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National Commission for Stratigraphy Belgium

NCS meeting report 12/2020

Meeting report: National Commission for Stratigraphy Belgium

January 2021

Due to restrictions concerning the Covid-19 health crisis, it was decided not to meet in person for the December 2020 NCS meeting. Instead, the subcommissions were asked to provide written input, which is compiled in this report.

1. Approval of the previous meeting report

The report of the 2019-12 meeting available on the NCS website did not raise any remarks and is thus considered as approved.

2. Reports of subcommissions

2.1 Lower Palaeozoic

Different field activities were organized during the summer: (1) preparation of the excursion to Mehaigne area (Jacques Verniers (JV), 2 July), (2) excursion to Mehaigne-area, Neuville-sous-Huy (Parc) and Huy, in preparation of excursion with the Société géologique du Nord (Eric Goemaere (EG), Alain Herbosch (AH), JV, 3 August), and (3) excursion to the ravines of Neuville-sous-Huy; (Jan Mortier, EG, AH, JV, 24 August).

A meeting took place at Brussels on 29 June between AH and JV for a discussion on a PPT (285 slides) with a review of the Silurian formations of Belgium.

Herbosch A., Liégeois J-P., Gärtner A., Hofmann M., Linnemann U., 2020. The Stavelot-Venn Massif (Ardenne, Belgium), a rift shoulder basin ripped off the West African craton: cartography, stratigraphy, sedimentology, new U-Pb on zircon ages, geochemistry and Nd isotopes evidence. *Earth-Science Reviews*, 203, 10321042.

<https://doi.org/10.1016/j.earscirev.2020.103142>

Herbosch A. (in prep.). The Mousty Formation: the state of the art. *Geologica Belgica*.

Verniers J. (in prep.). Publication of PhD Jan Mortier (2014).

2.2 Devonian

A fieldtrip for *Geologica Belgica* was organized by Julien Denayer, on 2 October 2020. It was devoted to the lithostratigraphy of the Eifelian from the southern flank of the Dinant Synclinorium.

2.3 Carboniferous

A significant study dedicated to the Devonian/Carboniferous boundary has been published:

Denayer J., Prestianni C. Mottequin B., Hance L. & Poty E. (2020). The Devonian–Carboniferous boundary in Belgium and surrounding areas. *Palaeobiodiversity and Palaeoenvironments*. <https://doi.org/10.1007/s12549-020-00440-5>

2.4 Permian-Triassic-Jurassic

The President of the subcommission Isabelle Belanger has resigned from her position and should be replaced as soon as possible.

2.5 Cretaceous

Nil

2.6 Paleogene-Neogene

No physical nor online meetings were organized during 2020. There were very frequent emails contacts between the members relating to the Neogene 2020 volume dealing with the update and *status questionis* of

the lithostratigraphy. Below you can find the list of the Neogene 2020 papers to be included in the *Geologica Belgica* volumes 3 and 4, 2020.

Vandenbergh N. & Louwye, S. An introduction of the Neogen stratigraphy of northern Belgium: present status.

Vandenbergh N., Louwye, S. & Anceau A. The Neogene stratigraphy of northern Belgium. Foreword.

Dusar M. & Vandenbergh N. Upper Oligocene lithostratigraphic units and the transition to the Miocene in North Belgium.

Munsterman D. & Deckers J. The Oligocene/Miocene boundary in the ON-Mol-1 and Weelde boreholes along the southern margin of the North Sea Basin, Belgium.

Louwye S., Deckers J., Verhaegen J., Adriaens R., Vandenbergh N. A review of the lower and middle Miocene of northern Belgium.

De Schutter P. J. & Everaert S. A megamouth shark (Lamniformes: Megachasmidae) in the Burdigalian of Belgium.

Everaert S., Munsterman D., De Schutter P., Bor T., Bosselaers M., Van Boeckel J. Stratigraphy and palaeontology of the lower Miocene Kiel Sand Member (Berchem Formation) in temporary exposures in Antwerp (northern Belgium).

Houthuys R., Adriaens R., Goolaerts S., Laga P., Louwye S., Matthijs J., Vandenbergh N., Verhaegen J. The Diest Formation: review of insights from the last decades.

Goolaerts S., De Ceuster J., Mollen F. H., Gijzen B., Bosselaers M., Lambert O., Uchman A., Van Herck M., Adriaens R., Houthuys R., Louwye S., Bruneel Y., Elsen J. & Hoedemakers K. The upper Miocene Deurne Member of the Diest Formation revisited: unexpected results from the study of a large temporary outcrop near Antwerpen International Airport, Belgium.

Verhaegen J., Frederickx L. & Schiltz M. New insights into the lithostratigraphy and paleogeography of the Messinian Kasterlee Formation from the analysis of a temporary outcrop.

Vandenbergh N., Wouters L., Schiltz M., Beerten K., Berwouts I., Vos K., Houthuys R., Deckers J., Louwye S., Laga P., Verhaegen J., Adriaens R. & Dusar M. The Kasterlee Formation and its relation with the Diest and Mol Formations in the Belgian Campine.

Louwye S. & Vandenbergh N. A reappraisal of the stratigraphy of the upper Miocene unit X in the Maaseik core, eastern Campine area (northern Belgium).

Louwye S., Deckers J., Vandenbergh N. The Pliocene Lillo, Poederlee, Merksplas, Mol and Kieseloolite Formations in northern Belgium: a synthesis.

Wesselingh F. P., Busschers F. S., Goolaerts S. Observations on the Pliocene sediments exposed at Antwerpen International Airport (northern Belgium) reveal the stratigraphic position of the Broechem fauna.

Deckers J. & Louwye S. The architecture of the Kattendijk Formation and the implications on the early Pliocene depositional evolution of the southern margin of the North Sea Basin.

Deckers J., Louwye S. & Goolaerts S. The internal division of the Pliocene Lillo Formation: correlation between Cone Penetration Tests and type sections.

Houthuys R. & Matthijs J. Reinterpretation and update of the Neogene lithostratigraphy and structure of the "Bree Uplift", NE Belgium.

Adriaens R. & Vandenbergh N. Quantitative clay mineralogy as a tool for lithostratigraphy of Neogene Formations in Belgium: a reconnaissance study.

Verhaegen J. Stratigraphic discriminatory potential of heavy mineral analysis for the Neogene sediments of Belgium.

Schiltz M. On the use of CPTs in stratigraphy: recent observations and some illustrative cases.

De Nil K., De Ceukelaire M. & Van Damme M. A reference dataset for the Neogene lithostratigraphy in Flanders, Belgium.

Physical or online meetings of the subcommission will be organized during Spring 2021 to formalize the proposed new lithostratigraphic units in the Neogene 2020 volume, and to emend existing units.

2.7 Quaternary

Nil

2.8 Alteration units

Nil

3. Regions

3.1 Flemish Region

- A new (Hydro-)Geological 3D model, G3Dv3.0 and H3Dv2.0, since the end of 2019
 - Formal geological formations and members, as well as hydrogeological units, in 3D
 - Downloadable data and info available: <https://www.dov.vlaanderen.be/page/geologisch-3d-model-g3dv3>
 - Virtual Borehole and Maps in DOV : <http://www.dov.vlaanderen.be/verkenner>
 - Virtual Profiles are in development for publication soon.
 - Thematic mapping, based on the 3D models:
 - Natural resources potential in case of earthmoving: <https://www.dov.vlaanderen.be/page/delfstofftoets-grondverzet>
 - Potential occurrence of soil/subsurface with plastic properties: <https://www.dov.vlaanderen.be/page/plastische-gronden>
- An undeep 3D lithological voxelmodel is in final phase for the urban region of Antwerp (city and harbour), and a first version will be published in 2021.
- Temporary outcrops: a total of 9 temporary outcrops are documented and illustrated in DOV: see <https://www.dov.vlaanderen.be/page/tijdelijke-ontsluitingen>
- Geotheek: the subsurface sample repository has samples of over 400 boreholes, temporary outcrops etc. A general communication is to be expected.
- H3O-De Voorkempen: the 3th H3O-project has started to make a cross-border hydro-geological 3D model with the Netherlands (region east of the city of Antwerp).
- Neogene reference dataset in DOV: see report Subcommission Neogene-Paleogene.

3.2 Walloon Region (REGWAL)

Bernard Delcambre has replaced Martin Laloux, who retired on 1 May 2020, as scientific coordinator of the Geological Map of Wallonia.

4 Website

The lists of the members for each subcommissions will be updated on the basis of the information provided in the subcommission reports.

James Ogg requested some changes to NCS website URLs, to avoid special characters which make linking to the TimeScale Creator difficult. Additionally, he suggested splitting the Triassic formations page. This will be discussed with the P-T-J subcommission.

Regarding website statistics, the total number of sessions again follows the increasing trend since its launch, with 9061 sessions in 2019 to 9895 in 2020. There is a shift in the way users reach the site. In 2019, 56% reached the

site directly by entering the URL, and 12% through a weblink. In 2020, there were only 16% direct visits, while 48% reached the site through a weblink, mostly via Databank Ondergrond Vlaanderen. The country of origin is stable, with 80% Belgian visitors. Total page visits also show a stable pattern, with most visits for the Quaternary and Paleogene-Neogene pages.

5. Any other business

5.1 Revision of the lithostratigraphic scale of Belgium

The special volume of *Geologica Belgica* dedicated to the lithostratigraphic units of Belgium was published in April 2002 and since then, the lithostratigraphy of our country has continued to evolve and to be refined thanks to your work. One of the best examples of such great progresses is the GB volume 23(3/4) gathering several papers related to the Neogene stratigraphy of northern Belgium without forgetting the syntheses dedicated to the Lower Palaeozoic of the Brabant Massif published by A. Herbosch and J. Verniers (2013, 2014). Furthermore, the revision of the geological mapping is now achieved both in the northern and the southern parts of Belgium. Many lithostratigraphic units, which have been proposed by the field geologists, do not appear in the 2002 overview edited by P. Bultynck and L. Dejonghe, which is more particularly the case for the Devonian (southern Belgium, Campine Basin).

The NCS website gathers all the decisions of the NCS and progressively includes the last developments in Belgian stratigraphy. Nevertheless, nothing can replace overviews published in an open access, peer-reviewed international scientific journal. That is why we do believe that it would be opportune to propose a revised version of the Belgian lithostratigraphy to the national and international geological communities.

The NCS proceeded to an opinion pool survey in December 2020 and most of the subcommissions are strongly interested in contributing to a special issue of GB dedicated to the revision of the Belgian lithostratigraphy. Nevertheless, a mixed opinion has arisen from the members of the Lower Palaeozoic subcommission. Alain Herbosch is not really enthusiastic because there is almost nothing to add concerning the Cambrian–Ordovician from the Brabant Massif. On the other hand, AH said that one could improve the stratigraphy of the Ardennes inliers but it would require the collaboration of the geologists of the Walloon Region who mapped these inliers recently. Furthermore, in his opinion, it is a little too early because of the agenda for the following months (e.g. Givet Colloquium in April 2022). Jacques Verniers has planned a review of the Silurian of Belgium following the award of the Van Den Broeck medal in 2018. However, its scope is partly similar to that of the 2002 paper, but also different with (1) an emphasis on general characteristics of the Silurian in Belgium, (2) the inclusion of descriptions of type localities and lithologs of the formations, made up in the last 20 years, (3) many new datings based on chitinozoans, and (4) hypotheses on the basin evolution and correlations between the Condruz Inlier and the Brabant Massif.

Of course, each subcommission is free to participate or not to the volume but we strongly urge the NCS members to submit a contribution, no matter how short it may be, in order that all the geological systems recognised in Belgium are represented. However, keep in mind that we aim to revise the lithostratigraphic scale of our country in including all the lithostratigraphic units and therefore to propose state-of-the-art papers. More information related to the special issue of *Geologica Belgica* (planned for release in the second semester of 2022) will be sent to the subcommissions in the forthcoming weeks.

Bernard Mottequin (Chair), Kris Welkenhuysen (Secretary, Webmaster)