

# Morpho-sedimentary and -dynamic characteristics of the Bay of Somme

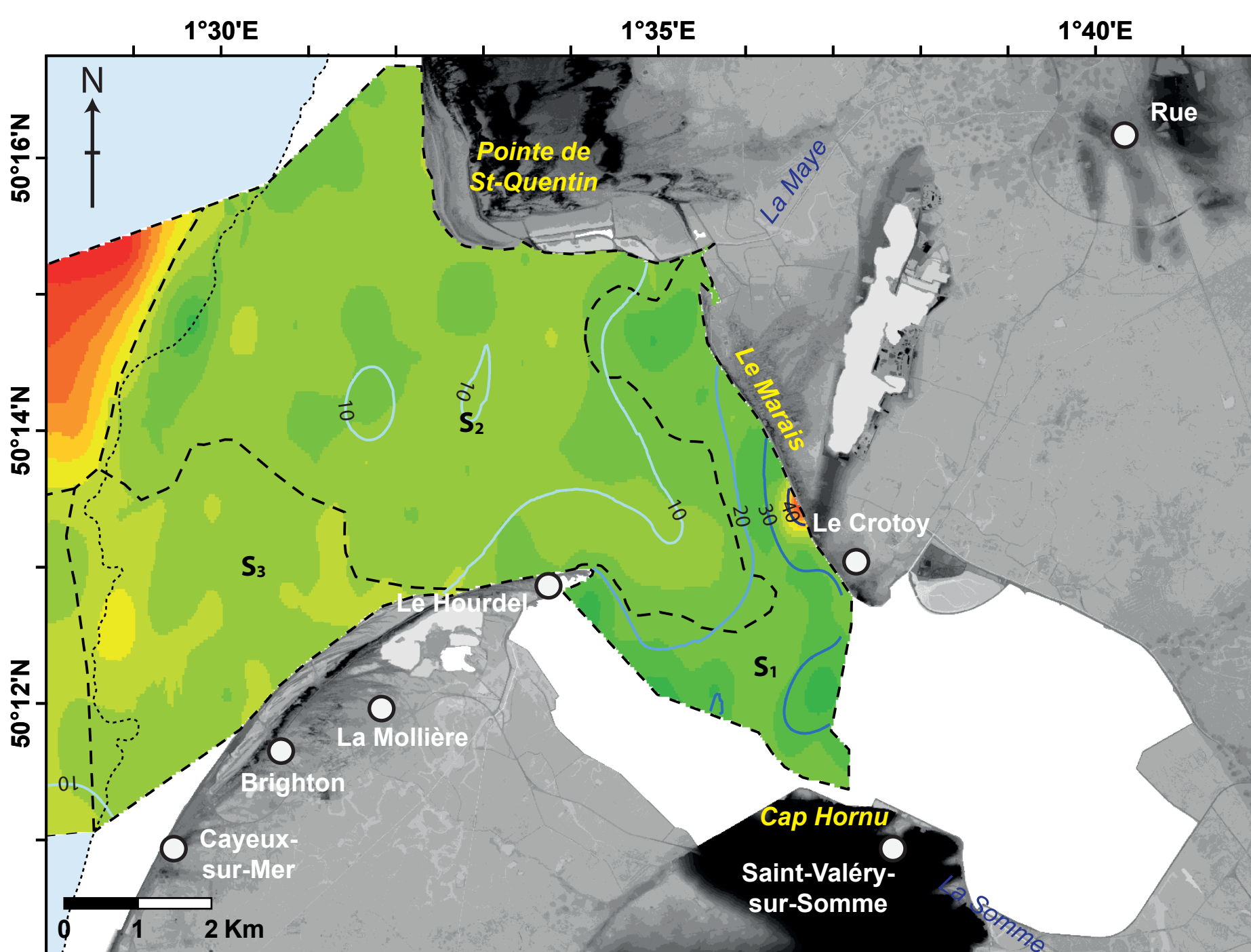
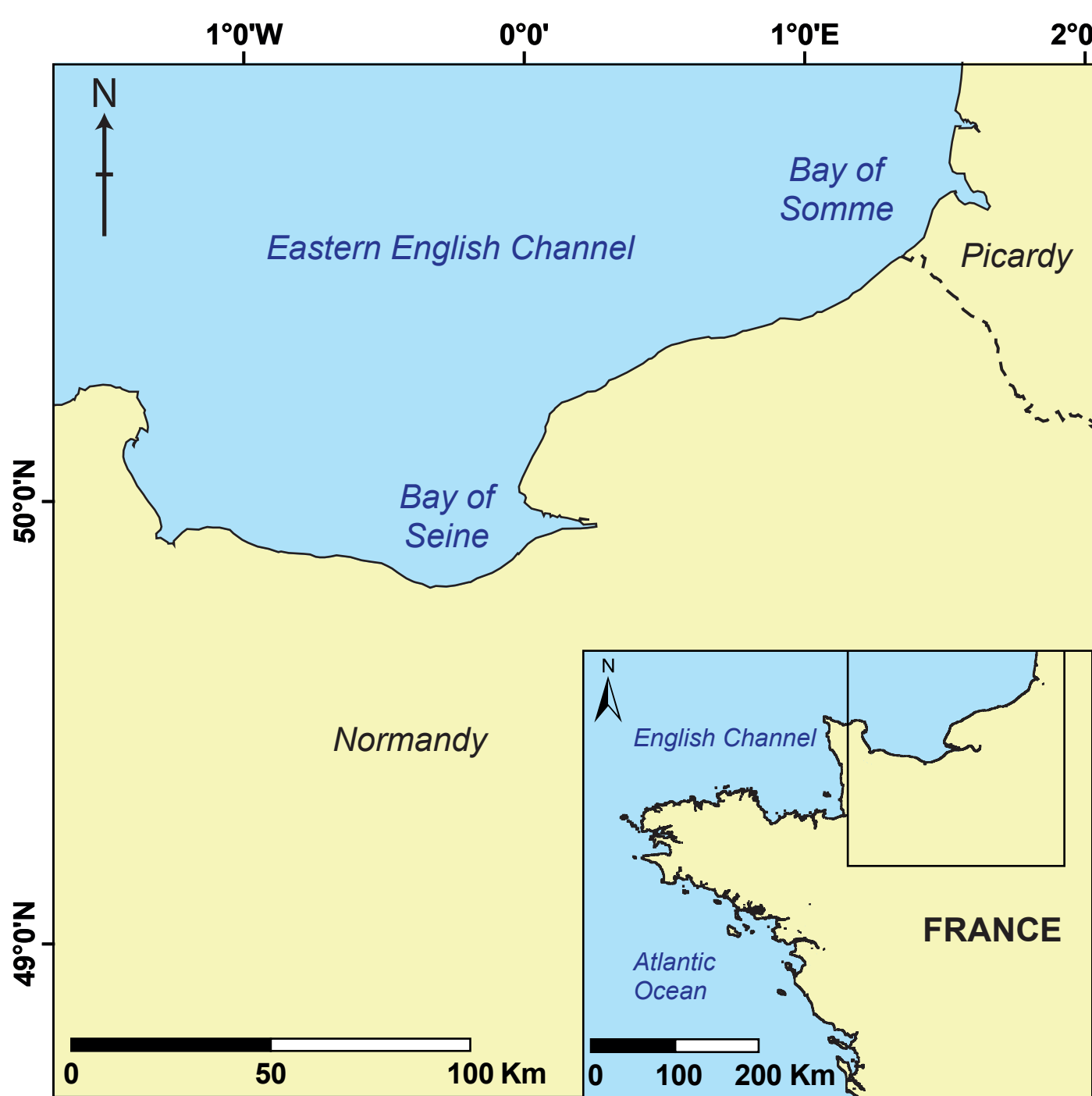
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**SEDIMENT MAP**

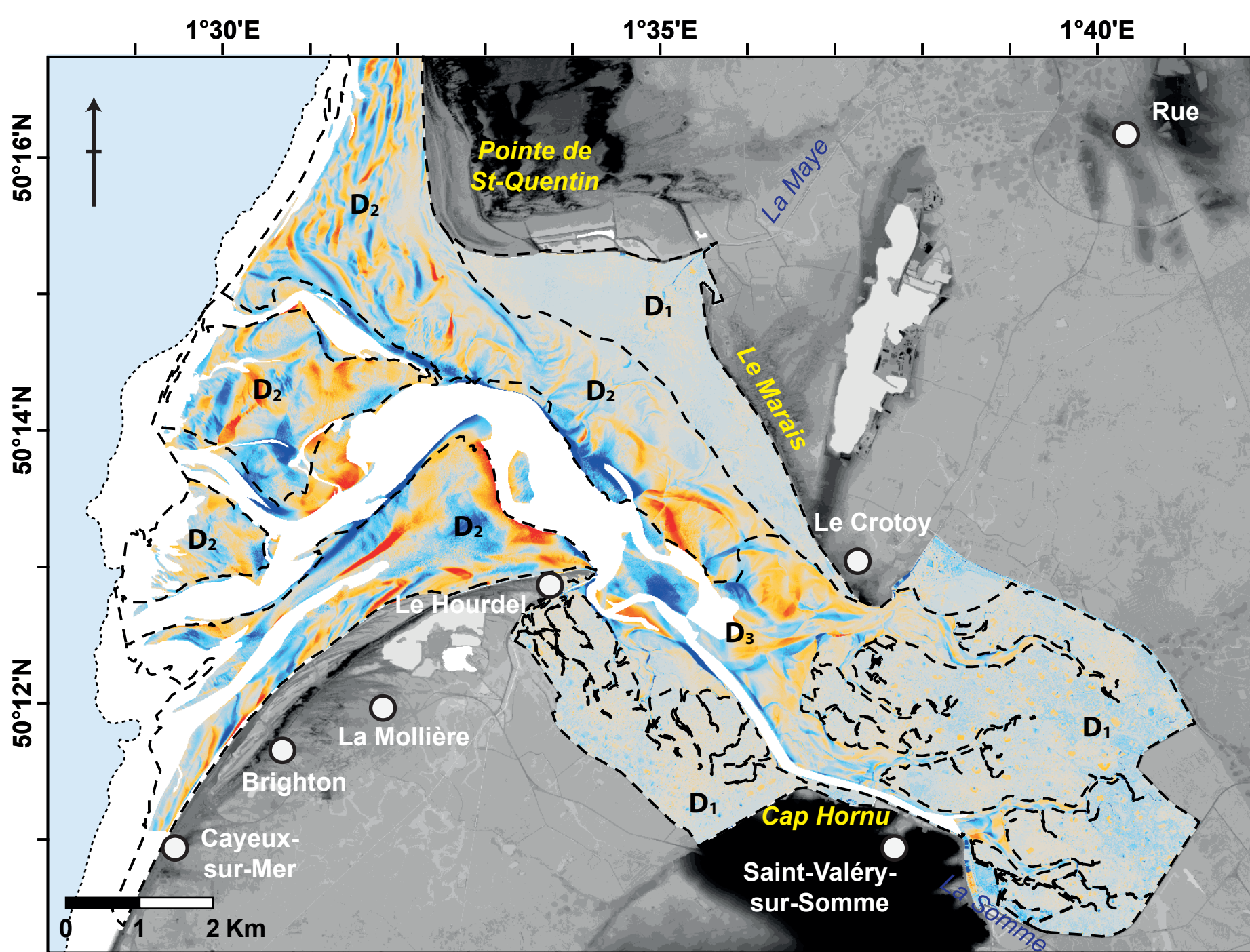
**Sedimentological zonation in 2013:**

- S<sub>1</sub>** Muddy sand and sandy mud, poorly sorted, with a strong CaCO<sub>3</sub> content
- S<sub>2</sub>** Sand, moderately sorted to well sorted, with a low CaCO<sub>3</sub> content
- S<sub>3</sub>** Sand and slightly gravelly sand, moderately sorted, with a very low CaCO<sub>3</sub> content

— CaCO<sub>3</sub> content in 2013 (%)  
 - - - Sedimentological zonation  
 ..... Lowest Astronomical Tide

**Mean grain size in 2013 (µm)**

- 62 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 350
- 350 - 400
- 400 - 450
- 450 - 500
- 500 - 550
- 550 - 588



**DYNAMIC MAP**

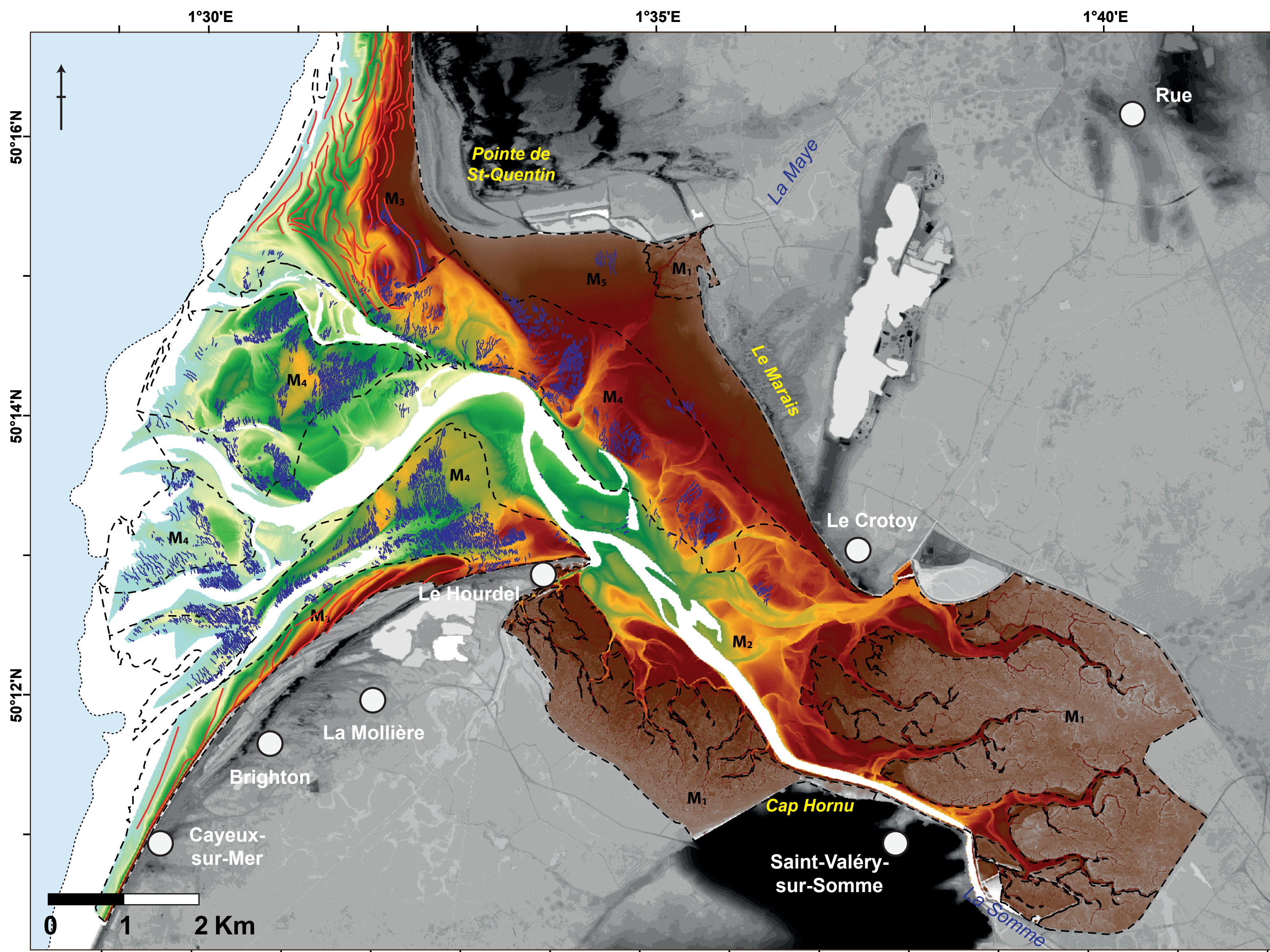
**Dynamic zonation on the 2011-2013 period:**

- D<sub>1</sub>** Stability
- D<sub>2</sub>** Strong dynamics due to migration of bedforms
- D<sub>3</sub>** Strong dynamics due to channel migration

- - - Dynamic zonation  
 ..... Lowest Astronomical Tide

**Altimetric variation on the 02/06/2012-01/04/2013 period (m)**

1.5 4.17  
 1.0  
 0.5  
 0  
 -0.5  
 -1.0  
 -1.5 -5.97



**MORPHOLOGY MAP**

**Morphological zonation:\***

- M<sub>1</sub>** Salt marshes
- M<sub>2</sub>** Tidal channels
- M<sub>3</sub>** Sedimentary bars
- M<sub>4</sub>** Hydraulic dunes
- M<sub>5</sub>** Beach of high altitude

\* zones indicate the dominant morphological features observed on the 2011-2013 period (in case of change on the 2011-2013 period, salt marshes, tidal channels, sedimentary bars and then dunes have been favored).

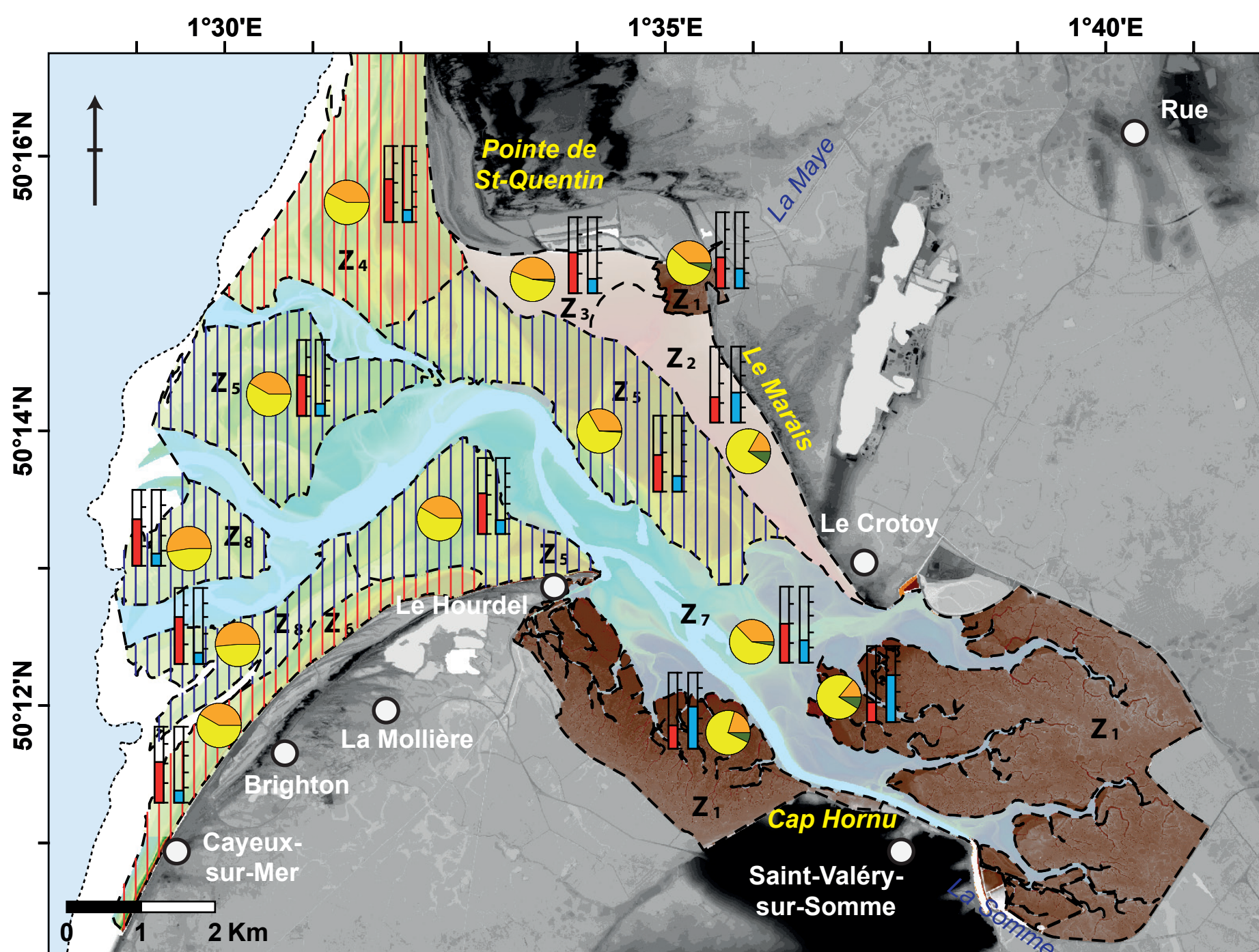
- - - Morphological zonation  
 ..... Lowest Astronomical Tide

**Crests of intertidal bedforms interpreted from LIDAR data (01/04/2013):**

- Hydraulic dunes
- Sedimentary bars

**Topography of 01/04/2013 (m NGF-IGN69)**

13.3  
 12.0  
 10.0  
 8.0  
 6.0  
 4.0  
 2.0  
 0  
 -2.0  
 -3.6



**INTERPRETATIVE MAP**

**Morpho-sedimentary and -dynamic zonation on the 2011-2013 period with information on filling stage:**

- Z<sub>1</sub>** Filled (nd)
- Z<sub>2</sub>** Final stage of filling (+0.088 ± 0.17m<sup>3</sup>/m<sup>2</sup>)
- Z<sub>3</sub>** Final stage of filling (+0.164 ± 0.17m<sup>3</sup>/m<sup>2</sup>)
- Z<sub>4</sub>** Current filling (+0.065 ± 0.17m<sup>3</sup>/m<sup>2</sup>)
- Z<sub>5</sub>** Current filling (+0.156 to +0.249 ± 0.17m<sup>3</sup>/m<sup>2</sup>)
- Z<sub>6</sub>** Current filling (+0.372 ± 0.17m<sup>3</sup>/m<sup>2</sup>)
- Z<sub>7</sub>** Current filling (nd)
- Z<sub>8</sub>** Erosion (-0.508 ± 0.17m<sup>3</sup>/m<sup>2</sup>)

Filling values according to Michel (2016)  
 Incertitude according to the formulae of Brasington et al. (2003)

- - - Morpho-sedimentary and -dynamic zonation  
 ..... Lowest Astronomical Tide

**Proportions of sedimentary classes, average mean grain size and carbonate content in 2013 (individual samples in Z1 or mean values per zone in Z2 to Z8):**

- Sand
- Fine sand
- Mud

\* Gravel is not represented as it represents never more than 0.76%

**Mean grain size**

400 µm  
 240 µm (maximum)  
 0

**CaCO<sub>3</sub> content**

50%  
 31% (maximum)  
 0

**Sediment dynamics (2011-2013):**

- Stable areas
- Areas of low dynamics
- Areas of strong dynamics covered with sedimentary bars (red) or hydraulic dunes (blue)
- Areas of strong dynamics due to channel migration

**MAP INFORMATIONS**

**Reference system :**  
 Spheroid: RGF93  
 Projection: Lambert Conformal Conic (Lambert-93)

**Location map :**  
 Base map: BD ALTI® (IGN)  
 Administrative boundaries: GEOFLA® Départements

**Sediment, morphology, dynamic and synthesis maps :**  
 Base map: RGE ALTI® version 2.0 (IGN)  
 Elevation scale (m)

**Data:**

- Sediment map: superficial sediment sampled in 2013 (Michel, 2016)
- Morphology and dynamic maps: 6 topographic LIDAR survey between 2011 and 2013 :
  - 17/02-08/03/2011 (RGE ALTI®, IGN)
  - 28/09/2011 (CIRCLE, SNO DYNALIT, FR SCALE 3730)
  - 02/06/2012 (CIRCLE, Région Picardie, FEDER)
  - 18/11/2012 (CIRCLE, SNO DYNALIT, FR SCALE 3730)
  - 01/04/2013 (CIRCLE, Région Picardie, FEDER)
  - 04/11/2013 (CIRCLE, SNO DYNALIT, FR SCALE 3730)

For morphology and dynamic maps, there is no data recorded in water areas (e.g. channels or hunting ponds located in salt marshes). Most of these zones appears in transparency on topography.