within the framework of Benabdellouahed PhD thesis (2011). Offshore very-high resolution seismic and geological sampling surveys (2007 to 2009) resulted in a detailed revision of the stratigraphy and structural scheme of the *Baie de Seine (BdS)*. This unprecedented level of details encourages us completing the data set in order to produce an updated version of the geological map of the area.

Since 2013, three very high seismic surveys (MERCAUX 2013 and 2015, TREMOR 2014) combined with geological sampling have been carried out by BRGM and collaborators (CNRS; Universities of Caen – Basse-Normandie, Rennes 1, and Lille 1; Polytech Mons). Together with bathymetric data from SHOM, seismic data interpretation allows us to extend our geological understanding to the surrounding areas.

In the northern *BdS* and offshore *Pays de Caux*, seismic data provided detail images of the Cretaceous series from the erosion unconformity over Jurassic deposits (K/J), to the onset of Cenozoic sedimentation. The older Cretaceous deposits are correlated to the Wealdian facies (lower Cretaceous) and are recognized NE of a large structural feature that includes both *Fécamp-Lillebonne (FL)* and *Nord-Baie-de-Seine (NBdS)* faults. The transgressive Aptian-Albian deposits described onshore are clearly visible above the K/J erosion surface to the west. The Upper Cretaceous (Cenomanian to Santonian-Maastrichtian chinks) is well developed as a stacking of sedimentary bodies revealing a transgressive trend towards the west. Within each of these sedimentary bodies, reflections show mostly progradational/regressive trend with evidence of a forced regression (channels), probably at the Mid-Late Cenomanian transition. Seismic data also provide high resolution images of the contourite-like geometries described along the coastal cliffs of Normandy (Lasseur, 2007), thus allowing first glance tridimensional reconstruction. Finally, seismic profiles image the structures that affect the area and show clear evidences of large tectonic inversion between Jurassic and Cenozoic. Both *FL* and *NBdS* faults definitely play a role in terms of sediment distribution and preservation during Cretaceous and then Cenozoic, and can be seen as the structural limit of the *BdS* area.

Benabdellouahed, M., 2011. La Seine fluviatile plio-quadernaire en baie de Seine : évolution morphologique et sédimentaire. Ph.D. memoir, Université de Caen – Basse-Normandie.

Lasseur E., 2007. La Craie du Bassin de Paris (Cénomanien-Campanien, Crétacé supérieur). Sédimentologie de faciès, stratigraphie séquentielle et géométrie 3D. Ph.D. memoir, Université de Rennes.

¹ BRGM, DGR/GBS – 3 avenue Claude Guillemin, 45060 Orléans, France / ² M2C UMR CNRS 6143, Université de Caen Basse-Normandie, 24 rue des Tilleuls, 14000 Caen, France / ³ Institut Polytechnique LaSalle-Beauvais, 19 rue Pierre Wagué, 60026 Beauvais, France. / ⁴ Faculté Polytechnique, Université de Mons, 9 rue de Houdain, 7000 Mons, Belgique / ⁵ LOG UMR 8187, Université de Lille 1, avenue Paul Langevin, 59655 Villeneuve d'Ascq, France.