

Geochemical mapping in the Kingdom of the Netherlands: introduction

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Framework of the research

In the beginning of the 1990's, the Department of Geochemistry of Utrecht University started a series of geochemical surveys of the Leeward Islands of the Antilles that form part of the Kingdom of the Netherlands. Apart from seeking a nice, warm fieldwork environment, the undertaking was motivated by the deficits in infrastructure and financial resources of these islands, which precluded the authorities to undertake such a survey on their own. By then, the International Geological Correlations Programme (IGCP; Darnley et al., 1995) had just been established to address the need for standardised geochemical databases worldwide; the then Geological Survey of the Netherlands (RGD) – now the TNO-Institute of Applied Geosciences (TNO-NITG) – participated in this programme from the start.

The general feeling in the Netherlands about the survey seemed to be somewhat complacent. Based on the work by Edelman (1983), the well-known framework of ABC values was viewed as providing a sufficient tool to distinguish artificially elevated levels of elements and compounds from the natural background. Furthermore, the national and regional authorities had already developed several environmental monitoring networks for air and water (Mol et al., in press), and where about to begin soil monitoring as well (see the contribution in the present issue by Busink & Postma).

The results of the Antilles studies had been intend-

ed for publication in the annals (*Mededelingen*) of the RGD. They provided an overview of the then actual situation within the Leeward Islands and their publication, although of limited international standing, would ensure their scientific and societal accessibility. When this initiative came to materialise, the *Mededelingen* had merged with *Geologie en Mijnbouw*, to become the *Geologie en Mijnbouw / Netherlands Journal of Geosciences*. This new journal focuses on the North Sea Basin and aims to stimulate Dutch earth-science research and bring it to the attention of a worldwide readership. When thinking about publication possibilities for the Antilles studies within this context, we soon realised that also much of the 'mainland' environmental and geochemical studies were not routinely being presented for publication in international journals. Much remains hidden in the so-called 'grey' literature of consultancy and government reports. Thus, huge quantities of data – the value of which is generally not limited to the case at hand – are collected, but go to waste for a wider audience. Moreover, there is a significant difference between the international scope on geochemical mapping and the practice of geochemical surveys in the Netherlands, which would make it additionally worthwhile to promote the latter.

With all this in mind, we started in 1998 to invite potential authors to contribute to a special issue on *Geochemical mapping in the Kingdom of the Netherlands*. We defined geochemical mapping as the characterisation and representation of the spatial geochemical variability at the earth surface, with scale or resolution

obviously depending on the problem at hand. With the aim to obtain a broad national overview of activities in the Netherlands, we invited leading people in consultancy as well as recent Ph.D. graduates. Although we experienced during the process of compiling the present issue that the qualitative gap between a 'grey' report and an international scientific publication is sometimes large, we feel that, all in all, we have been able to realise a special issue that is interesting for an international readership. We expect also that this initiative will result in more interesting papers on this topic to appear in future issues of this and other journals.

Outline of the issue

The first four papers, by Huisman et al. (2x), Tebbens et al., and Middelkoop, cover geochemical mapping in various fluvial environments. Starting in the Early Pleistocene Kedichem Formation, via the Late Weichselian and Holocene infillings of Meuse River, residual channels (upper Kreftenheye and Betuwe Formations), we end up in the embanked floodplains of the lower Rhine and Meuse rivers. A common goal to these studies is to reveal patterns of natural background levels in the (sub)surface of the Netherlands. The paper by Busink & Postma provides an overview of the current practice in chemical soil monitoring in the Netherlands. It shows the emphasis in national and regional policy on environmental themes such as acidification and diffuse agricultural pollution. The more methodical papers by Brus et al. and Van Lienen et al. are examples of the way cost-effective solutions are sought for complicated tasks such as designing optimal sampling schemes and optimal ways of representation of spatial information.

Van Sambeek et al. compare the geochemistry of the groundwaters of Aruba, Bonaire and Curaçao, linking statistics to underlying processes and factors. Van den Oever and De Vries similarly provide a geochemical baseline for the soils of Aruba and Curaçao, respectively. All papers are based on earlier reports that sometimes contain additional information, particularly in the form of raw data and extensive maps. We are pleased that *Geologie en Mijnbouw / Netherlands Journal of Geosciences* provides a platform for the publication of these additional data as well, on their website: <http://www.nitg.tno.nl/eng/products/pub/njg/index/shtml>. All authors have been invited to take advantage of this medium.

Acknowledgements

While all authors have the Dutch nationality, reviewers were sought both internationally and locally for each paper.

The following reviewers contributing to this special issue agreed to being included in the list of referees:

N. Asselman	K. Marsina
M. Bierkens	A.B. McBratney
B. Bølviken	J. McConnell
L. Cox	K. Meinardi
E.A. Curet	M. Van der Perk
J.C. Davis	R.D. Schuiling
Th. Edelman	A. Steenfelt
R.G. Garrett	R. Swennen
M. Hale	C. Wiedeman
J. Van Huissteden	H. de Wijs
M.G. Hutchins	J.J.P. Zijlstra
M. Keuken	

We take this opportunity to express our sincere gratitude for their efforts. Their involvement generally considerably improved the quality of the papers. We were pleased that several foreign reviewers explicitly mentioned their interest in, and appreciation for, the Dutch approach. It showed to us that the Netherlands indeed are still on the forefront in environmental issues.

In addition to the reviewers, and – obviously – the authors, we would like to thank Hans Eggenkamp, Hans Huisman and Bertil van Os, who gradually became invaluable geoa's (guest-editor office assistant). We also would like to mention Theo Wong, handling editor for *Geologie en Mijnbouw / Netherlands Journal of Geosciences*, who encouraged us to go forward with this initiative.

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