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Nevele Formation

Formal description of the Nevele Formation, grouping the chalk deposits on the western and central parts of the Brabant Massif

5-6-2009, accepted 10-12-2009, abbreviated 18-12-2009

Name: derived from Nevele commune (province of East-Flanders, 13 km west of Ghent)

Stratotype: Nevele borehole in borough Hansbeke, GeoDoc 54E 196. Lambert coordinates: x = 91440, y = 195165, z (ground level) = 10 m; depth interval 198.0 - 232.4 m (corresponding to the entire Cretaceous marine section at this site).

Well, drilled 1989 for the piezometric network of Flemish Administration for Environment, Nature and Land Management (AMINAL), deepened and cored by Flemish Administration for Natural Resources and Energy (ANRE). Borehole description in DOV <www.dov.vlaanderen.be> and GeoDoc files of the Geological Survey of Belgium. Continuous wireline core from 211 m till final depth of 273,20 m. Cores are cut lengthwise and preserved in the core repository of the Geological Survey of Belgium.

Description: Pale gray (2,5 Y 8/1) fine grained chalk (biomicritic wackestone), becoming more white-coloured downward (N 9/0), with darker wavy, non-parallel laminae and bioturbations (2,5 Y 7/1). Few macrofossils (rhynchonellids and mollusc shell debris, pyritised silicic sponge remains). Rarely silex (flint) bearing. The bottom bed (229,55-232,40 m) consists of glauconitic, strongly bioturbated chalk, with phosphatic grains and frequent, often green-coated pebbles derived from the regolith.

Underlying strata: rubefied regolith (7,5-10R, 2,5-10 YR), of earlier Cretaceous age, reaching a depth of 40 m, developed on fractured and steeply inclined greenish-grey (10 GY) phyllites (Stoops, 1992; Mees & Stoops, 1996) of the Cambrian Oisquercq Group (Piessens et al., 2005).

Overlying strata: On the north flank of the Brabant Massif, the Nevele chalk is the only Cretaceous formation present, covered by grey sandy clays and glauconite-bearing clayey sands of the Hannut Formation, Landen Group, Thanetian (Jacobs et al., 1999; Vandenberghe et al., 1990).

Area: NW Belgium, on the Brabant Massif west of the line Antwerp-Brussels and along the western rim of the Campine basin; only known as subsurface occurrence. Eroded towards the southern margin of the Brabant Massif.

Towards the Campine basin, the chalks assigned to the Nevele Formation laterally grade into more diverse sedimentary units, which make up the lower part of the Gulpen Formation, namely the Zeven Wegen Member, and the Vaals Formation.

In the more strongly subsiding Mons basin, the homogeneous chalks assigned to the Nevele Formation are equivalent to 5 different chalk units, successively the Saint-Vaast, Trivières, Obourg, Nouvelles and Spiennes Formations.

Thickness: 34.4 m in the Nevele borehole (54E196) stratotype. Increasing in thickness towards the northwest and northeast, reaching 121 m in the Knokke well (11E138).

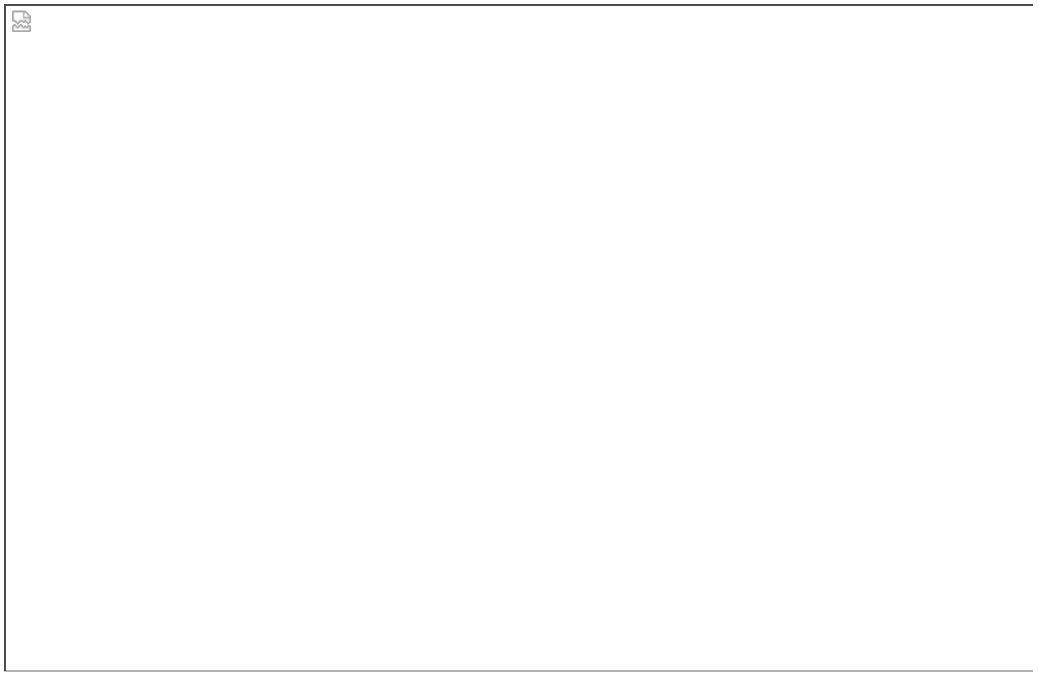
Age: There is no biostratigraphical datation applied directly to the Cretaceous of the Nevele borehole. However, bioclast assemblages allow regional correlations, hence biostratigraphic dating. Tthe Nevele Formation at the type locality, including the upper non-cored part, is deposited during the Santonian to Campanian.

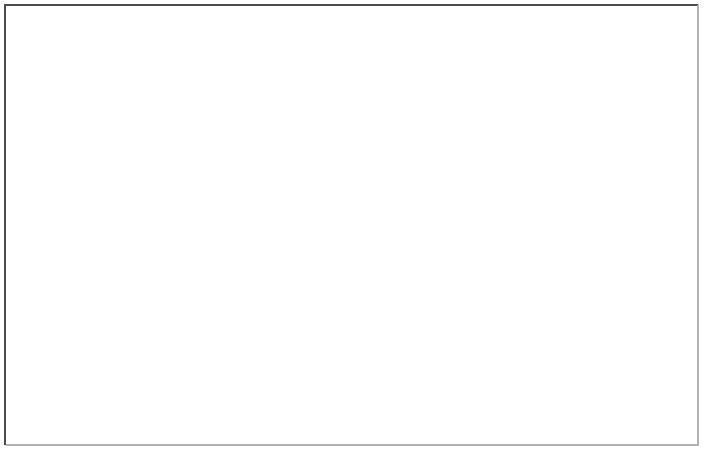
Historical background: In borehole descriptions filed in the GeoDoc archive of the Geological Survey of Belgium and in the associated literature, this formation is designated as "white chalk, Cretaceous chalk or Senonian chalk". More precise lithostratigraphical information nor correlations to the stratigraphical schemes of the outcrop areas have ever been provided.

The Nevele Chalk Formation corresponds to the Ommelanden Formation of the Dutch stratigraphical nomenclature.

Reference:

Dusar, M. & Lagrou, D., 2007. Cretaceous flooding of the Brabant Massif and the lithostratigraphic characteristics of its chalk cover in northern Belgium. Geologica Belgica, 10/1-2: 27-38.





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