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National Commission for Stratigraphy Belgium

NCS meeting report 13/01/2016

Meeting report: National Commission for Stratigraphy Belgium

GSB-RBINS, 29/06/2016

Start : 09:30 End : 12:00

Present (8)

M. De Ceukelaire (S and Webmaster), E. Goemaere (S), Michiel Duser, Stephen Louwye, Isabelle Belanger, Frieda Bogemans, Alain Herbosch, Bernard Mottequin

Invited (1)

Y. Vanbrabant acting head of the GSB

Excused (9)

N.Vandenbergh (P) Martin Laloux (SPW), Marie Coen-Aubert, Vanessa Heyvaert, Katrien De Nil, Jacques Verniers, Johan Yans, Eddy Poty, Bernard Delcambre

En l'absence du président en titre, les 2 secrétaires assurent ensemble la présidence de la séance

1. Approval of the previous meeting report : <http://ncs.naturalsciences.be/meeting-reports/meeting-2016-01>

Approved without modifications

2. Survey of the different subcommissions:

General comments:

- The full reference and abstract of new publications can be published on the website.
- New Paleozoic units defined by the Service géologique de Wallonie as part of the geological mapping programme – including transboundary units defined in Germany or the Grand Duchy of Luxembourg (cf work by Léon Dejonghe) should be published on the NCS website. It provides value of publication, in general much faster than the official publication of the geological maps. Yves Vanbrabant will contact Daniel Pacyna and Martin Laloux for establishing a procedure for doing so in the framework of the geological ERANET programme.
- The new LIDAR map of Wallonia offers many possibilities for improving geological mapping. This is considered an occasion for upgrading the existing geological maps by the Service géologique de Wallonie.

Lower-Paleozoic

No new stratigraphic units were defined. Current effort by the cartography teams of the Service géologique de Wallonie is mostly directed towards the Lower Paleozoic of the Stavelot-Venn Massif.

Alain Herbosch, Jean-Paul Liégeois and Christian Pin recently published: “Coticules of the Belgian type-area (Stavelot-Venn Massif): limy turbidites within the nascent Rheic oceanic basin.” in *Earth-Sciences Reviews*, June 2016 à les références de l'article et son résumé seront repris sur le site web de la NCS (à fournir par Alain).

Devonian

Adaptation text website Devonian : “The Devonian is also known in two deep boreholes of the Campine Basin. In this northern area of Belgium, it is more particularly characterized by thick conglomeratic deposits whose age is Upper Givetian to Upper Frasnian.”

- Membre de Martelange à transmettre la description (I.Belanger) à la sous-commission et mettre les informations sur le website de la NCS
- Relancer l’examen des unités (groupe, formations, membres) du Famennien suite aux travaux publiés de cartographie par le SGW et placer ces données sur le website de la NCS
- Stimulation des équipes de géologues cartographes de la carte géologique de Wallonie afin qu’ils transmettent les données sur les unités stratigraphiques nouvellement créées dans le cadre de leurs cartes. Ceci est vrai en particulier pour les unités autour du Massif de Stavelot-Venn qui s’inspirent des unités définies récemment en Allemagne.
- The proposed Booischot Formation is accepted by the present commission and to be formalised.

Carboniferous

Les représentants de la sous-commission sont absents mais E.Poty a transmis à B. Mottequin les documents utiles (conformément au rapport 2016-01 : « E. Poty will soon deliver to the ncs the introductory text for the Carboniferous and transmit also the membership list of the Carboniferous subcommission¹. A discussion text is also announced regarding the introduction in the Lower Viséan of the Formation d’Hemptinne , commonly known before as the “ Terwagne blanc”) qui sont ci-attachés.

Text sent by Eddy Poty and revised by Bernard Mottequin :

- **Dinantian** (lower Carboniferous)

The Carboniferous period (about 359 Ma to 299 Ma) was divided between Dinantian (359 – 331 Ma) and Silesian. These two subsystems do not correspond to the two subsystems now defined in the Carboniferous system : Mississippian and Pennsylvanian, the base of the latter being situated in the lowermost part of the Silesian (about 323 Ma). However, the Belgian subdivisions remain in use because they correspond to two main patterns of deposition : carbonated for the Dinantian and siliciclastic with coal measures for the Silesian.

The Dinantian comprises the Tournaisian and Viséan stages, divided in five substages which are now largely used in Eurasia : Hastarian (Lower Tournaisian), Ivorian (Upper Tournaisian), Moliniacian (Lower Viséan), Livian (Middle Viséan) and Warnantian (Upper Viséan). The Dinantian succession was deposited along the southern edge of the Laurussia continent, in two major marine basins separated by the Anglo-Brabant Massif, corresponding to the Campine Basin in the north of Belgium and the Namur-Dinant Basin in the south of Belgium, northern France and Aachen area in Germany. The Dinantian of the Namur-Dinant Basin outcrops largely and was the type area for the historical subdivision of the lower Carboniferous, while the Dinantian of the Campine Basin outcrops only in the Visé area and is mainly known from boreholes.

The Dinantian deposits are almost exclusively limestones and diagenetic dolomites evolved from limestones (mainly in the Tournaisian). They are the base for the recognition of 10 third-order eustatic stratigraphic sequences which can be traced worldwide.

¹ List is added at the end of the Carboniferous chapter

The Namur-Dinant Basin is divided in seven sub-basins having their own tectono-sedimentary evolution : the Hainaut (HSA), Namur (NSA), Condroz (CSA), Dinant (DSA), Visé-Maastricht (VSA), southern Avesnois (ASA), and Vesdre-Aachen sedimentation areas (VASA). The HSA is characterized by high subsidence rates, with the accumulation of up to 2500 m of limestones and dolomites including thick anhydrite units (up to 200 m thick). The classical Tournaisian type sections are located and still well exposed around the town of Tournai, in the HSA. The NSA displays a incomplete stratigraphic succession with proximal carbonate facies ; the French Boulonnais is part of the NSA. The CSA has proximal facies with some gaps. The DSA has during the upper Tournaisian a relatively deep water sedimentation with the development of Waulsortian buildups ; it shows an evolution to shallow water facies during the Viséan. The VSA was part of the Namur-Dinant Basin during the Upper Devonian and the Tournaisian, then evolved to a rapidly subsiding graben filled with deep marine limestone turbidites, separated from the Namur-Dinant Basin by the Booze- Le Val-Dieu ridge and connected to the Campine Basin; the disused quarries at Visé were the classical stratotype for the Viséan. The ASA is in northern France and displays a very incomplete succession sometimes similar to those of the NSA. The VASA has the most incomplete succession with very proximal facies for the Tournaisian corresponding to periods of sea-level highstand, and no Viséan deposit.

In the Namur-Dinant Basin, small quarries extracts limestones for building stones (mainly in the Upper Tournaisian) and large quarries extract limestone for aggregates, cement and lime production.

The Campine Basin records mainly Viséan carbonates with numerous microbial/cryptalgal buildups, some of them being karstified and used for gas storage. The Viséan succession varies in thickness with respect to the general half-graben structure of the basin, the thickness of the deposits increasing southward to the Brabant Massif.

- **New formation:** the Hemptinne Formation

Description: The formation comprises pluridecimetre-thick bedded, pale to white limestones of peritidal facies. They are composed of wackestones with fenestrae, stromatolitic boundstones, peloidal and oolitic grainstones. There are typically frequent levels of pluricentimetre oncolites. Fossils are not common. The Hemptinne Formation resembles the Terwagne Formation, but is very pale while the other is very dark, and it is devoid of silica and argillaceous layers, except for an argillaceous layer in its upper part (cinerite M). Therefore the Hemptinne limestone is very pure and was often confounded with the overlying Neffe Formation and with the underlying Avins Member of the Longpré Formation.

Stratotype: The section in the eastern bank of the small valley of the Hubièssau rivulet, between Robièpont and the Ferme de la Bataille, 500 m northwest of Hemptinne, 4 km north of Philippeville, Dinant sedimentation area (DSA).

Area: northern and southern borders of the DSA. The formation marks the transition between the Salet Formation of the DSA and the Terwagne Formation of the Condroz sedimentation area (CSA) and of the Southern Avesnois sedimentation area (ASA).

Thickness: about 80 m in the type section. In fact, because the formation has a pale colour and some oolitic facies similar to those of the Avins Mbr and the Neffe Fm, its boundaries are usually not easy to recognize.

Age: Moliniacian (early Viséan), MFZ11 Mississippian Foraminifer Zone. The cinerite M is present in its upper part, as in the Terwagne Formation. Until now, no corals were found. The formation corresponds to the transgressive system tract of the Dinantian third-order sequence 6.

- **Changes in the lithostratigraphy**

Ourthe Fm : Thickness : About 35 m in the type area, 20 m in the Hoyoux valley.

Martinrive Fm : There was a mistake in the description of the lithology : « Most of the formation consists of dark limestones (mudstones to wackestones)... » (and not « packstones to wackestones »)

New proposal announced: Rieudotte, Gives, Java members of Andenne Formation to be introduced by Bernard Delcambre.

A question about the stratigraphic results of the BALMATT geothermal well in Mol, drilled by VITO: M. Duser informs that the VITO organisation is not ready to lift the confidentiality of this well soon.

- **Members of the Carboniferous subcommission**

Delcambre Bernard (UCL), Denayer Julien (Ulg), Duser Michiel (KBIN), Hance Luc (CARMEUSE s.a.), Hennebert Michel (FPM), Mottequin Bernard (IRSNB), Poty Edouard (Ulg²).

- **Recent papers**

Denayer, J., Aretz, M., Poty, E. & Mottequin, B. 2016. Royseux : a palaeobiodiversity hotspot in the Late Viséan (Carboniferous) of Belgium. *Geologica Belgica* 19/1 : 7-20.

Mottequin, B., Poty, E. & Prestiani, C. 2015. Catalogue of the types and illustrated specimens recovered from the « black marble » of Denée, a marine conservation-lagerstätte from the Mississippian of southern Belgium. *Geologica Belgica*, 18 : 1-14.

Poty, E., Aretz, M. & Hance, L. 2014. Belgian substages as a basis for an international chronostratigraphic division of the Tournaisian and Viséan. *Geological Magazine* 151 (2) : 229-243.

Link to the abstract and fieldtrip volumes of the IGCP 596 meeting that took place at RBINS last year:

https://www.researchgate.net/publication/282332406_IGCP_596_-_SDS_Symposium_September_20-22_2015_Brussels_Climate_change_and_Biodiversity_patterns_in_the_Mid-Palaeozoic_Abstract_volume

<http://strata.fr/pdf/Strata2015-1.16-midpaleozoic-climate.pdf>

Perm-Trias-Jura

Discussion about the Hondelange Member, which is a sandy unit within the clayey Arlon Formation. Isabelle Belanger et Frédéric Boulvain ont organisé une excursion géologique (participants belges, luxembourgeois et allemands) en Lorraine belge pour observer les affleurements du Membre de

² It is suggested to include David Lagrou (VITO)

Hondelange et discuter de l'intérêt de convertir le Membre de Hondelange en Formation de Hondelange. Les membres de la sous-commission s'accordent pour valider cette proposition. Le livret-guide de l'excursion ainsi qu'un résumé seront prochainement transmis par I. Belanger pour être publié sur le site web de la NCS

Cretaceous

Up to three lithostratigraphic schemes exist for the same stratigraphic intervals (the NCS subdivision published in 2001 and partly emended since, the units of the carte géologique de Wallonie, and the units used in DOV documents. The mapping units effectively in use should be included on the NCS system as equivalent to the 2001 system. The Vert Galand Formation of the carte géologique de Wallonie has been considered as a first testcase.

A proposal for the Vert Galand Formation, incorporating the Bruyelle and Merlin Members and its equivalents in Flanders published on the DOV website has been introduced by M. Duser with support of J. Yans. Tacit agreement by Michel Hennebert (Service géologique de Wallonie) as one of the original authors will be requested before this unit can be formalised.

The alterites particularly concern the Cretaceous system as they form either at the expense of Cretaceous strata or are largely developed during the Cretaceous epoch. However, their discussion is treated separately.

Paleogene-Neogene

leper Group: revision in an advanced state, attending confirmation of Subcommittee to put new version on the web

Neogene Continental Group (proposed by NCS 2016-1 meeting): on hold till the end of the H3O project, which will take another year. M. Duser has written a discussion text but will not take initiative to lead this working group.

Chattian – Inden – Kiezoolite Formations : Timothy Lanckacker is working on the proposals published on the NCS website, it also depends on the outcome of the H3O project.

Excursion Formation de Bruxelles (conjointe sous-commission et Société géologique du Nord). La division de la F. de Bruxelles s'annonce très difficile. Rik Houthuys will prepare a proposition.

New member between Heers and Hannut : Johan Matthijs will prepare a discussion text. Proposed name : Beselare clay member.

Quaternary

Excursion in the Mark valley – report = thesis Willy Huybrecht

Arenberg Formation is put on the website as a proposal

Weelde Formation, new text prepared by F. Bogemans is on reading in the subcommittee, will be soon published as proposal

Alterites

- Clay+ flint Formation. Le proposal préparé par M.Duser et validé par J.-L. Pingot et J.Yans est disponible sur le site web pour discussion. Cette formation existe notamment en Angleterre et en France. Une discussion générale a lieu sur les limites inférieures de cette unité, son extension spatiale, son épaisseur cartographiable (ou non).

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- Sont évoquées d'autres altérites comme a) les saprolites sur le socle du Massif de Brabant (non cartographiées sur les nouvelles cartes wallonnes mais visibles en forages) et les altérites d'Ardenne. Discussion sur leur représentation sur les cartes géologiques (trame, symboles...)
 - Roland Dreesen has written a request to the president of NCS to consider the development of a generalised mapping system for residual sandstones overlying older formations. During discussion this is extended to gossans and orebodies (which were represented on the old geological maps).
 - Il est conclu que
 - la discussion n'était pas encore terminée et nécessite une réflexion complémentaire ;
 - geotechnical properties should be considered an essential part of its characterisation ;
 - que Michiel Duser et Johan Yans prépareront un texte qui introduit le nouvel onglet « alterites » sur le site WEB ;
 - qu'il fallait mettre ce point à l'ordre du jour de la prochaine réunion de la NCS ;
 - il est envisagé de créer un groupe de travail sur ce thème.

Talk by Y.Vanbrabant (GSB)

Présentation du programme de recherche « **StratiSankey: a tool to ease the stratigraphy reading** » (fichier pdf en annexe au présent rapport). Ce projet fait partie intégrante du plan stratégique du SGB-GSB pour les prochaines années.

Yves demande l'aide de la NCS pour son travail. La commission est intéressée, lui apportera son aide et conseille néanmoins à Yves qu'il s'adresse aux auteurs de chaque nouvelle carte géologique car les géologues cartographes sont les plus qualifiés pour discuter des corrélations (évolutions temporelles) entre les stratigraphies anciennes et la stratigraphie actuelle.

Varia

- The cores of the collection RBINS-SGB will move to Perennes-lez-Binche. Some cores will not be available for some months for scientific research.
- Drupalgardens stops his support the 1st of august. We are looking to a new host for the website. The url ncs.naturalsciences.be will remain. Normally the user will not have any inconveniences.
- Aucune date n'a été fixée pour une prochaine réunion plénière.
- Les secrétaires remercient les membres des sous-commissions pour leur travail.

E. GOEMAERE & M. DE CEUKELAIRE

N. VANDENBERGHE

Secretaries

President



Geological Survey
of Belgium

StratiSankey

A TOOL TO EASE THE STRATIGRAPHY READINGS

Yves Vanbrabant

NCS, Brussels 27/06/2016

Regard from a stratigraphy user

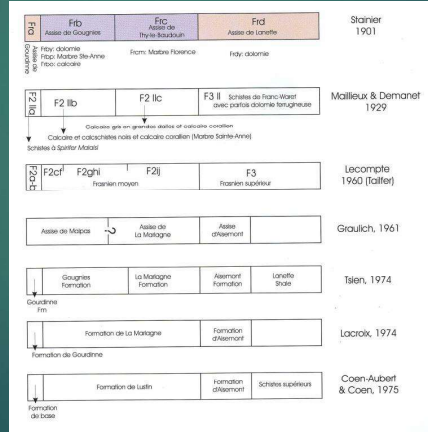
- ▶ Stratigraphy is a research topic for some researchers and it is a tool of other geologists (called here users)
- ▶ Stratigraphy for the users is frequently complex to assimilate and to refer to, since there are gaps between the current stratigraphy (NCS-website) and the one present in 'old' papers, reports,...
- ▶ As a result, some users apply an old stratigraphy (i.e. if a recent map is not available) or their production includes errors.
- ▶ Documents are available and the concept of **StratiSankey** project is to ease the access to the stratigraphy information
- ▶ StratiSankey concept aims to provide the references for the stratigraphy at a local scale (geol map) and for both old references and the new one;

Reference documents

AUTEUR	FORMATION	FRANCON	WALON	BRUNNEN	SANT-AMAND	NEUVART	VELLE	LA ROOSE	PERELLE	PERCE	VIREUX	CHOIX	HIERGES	SANT-COINTE
LEONARD DE LA CARTE GEOLOGIQUE DE BELGIQUE, 1863-1866	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
LEONARD DE LA CARTE GEOLOGIQUE DE BELGIQUE, 1863-1866	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
DE DOORLOOF, H., 1903	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
MAILLEUX, E., 1910	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
MAILLEUX, E. & DEMANET, F., 1919	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
MAILLEUX, E., 1933 - 1940	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
MAILLEUX, E. & DEMANET, F., 1927	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
ABDELRECHER, S., 1944	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
GODEFROID, E., 1944	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
GODEFROID, E., 1944	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
GODEFROID, E., 1944	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
MAILLEUX, E., 1944	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE
CHAILL, L., 1961, 1962	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE	GRANDE-GRANDE

(Godefroid et al., 1994)

These documents exist, but there are scattered and even some users are lost (which reference do apply to my study zone?)



(Boulvain et al., 1999)

ENR FORMATION DE L'EAU NOIRE

P. BULTYNCK

- 1880 - DEWALQUE - Assise inférieure du schiste et calcaire de Coëvin : schiste à *Spirifer cultrigatus* (pro parte, seulement la partie supérieure; parties inférieure et moyenne = la Formation de Hierges et la Formation de St-Joseph).
- 1892 - Légende de la Carte géologique détaillée de la Belgique - Bb. Schistes de Buro. *Spirifer cultrigatus* (pro parte, voir 1880).
- 1896 - Légende de la Carte géologique détaillée de la Belgique - Coa schistes, grauwacke et grès de Buro. Oligiste oolithique. *Spirifer cultrigatus* et *Spirifer arduennensis* (pro parte, voir 1880 et remarques).
- 1912 - MAILLEUX - Schistes calcaireux à *Spirifer cultrigatus* pro parte : Schistes calcaireux à *Spirifer cultrigatus*, *Spirifer elegans*, *Conocardium curvatum*, *Rh. orbignyana* etc. (Co1a) et Calcaire schisteux à *Dalmanella longirostris*, *Rensia ?* (partie Co1c).
- 1929 - Légende générale de la Carte géologique détaillée de la Belgique - Coa - Schistes calcaireux, grauwacke (Grauwacke de Buro). *Spirifer cultrigatus*, *Rhynchonella (Urcinulata) orbignyana* (pro parte, seulement la partie supérieure; partie inférieure = Formation de St-Joseph).
- 1970 - BULTYNCK - Co1b + Co1c.
- 1974 - BULTYNCK et GODEFROID - Eau Noire Formation.
- 1974 - TISEN - Buro Formation, Eau Noire Member.

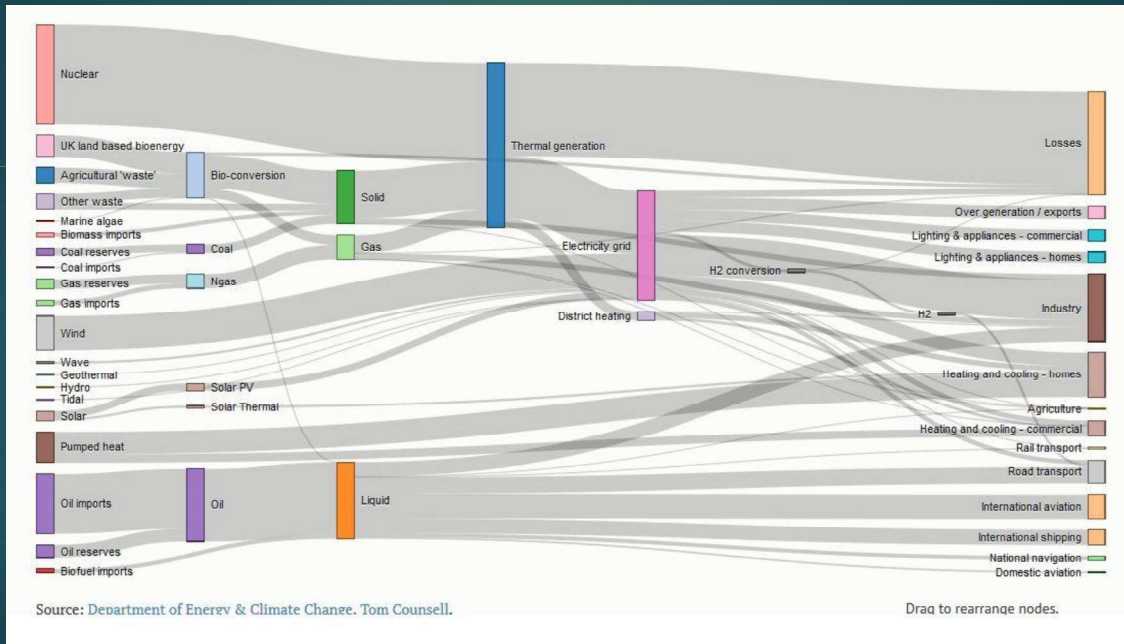
(Bultynck et al., 1991)

StratiSankey project: features

- ▶ Project is oriented towards a quick and easy reading;
- ▶ In some cases, we will need to take some shortcuts!
- ▶ The project is part of new services provided in the frame of the Geological Model of Belgium (priority axis @ GSB)
- ▶ StratiSankey concept is linked to a **PostgreSQL DB** and Sankey plots are generated automatically through a **C# software** developed in-house. End result is one **html webpage** for each geol. map
- ▶ Online: soon. Today 10 maps are done

Example of a Sankey diagram

<https://bost.ocks.org/mike/sankey/>



Demo

[Chastre-Gembloux](#)

[Hannut-Montenaeken](#)

Tavier-Esneux

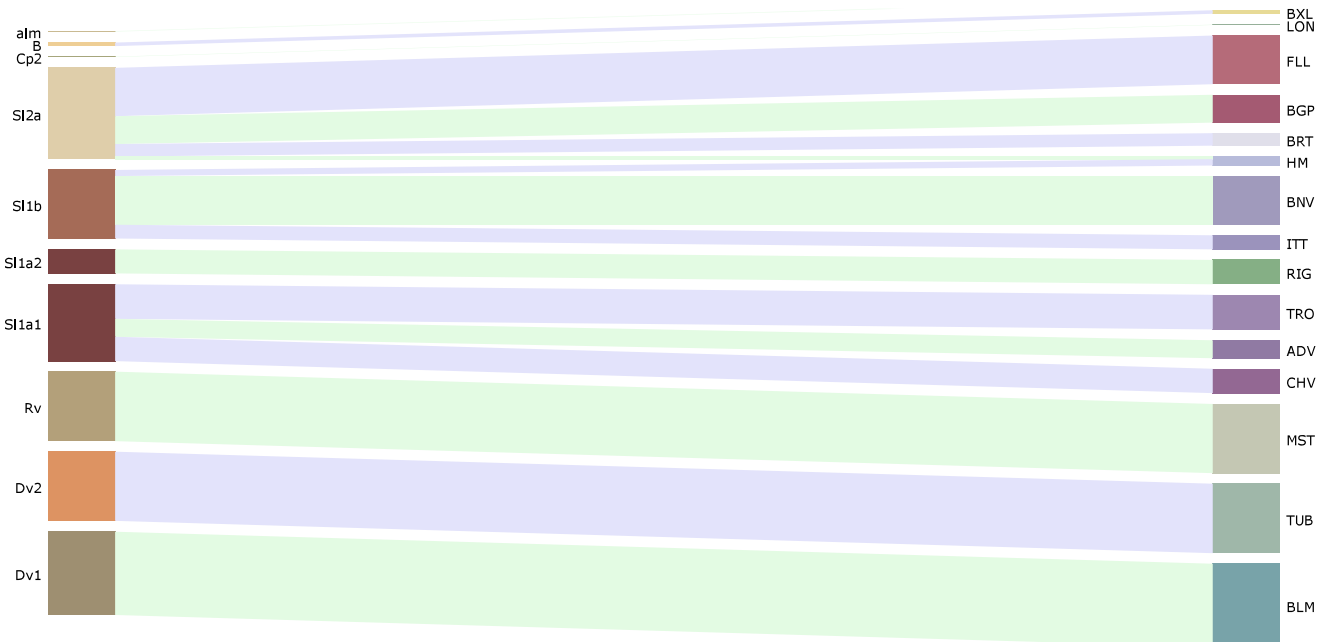
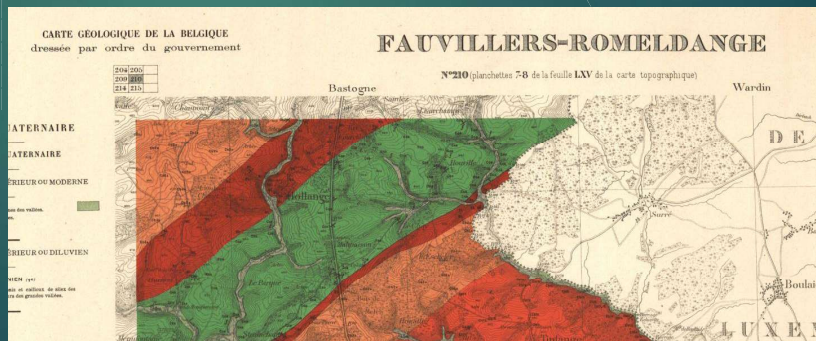
[Henri-Chapelle - Raeren](#)

[Champlon - La Roche](#)

Questions to NCS?

- ▶ Can I have the support of NCS or some of its sub-commissions to answer specific question?
 - ▶ Example: is the 3 characters unique? PER = Pernelle or Pepinster?

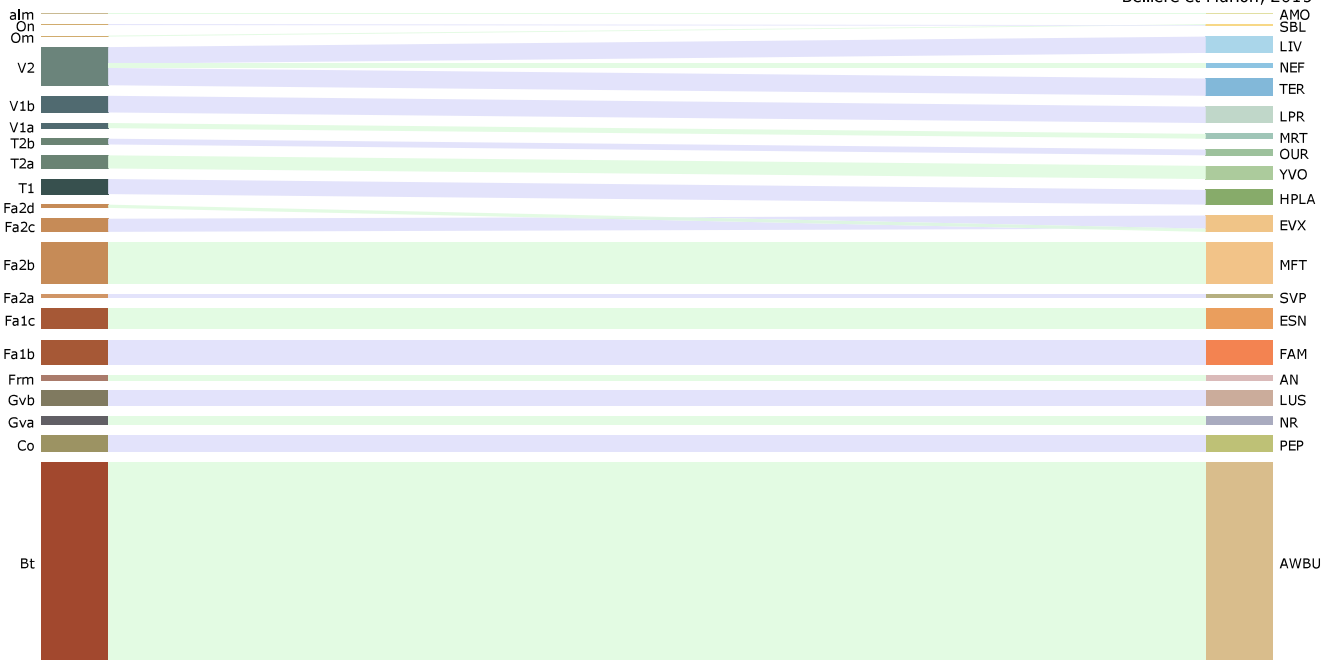
 - ▶ More general questions? Example: how to deal with old errors?
- Or which stratigraphy references apply to specific maps or in boreholes?



Tavier-Esneux n°147 - 49/1-2

Lohest, 1896

Bellière et Marion, 2015



Champlon-LaRoche n°187 - 60/1-2

Stainier, 1896

Asselberghs, 1946

Dejonghe et Hance, 2001

