Review of the Silurian in Belgium.

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Abstract

Since the last review on the Silurian in Belgium (Verniers et al. 2001), much new fieldwork and studies with detailed logging in boreholes and outcrops in the Brabant Massif and in the Condroz Inlier, increased our knowledge but often went unpublished in PhD's, MSc's and reports. Especially in the Condroz Inlier continuous lithologs could be recorded (Puagne area: Criptia and Genicot formations; Neuville-sous-Huy area: formations of Genicot, Neuville-S-H, Naninne, Jonquoi and Thimensart), and in the Orneau valley of the Brabant Massif: the Bois Grand Père, Fumal and Vichenet formations.
Detailed sampling in those sections produced moderately well preserved chitinozoan assemblages allowing to describe an accurate biozonation (Mortier 2014 Mortier *et al* subm.) and together with previous studies in boreholes of the Brabant massif (chitinozoans by Van Grootel 1990 unpublished, Zalasiewicz (in Van Grootel et al 1998) and more recent unpublished studies, for the first time a chitinozoan biozonation can be proposed for the entire Silurian of the Brabant massif (with14 assemblage biozones and 15 subzone) and another for the entire Silurian of the Condroz Inlier (with more than 12 assemblage biozones).

This biozonation and correlation with well dated sections in Avalonia and the Baltic area allowed a revision of the definitions of the Silurian lithostratigraphic units and propose a more accurate chronostratigraphical dating of the different subparts of the Brabant massif and the Condroz inlier. It appears that the Silurian sequence is thick in the Brabant Massif and less in the Condroz Inlier, which was already well known, but it appears that still many parts are missing in both areas. Several trends in oxic-anoxic cycles, sea-level change and facies change can now better be located in time.

In detail, it is shown that the late Hirnantian to lower Llandovery transition is well exposed in Tihange, Condroz Inlier (Pereira et al. 2021). The *convolutus* sea level drop followed by transgression well evidenced in the Llandovery area, Wales, proofs also to be present in the SW part of the Condroz: with Genicot Fm, covering a incision history and in the Brabant massif with a thin conglomerate in a borehole, a limited amount of missing strata below. The Corroy Formation (Brabant Massif, Sheinwoodian) is no more the time equivalent of the Naninne Formation (Condroz Inlier), as long postulated in literature: the latter is now dated upper Telychian (time slice Te5). The Ireviken extinction event observed in most fossil groups happens somewhat differently for the chitinozoans. The Corroy Formation is interpreted as deposited during a sea level low. In its top, already in the post-*riccartonensis* - *flexilis* biozone, an important extinction of the taxa occurs with nearly no changes lower down, Higher in the sequence the sea-level rises. The Mulde event is only visible with poorer

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chitinozoan assemblages. The early Ludlow sea-level rise and maximum flooding surface is well visible sedimentologically low in the Ronquières Fm (Brabant Massif).

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