Interreg North-West Europe RAWFILL

Co-funded by the Walloon region

RAWFILL WP I1
I1.1.1 Archives and inventory report

Date: December, 2020

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SAMEN MAKEN WE MORGEN MOOIER OVAM

LIÈGE université

BGS 1835 British Geological Survey Expert | Impartial | Innovative

atrasol SUSTAINABLE CONSULTANT

BAV Bergischer Abfallwirtschaftsverband

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SUBJECT:	...						
☒	report	☐	information	☐	consideration	☐	decision
To:	...			From:	...		

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Introduction

Prior to the geophysical surveys on the Meerhout landfill site, the amount of waste, the landfill area and the waste types must be estimated. These estimations are based on existing databases and archives from OVAM and the site-operator IOK and will be described in this report.

The information was originated from following sources:

- Report A: RUP Biezenhoed TOELICHTINGSNOTA en STEDENBOUWKUNDIGE VOORSCHRIFTEN Voorontwerp Juni 2012
- Report B: ORIENTEREND BODEMONDERZOEK IOK MILIEUBEDRIJFTE MEERHOUT (2002)
- Report F: Potentieel verontreinigde site –registratieformulier Meerhout 1993

Study area

a. Soil and geology

The landfill site of Meerhout is located in Meerhout, Belgium (**Fig. 1**). Local geology reveals four distinct layers below the landfill. The first layer (the most recent one), up to five meters thick, consists of quaternary sands, followed by tertiary sands underneath. Below that, one can find a fifty meters thick layer from the Diest Formation. Even deeper is a 20 m thick layer of the Berchem Formation (i.e. sand with clay) and Boom Formation (i.e. clay).

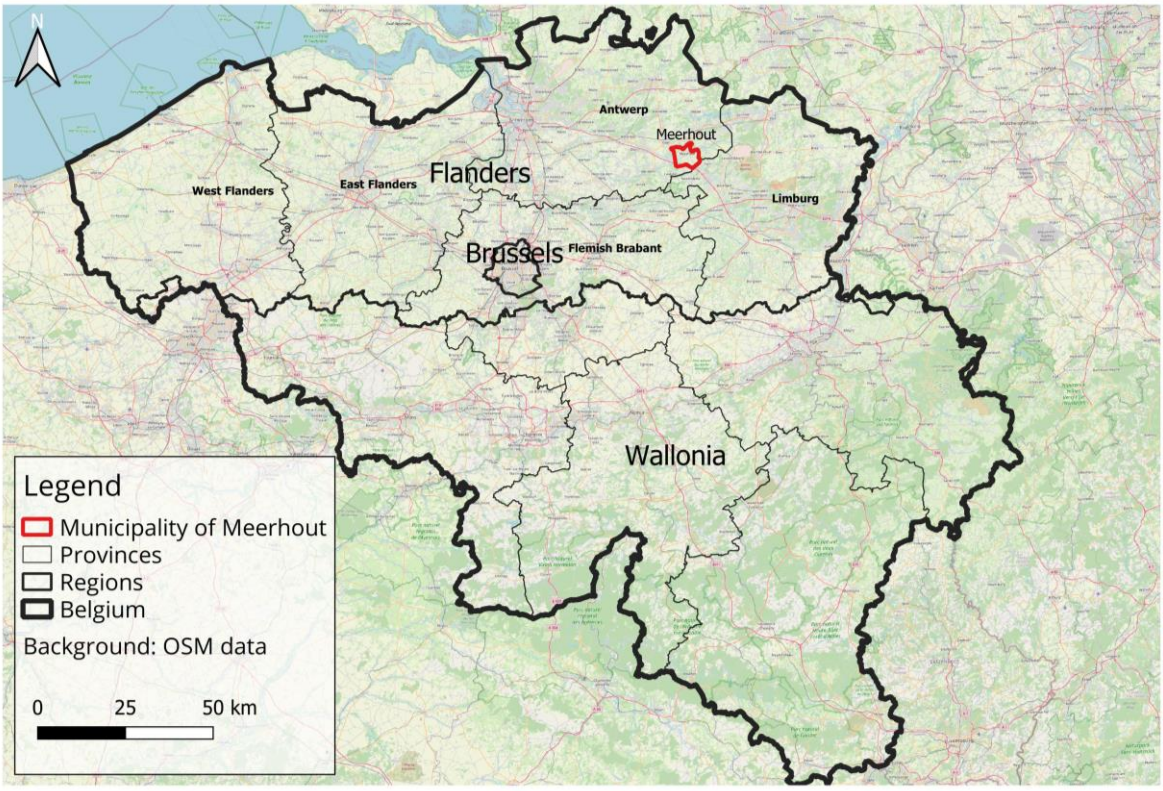

Figure 1 - Location of the Meerhout municipality in Belgium. Background data: OpenStreetMap (OSM) .

b. Hydrogeology

Based on previous investigations, the groundwater level appears to be at one meter below the original surface level. Based on the topography of the area and on-site visits, the groundwater is flowing in southwestern direction. In terms of vulnerability of the groundwater, the landfill site is located in an area that is marked as being *'very vulnerable'* on the groundwater vulnerability maps. The sandy water bearing layer is covered only by another sandy layer of less than 5 meters thick and the unsaturated zone being less than 10 meters thick.

Landfill General information

a. Location

The landfill is located in the province of Antwerp, Flanders, Belgium. The address of the landfill is *Kiezel 300, 2420 Meerhout*. The GPS coordinates of the site are X 197700, Y 199400 (Lambert 1976). **Figure 2** shows the location of the landfill with reference to surrounding municipalities, highways and waterbodies. The landfill is located adjacent to the E313 and nearby the Albertkanaal (Albert Channel), which are both important transport connections between the cities Antwerp (Flanders) and Liege (Wallonie). Furthermore, an industrial plant of Umicore is located closely to the landfill.

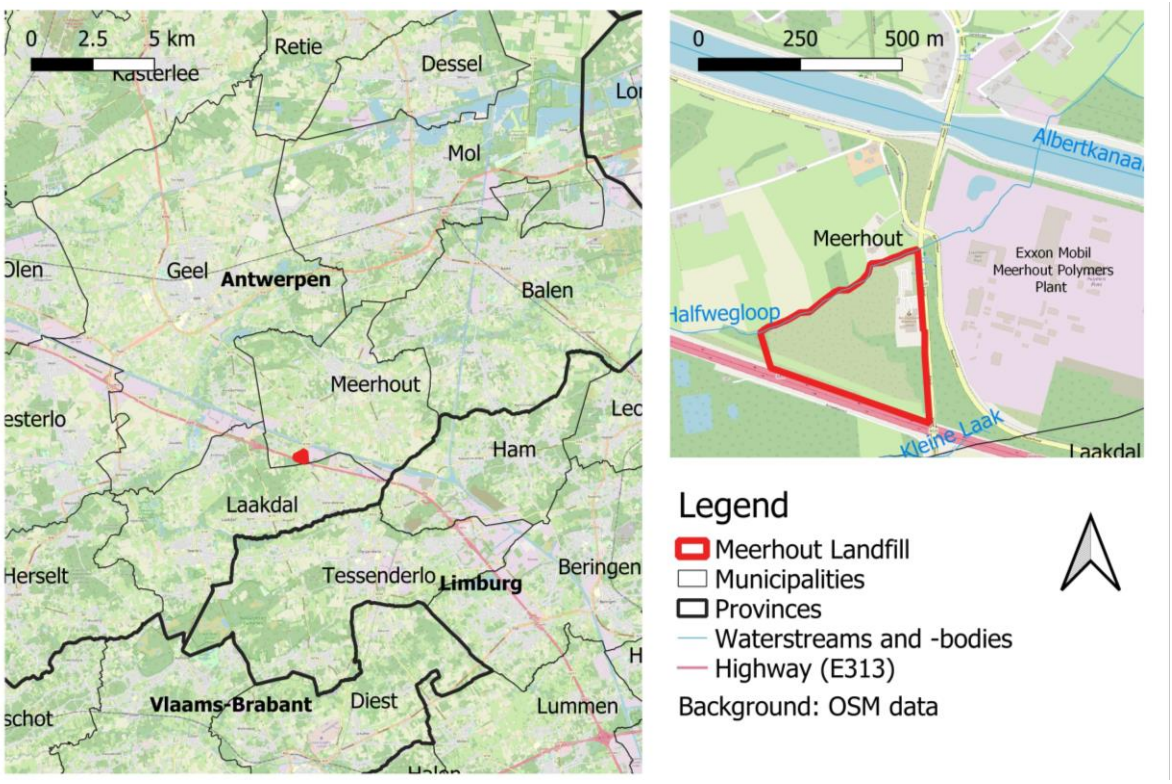

Figure 2 - Detailed location of the Meerhout landfill Background data: OpenStreetMap (OSM) .

b. OVAM file number

The reference number is 12290, which is an OBO (orientating soil investigation) number. Two investigations were done, one in 2000 and one in 2004.

c. Accessibility

The eastern part of the site is now a waste sorting facility. This is the only entrance to the landfill and is only open during working hours (ca. between 8 a.m. and 4 p.m.) and only on demand. **Figure 3** illustrates the different paths by which the landfill is made accessible.

Figure 3 - pictures with a view on the gas extraction installation from the lower part of the landfill (left) and picture of the path between the lower and higher part of the landfill (right), source: RUP Biezenhoed, IOK (2012).

Geometry

a. Size, area and sections of the landfill

The landfill site area is approximately 7.5 ha and has a total perimeter of 1250 m. It includes a container park facility with transfer station, partially located on the older dumping zone (**Fig. 4**). The landfill was developed in five stages that led to different waste thicknesses (*see the section "Topography and thickness of the landfill"*).

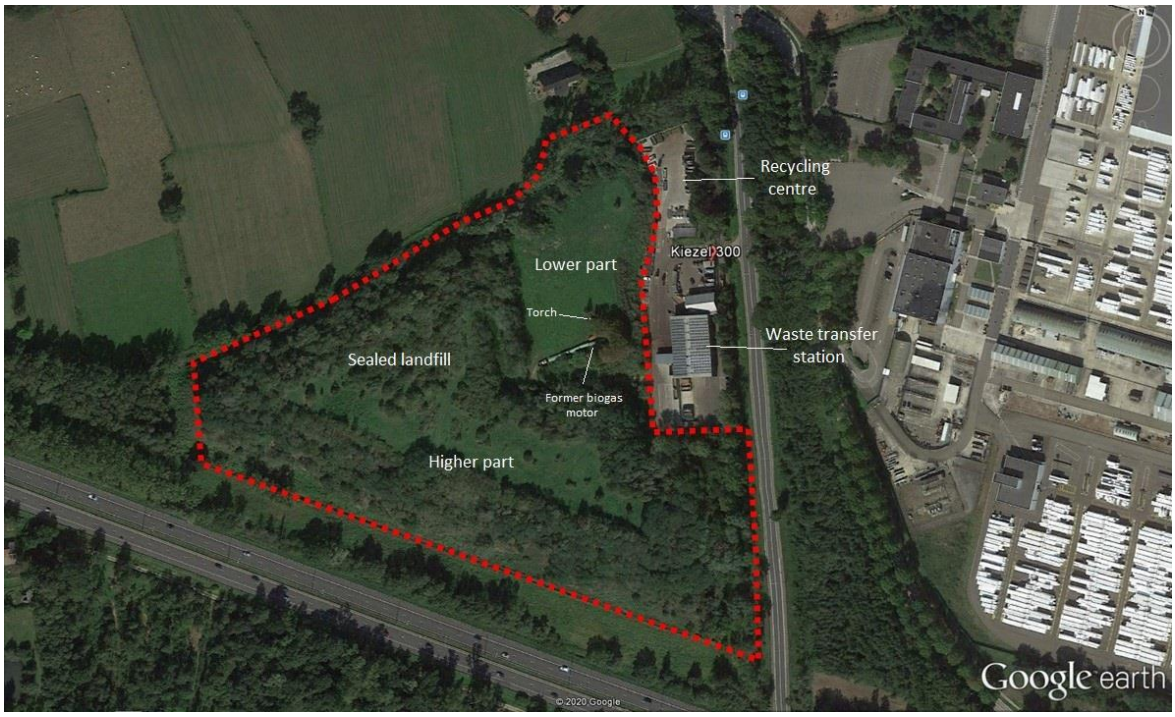

Figure 4 - Satellite image of the Meerhout landfill, different sections and surroundings indicated (red dots indicate the plan area of the landfill) (image from 14/09/2019), source: Google Earth.

b. Topography and thickness of the landfill

The landfill of Meerhout is completely built on the original ground level. Therefore, the thickness of the waste is the same as its current prominence, corresponding to the topography of the site. The landfill area can be divided into two main areas:

1) the northeastern lower part, which is also the oldest part of the landfill. Its thickness ranges from ~5 m (red zone in **Fig. 5C**) to ~10 m (orange zone in **Fig. 5C**). This part of the landfill was not sealed with HPDE foil.

2) The southern part with waste deposits up to 20 m thick is the most recent extension dating from the eighties and was sealed properly.

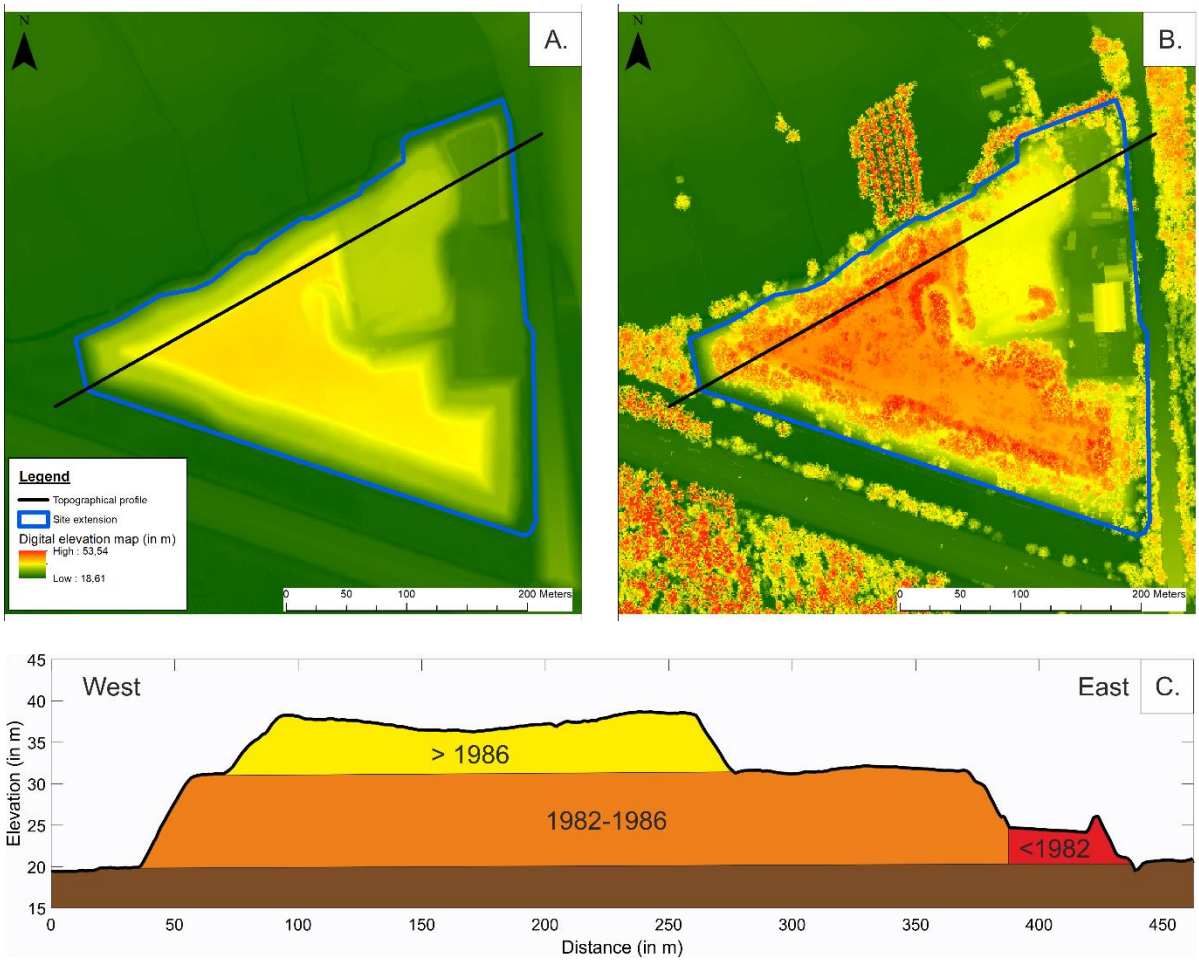

Figure 5 - The Meerhout landfill topography: A. DEM soil elevation; B. DEM top of vegetation; C. cross-section.

c. Vegetation

The site vegetation is visualised in **Figure 6.** In the northern corner of the site grass was identified as the most dominant type of vegetation. Contrastingly, more vegetation was found at the higher parts of the landfill in the south. This vegetation mostly consists of shrubs, small trees and some herbs.

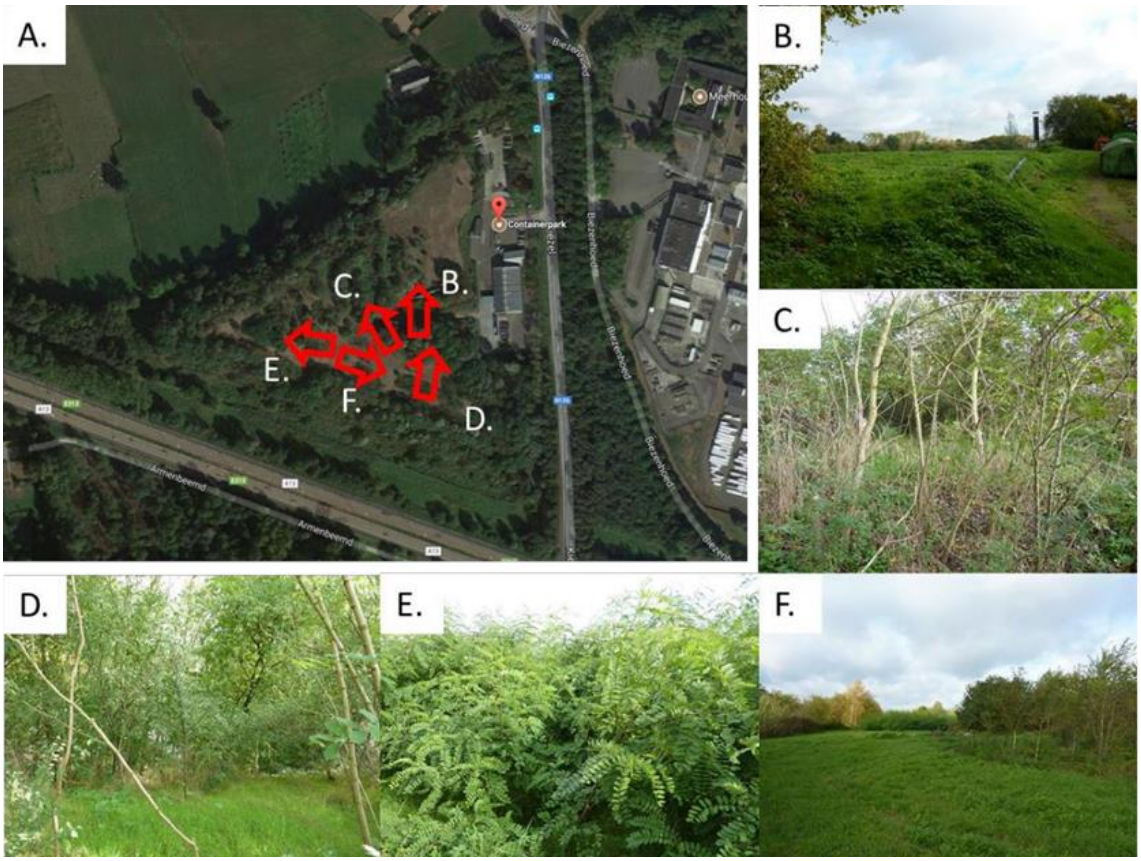

Figure 6: Photos of Meerhout landfill (13/10/2017) – arrows and letters in the picture A (aerial photo) indicate the location at which the different photos were taken.

d. Capping layer

The capping of the landfill was performed in 1998 and consists of a HPDE foil, with at the top a 1 m thick soil layer. On top of this layer, trees and shrubs were planted.

Historical information

Between 1981 and 1997, both municipal solid waste and industrial waste were deposited on the Meerhout landfill. In total, 942 589 m³ of municipal solid waste and 370 909 m³ of industrial waste materials were deposited based on historical records. The dumping method consisted of accumulation on top with layered mechanical compaction. This process was repeated at least annually.

Environmental monitoring

a. Leachate

A leachate collection and removal system was installed on site. Each year, the two leachate wells collect about 814 tonnes of leachate. This leachate is treated in an external treatment center – TWZ Evergem.

b. Gas

Biogas production in the landfill is quickly diminishing, to the extent that the biogas motor stopped being operational from 2015 onwards. The gas flare is still operational on a monthly basis.

c. Leakages

Regular checkups were done by IOK in 2015 in the sealed layers and dikes of the landfill. No specific problems were mentioned.

d. Rainfall

To be able to measure the leachate level within the landfill, the level was measured each month in the degasification wells and three other control wells from July 2002 to 2013. Since 2013, it is done once every three months. The measurements are performed by IOK.

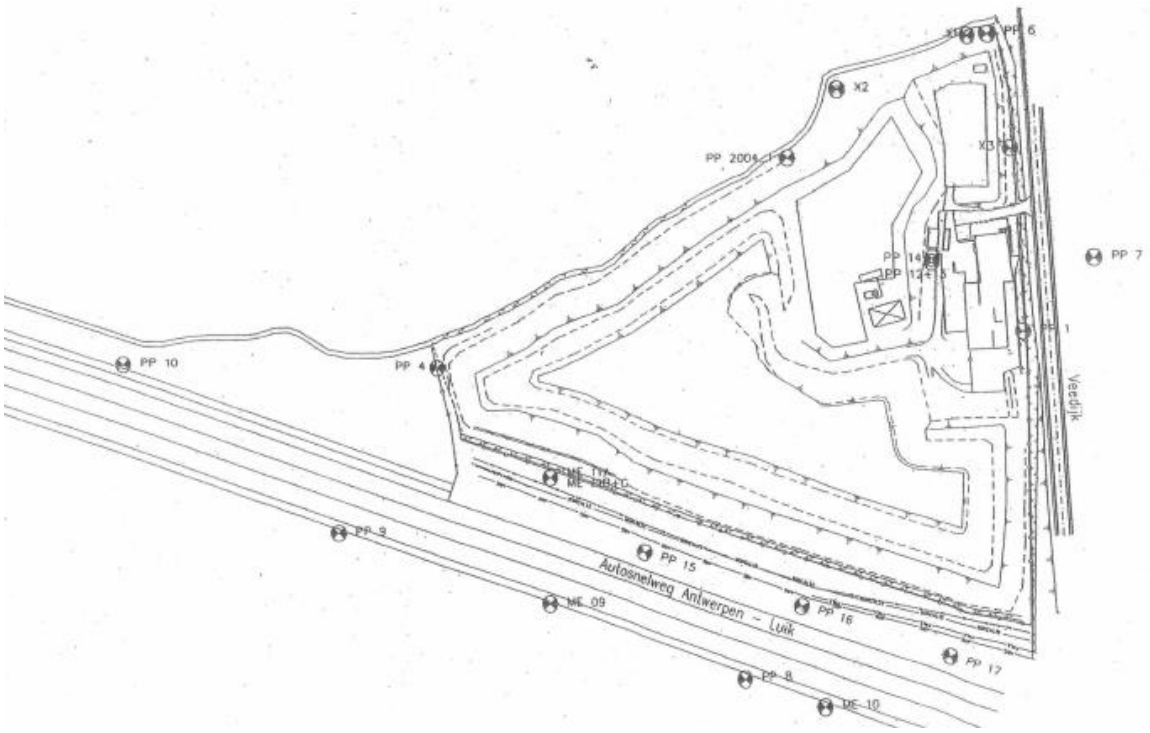

Figure 6 - Location of all monitoring wells on the site.

d. Others

No data are available on the tomography and temperature within the landfill. Microbiological characterization and monitoring of the landfill were not performed.

Contact

Feel free to contact us.

Local contact details:

BELGIUM	ATRASOL	renaud.derijdt@atrasol.eu
	Cleantech Flanders / VITO	alain.ducheyne@vito.be
	OVAM	ewille@ovam.be
	SPAQuE	c.neculau@spaque.be
	Université de Liège	f.nguyen@ulg.ac.be
FRANCE	SAS Les Champs Jouault	champsjouault@gmail.com
GERMANY	BAV	pbv@bavmail.de
THE UK	NERC	jecha@bgs.ac.uk

Coordination office:

BELGIUM	SPAQuE Boulevard Maurice Destenay 13 4000 Liège	c.neculau@spaque.be