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BELAM

Belgian Antarctic Meteorites : curation and research

DURATION OF THE PROJECT
01/03/2012-31/12/2016

BUDGET
434.590€

KEYWORDS
Antarctic meteorites, curation facility, meteorite research

CONTEXT

Meteorites are the leftover building blocks of the Solar System, providing clues on its origin and evolution. They are classified in groups corresponding to different evolutionary phases of the Solar Nebula. Chondrites originated from the break-up of undifferentiated planetary bodies. Achondrites (iron, stony-iron and stones) derive from more evolved planetary bodies that have undergone differentiation comparable to the formation of the core, mantle and crust on Earth.

Since 2009, through a joint collaboration with the National Institute of Polar Research (NIRP) in Japan, Belgian scientists have carried out meteorite searches in the Sør Rondane region of Antarctica near the Belgian station Princess Elisabeth. The 2009-2010, 2010-2011 and 2012-2013 field seasons have yielded more than 1200 new meteorites, that are shared equally between the two countries.

PROJECT DESCRIPTION

Objectives

The objectives of this project, dedicated to Antarctic meteorites, are:

(i) to establish and organise the meteorite curation facilities at the Royal Belgian Institute of Natural Sciences (RBINS), through renovation of the storage room and installation of the material required for the curation task.

(ii) in collaboration with NIPR, to identify and classify the Antarctic meteorites, a crucial part of the curation work. The detailed description and accurate classification of the new meteorites, down to the sub-group level, will guarantee the quality of the research performed on these samples. The identified meteorites will be registered in an online database.

(iii) to make the Belgian collection of meteorites available for local and international researchers. Clear rules for sample loan, destructive analyses, etc. will be established, based on existing rules and experience of RBINS, and in coordination with NIPR. A website developed and hosted by RBINS will display this information.

(iv) to set up a Belgian research network on meteorites, based on existing VUB-ULB collaboration and reaching out to colleagues in other institutions. The network will facilitate discussions and promote joint research, organise workshops and student exchanges, and stimulate participation in the meteorite curation work.

(v) to carry out quality research on the Antarctic meteorites recently collected.

Methodology

A first work package, grouping objectives (i) to (iii) above, is to set up a state-of-the-art curation facility for meteorites at RBINS, using the following methodology:

- Gather experience from well-established collections, in particular at NIPR, which manages a large collection of Antarctic meteorites, by visiting these facilities, and organising workshops in Belgium to benefit from European institutions with an established meteorite curation system.
- Set up facilities and curation processes according to international standards. This includes the establishment of a repository, loan guidelines, quality control, and a handbook that will present the different curation directives at RBINS.
- Make the collection publicly available through an easily accessible online database, after identification and characterisation of the samples.

These tasks will be carried out using the existing RBINS curation facility for geological-mineralogical samples, in close association with the ULB and VUB partners who are familiar with meteorite loan processes.

A second work package, grouping objectives (iv) and (v) above, is to develop state-of-the-art research on meteorites from the collection, using the analytical facilities in Belgium and the expertise available at universities and research institutions. Suitable partners for the research network will be involved in a national workshop and dedicated research will be performed, including participation in international conferences.

SSD SCIENCE FOR A SUSTAINABLE DEVELOPMENT

ANTARCTICA

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INTERACTION BETWEEN THE DIFFERENT PARTNERS

A post-doctoral researcher, recruited for this project over a period of 4 years, shares her time between RBINS and VUB-ULB, thus constituting a link between the partners. Representatives from VUB, ULB and RBINS are involved in the Scientific Loan Committee that decides on sample allocation for research and for exhibitions of Antarctic meteorites..

EXPECTED RESULTS AND/OR PRODUCTS

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PARTNERS

RBINS manages scientific collections in most fields of natural sciences, and makes this material available to the scientific community. Marleen De Ceukelaire is curator of the geological collections, including meteorites.

Prof. Philippe Claeys of the **VUB** conducts research in the field of impact craters and their geochemical and isotopic signature, especially platinoid metals and chromium isotopes to trace the origin of projectiles. This leads to a better understanding of large-scale planetary processes.

Prof. Vinciane Debaille of the **ULB** has expertise in isotope geochemistry and geochronology, for both radiogenic isotopes and heavy stable isotopes. Privileged research themes include planetary differentiation from meteorite investigation, and the chronology of the early solar system.

CONTACT INFORMATION

Coordinator

Walter De Vos,
Royal Belgian Institute of Natural Sciences (RBINS),
Vautierstreet 29,
1000 Brussels.
Tel. 02 788 7630,
Fax. 02 647 7359, e-mail
wdevos@naturalsciences.be , website
http://www.naturalsciences.be/
science/collections
Meteorite collection accessible through Darwin database\Geo-Palaeo Search\Geology.

Partners

Philippe Claeys,
Earth System Science, Vrije Universiteit Brussel (VUB)
Pleinlaan 2,
1050 Brussels.
Tel. 02 629 3394,
e-mail phclaeys@vub.ac.be
website we.vub.ac.be/~essc

Vinciane Debaille,
Université Libre de Bruxelles (ULB)
Laboratoire G-Time
CP 160/02, Avenue F.D. Roosevelt 50,
1050 Brussels.
Tel. 02 650 2271,
Fax. 02 650 3748, e-mail
vdebaill@ulb.ac.be , website
http://gtime.ulb.ac.be/VD.htmlr

Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting
http://www.belspo.be/fedra

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Belgian Science Policy
Louizalaan 231 - Avenue Louise • B-1050 Brussels
Tél. +32 (0)2 238 34 11 • Fax +32 (0)2 230 59 12 • www.belspo.be/ssd
Contact. Maaike Vancauwenberghe

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