Académie Royale de Belgique

Comité National Belge
de
GEODESIE et de GEOPHYSIQUE

Président : J. De Keyser
Vice-président : Th. Camelbeeck
Secrétaire : V. Pierrard
Secrétaire-adjointe : C. Bruyninx

Institut d'Aéronomie Spatiale de Belgique
Avenue Circulaire, 3
B-1180 Bruxelles
vivane.pierrard@oma.be

Koninklijke Vlaamse Academie van België

Belgisch Nationaal Comité
voor
GEODESIE en GEOFYSICA

Voorzitter : J. De Keyser
Ondervoorzitter : Th. Camelbeeck
Secretaresse : V. Pierrard
Adjunct-Secretaresse: C. Bruyninx

Belgisch Instituut voor Ruimte Aëronomie
Ringlaan, 3
B-1180 Brussel
viviane.pierrard@oma.be

http://bncgg.oma.be

Annual report 2010 of the
COMITE NATIONAL BELGE DE GEODESIE ET DE GEOPHYSIQUE
BELGISCH NATIONAAL COMITE VOOR GEODESIE EN GEOFYSICA

1. Short introduction on the subject of research and the goals of the Committee

The BNCGG serves as a link between IUGG and the Belgian scientists working in the fields of Geodesy and Geophysics. This activity reaches a climax every four years at the IUGG general assemblies. **The next IUGG General Assembly (XXV) will be held in Melbourne (Australia) from 7 June to 8 July 2011.** The BNCGG is then charged to propose to the Academy the national delegates to IUGG and to its eight Associations:

International Association of Cryospheric Sciences (IACS);
International Association of Geodesy (IAG);
International Association of Geomagnetism and Aeronomy (IAGA);
International Association of Meteorology and Atmospheric Sciences (IAMAS);
International Association of Hydrological Sciences (IAHS);
International Association of the Physical Sciences of the Ocean (IAPSO);
International Association of Seismology and Physics of the Earth Interior (IASPEI);
International Association of Volcanology and Chemistry of the Earth Interior (IAVCEI).

In the meantime the BNCGG regularly organises conferences by renowned Belgian or foreign scientists. The BNCGG tries also to encourage the participation of young scientists to the IUGG General Assemblies by attributing grants.

Belgium was among the 9 countries who established the International Union of Geodesy and Geophysics (IUGG) on July 28, 1919 in Brussels. The Belgian National Committee for Geodesy and Geophysics (BNCGG) was created shortly after in 1921. The running expenses were covered until 1950 by the National Cartographic Institute and later on by Royal Academy of Belgium, now split into "Koninklijke Vlaamse Academie van België voor Wetenschappen en Kunsten" and "Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique".

In parallel with the BNCGG there exists since 1955 an "Association sans buts lucratifs de droit belge" called "Comité National Belge de Géodésie et de Géophysique, Bruxelles". It is charged to administrate the finances of the Committee.

2. Member list

- Board

Président	Johan DE KEYSER (IASB-BIRA)	N	Voorzitter
Vice-président	Thierry CAMELBEECK (ORB-KSB)	F	Ondervoorzitter
Secrétaire	Viviane PIERRARD (IASB-BIRA)	F	Secretaris
Secrétaire-adjointe	Carine BRUYNINX (ORB-KSB)	N	Adjunct-Secretaris

- Members (16)

- Prof. BECKERS, Jean-Marie (F, IAPSO)
Université de Liège
Département d'Astrophysique, Géophysique et Océanographie
GeoHydrodynamics and Evironment Research
Sart-Tilman B5
4000 Liège
Phone: +32 4 366 3358
Fax: +32 4 366 2355
E-mail: jm.beckers@ulg.ac.be

- Dr. BRUYNINX, Carine (Adjunct-secretaris, N, IAG)
Koninklijke Sterrenwacht van België
Ringlaan 3
1180 Brussel
Phone : +32 2 373 0292
Fax : +32 2 374 9822
E-mail : carine.bruyninx@oma.be

- Prof. CAMELBEECK, Thierry (Vice-président, F, IASPEI))
Observatoire Royal de Belgique
Av. Circulaire 3
1180 Bruxelles
Phone : +32 2 373 0252
Fax : +32 2 374 9822
E-mail : thierry.camelbeeck@oma.be

- Dr. CRUCIFIX, Michel (F, IAMAS)
Georges Lemaître Centre for Earth and Climate Research (TECLIM)
Earth and Life Institute
Université Catholique de Louvain
Chemin du Cyclotron 2
1348 Louvain-la-Neuve, Belgique
Phone : +32 10 473300
Fax : +32 10 474722
E-mail : michel.crucifix@uclouvain.be

- Prof. DEHANT, Véronique (F, IAG)
Observatoire Royal de Belgique
Avenue Circulaire 3
B-1180 Bruxelles, Belgium
Phone : +32 2 373 0266
Fax : +32 2 374 9822
E-mail : Véronique.Dehant@oma.be

- Dr. De KEYSER, Johan (Voorzitter, N, IAGA) Belgisch Instituut voor Ruimte Aëronomie
Ringlaan 3
1180 Brussel
Phone : +32 2 373 0368
Fax : +32 2 374 8423

E-mail : johan.dekeyser@bira-iasb.oma.be

- Dr. De MAZIERE, Martine (N, IAMAS) martine.demaziere@oma.be
Belgisch Instituut voor Ruimte Aëronomie
Ringlaan 3
1180 Brussel
Phone : +32 2 373 0363
Fax : +32 2 374 8423

- Prof. DE SMEDT F. Hilaire (N, IAHS)
Vrije Universiteit Brussel (VUB)
Department of Hydrology and Hydraulic Engineering
Pleinlaan 2
B-1050 Brussel
Phone : +32 2 6293547
Fax : +32 2 629 3022
E-mail : fdesmedt@vub.ac.be

- Dr. DEWITTE, Steven (N, IAMAS) dewitte@oma.be
Koninklijk Meteorologisch Instittuut
Ringlaan 3
1180 Brussel

- Prof. ERNST Gerald (F – IAVCEI) gerald.ernst@ugent.be
Dpt. Geology & Soil Sciences ; Universiteit Gent
Krijgslaan 281/S8
9000 Gent

- Prof. FICHEFET, Thierry (F, IAPSO)
Georges Lemaître Centre for Earth and Climate Research (TECLIM)
Earth and Life Institute
Université Catholique de Louvain
Chemin du Cyclotron 2
B-1348 Louvain-la-Neuve
Phone : +32 10 47 3295
Fax : +32 10 47 3297
E-mail : fichefet@astr.ucl.ac.be

- Prof. HUYBRECHTS, Philippe (N – IACS) phuybrec@vub.ac.be
Departement Geografie
Vrije Universiteit Brussel
Pleinlaan 2
B-1050 Brussel
Phone : +32 2 629 3593
Fax : +32 2 629 3378

- Prof. PIERRARD, Viviane (Secrétaire, F, IAGA)
Institut d'Aéronomie Spatiale de Belgique
Avenue Circulaire 3
B-1180 Bruxelles, Belgium
Phone : +32 2 373 0365
Fax : +32 2 374 8423
E-mail : viviane.pierrard@oma.be

- Dr. VANDAELE, Ann Carine (F, IAGA)
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
B-1180 Bruxelles, Belgium
Phone +32 2 3730367

Fax : +32 2 374 8423
E-mail : a-c.vandaele@aeronomie.be

- Dr. VANNESTE, Kris (N, IASPEI)
Koninklijke Sterrenwacht van België
Ringlaan 3
1180 Brussel
Tel: +35 2 3730280
Fax: +32 2 3730339
kris.vanneste@oma.be

- Prof. VERHOEST Niko (N, IAHS) Universiteit Gent
Laboratory of Hydrology and Water Management
Coupure links 653
9000 Gent
Phone: +32 9 264 6138
Fax: +32 9 264 6236
E-mail: niko.verhoest@ugent.be

- **Honorary members (21)**

- Baron ACKERMAN, Marcel
Rue de la Montagne 24
1367 Mont Saint André
E-mail : ackerman.marcel@skynet.be

- Prof. BERGER, André
Université Catholique de Louvain
Georges Lemaître Centre for Earth and Climate Research (TECLIM)
Earth and Life Institute Chemin du Cyclotron 2
B-1348 Louvain-la-Neuve, Belgium
Phone : +32 10 47 3303
Fax : +32 10 47 4722
E-mail : berger@astr.ucl.ac.be

- Dr. DE MUER, Dirk
Koninklijk Meteorologisch Instituut
Ringlaan 3
B-1180 Brussel, Belgium
Phone : +32 2 373 0570
Fax : +32 2 373 0553
E-mail : dirk.demuer@oma.be

- Prof. DE TROCH, François
Lamstraat 4
9820 Merelbeke
Phone : +32 9 264 6135
Fax : +32 9 264 6236
E-mail : fdetroch@netadmin.be

- Prof. DUCARME, Bernard
Rue de Louvranges 48,
1325 Chaumont-Gistoux
Phone : +32 2 373 0248
Fax : +32 2 374 9822
E-mail : bf.ducarme@gmail.com

- Prof. KOCKARTS, Gaston
Rue du Merlo 8a, bte 16
B-1180 Bruxelles

Phone : ++32 2 376 0414

- Prof. LEMAIRE, Joseph
Institut d'Aéronomie Spatiale de Belgique
Avenue Circulaire 3
B-1180 Bruxelles, Belgium
Phone : +32 2 653 4921
Fax : +32 10 474722
E-mail : jfl@astr.ucl.ac.be

- Dr MALCORPS, Henri
Directeur-Generaal
Koninklijk Meteorologisch Instituut
Ringlaan 3
1180 Brussel
Phone : +32 2 373 0500
Fax : +32 2 375 1259
E-mail : henri.malcorps@oma.be

- Prof. NIHOUL, Jacques
GHER – Modèle Environnement
Université de Liège
Sart Tilman B5
4000 Liège
Phone : +32 4 366 3350
Fax : +32 4 366 4740
E-mail : j.nihoul@ulg.ac.be

- Prof. PAQUET, Paul
Rue du Moulin à vent 9
B-5031 Grand-Leez, Belgium
Phone : +32 81 414938
Fax : +32 2 374 9822
E-mail : Paul.Paquet@skynet.be

- Prof. PETERS, Jean-Jacques
44 rue Philippe de Champagne
B-1000 Brussels, Belgium
Phone : +32 2 512 8006
Fax : +32 2 502 4644
E-mail : jjpeters@skynet.be

- Prof. RONDAY, François
Administrateur
Université de Liège
Place du 20 Août, 7
B-4000 Liège, Belgium
Phone : +32 4 366 5301
Fax: +32 4 366 5400
E-mail : fronday@ulg.ac.be, administrateur@ulg.ac.be

- Dr. Roth, M. (F – IAGA) michel.roth@bira-iasb.oma.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

- Prof. Schayes, G. (F – IAMAS) schayes@astr.ucl.ac.be
Georges Lemaître Centre for Earth and Climate Research (TECLIM)

Earth and Life Institute Université Catholique de Louvain
Chemin du Cyclotron 2
1348 Louvain-la-Neuve

- Dr SCHERER, Marc
Belgisch Instituut voor Ruimte-Aeronomie
Ringlaan 3
B-1180 Brussel, Belgium
Phone : +32 2 374 8121
Fax : +32 2 374 8423
E-mail : Marc.Scherer@bira-iasb.oma.be

- Prof. SIMON, Paul C.
Institut d'Aéronomie Spatiale de Belgique
Avenue Circulaire 3
B-1180 Bruxelles, Belgium
Phone : +32 2 373 0413
Fax : +32 2 375 9336
E-mail : Paul.Simon@oma.be

- Prof. SNEYERS, R.
Rue Copernic 68
1180 Bruxelles
phone : ++32 2 374 0154

- Ingénieur STERLING, André
Avenue Armand Huysmans 205, bte 3
1050 Bruxelles
phone : ++32 2 649 2238

- Prof. VAN DER BEKEN, André
François Laurentplein 45,
9000 Gent
E-mail : andre.van.der.beken@pandora.be

- Prof. VAN TWEMBEKE, Urbain
Kruisbooglaan 11
3210 Linden.
Phone :++32 16 25 89 77

- Dr VERBEIREN, Roland
Koninklijke Sterrenwacht van Belgie
Ringlaan 3
B-1180 Brussel, Belgium
Phone : +32 2 373 0257
Fax : +32 2 374 9822
E-mail : roland.verbeiren@telenet.be

- **Associated members (46)**

Amelynck, C. (N -IAMAS) amelynck@bira-iasb.oma.be
Belgisch Instituut voor Ruimte Aëronomie
Ringlaan 3
1180 Brussel

Barth A. (F -IAPSO Amelynck, C. (N -IAMAS) a.barth@ulg.ac.be
AGO-GHER Université de Liège
Sart Tilman B5
4000 Liège

Batelaan O. (N –IAHS) batelaan@vub.ac.be
Department of Hydrology and Hydraulic Engineering Vrije Universiteit Brussel
Pleinlaan 2
1050 Brussel

Bernard, A. (F – IAVCEI) abernard@ulb.ac.be
Geochemistry 160/02
Université Libre de Bruxelles
Ave. Roosevelt 50
1050 Bruxelles

Bingen, Chr. (N -IAMAS) bingen@bira-iasb.oma.be
Belgisch Instituut voor Ruimte Aëronomie
Ringlaan 3
1180 Brussel

Chabrillat, S. (F – IAMAS) chabrillat@bira-iasb.oma.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Collin, F. (F – IASPEI) collin@oma.be
Observatoire Royal de Belgique
Avenue Circulaire 3
1180 Bruxelles

Crommelynck, D. (F – IAMAS) dcrommelynck@tvcablenet.be
Institut Royal Météorologique
Avenue Circulaire 3
1180 Bruxelles

Crosby N. B. (F – IAGA) norma.crosby@aeronomie.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Darrouzet F. (F – IAGA) darrouzet@aeronomie.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Dassargues, A.(F – IAHS) alain.dassargues@ulg.ac.be
Laboratoires de Géologie de l'Ingénieur d'Hydrogéologie (LGIH)
Université de Liège (ULg)
Bâtiment B52/3
Sart Tilman
4000 Liège

De Backer, H. (N – IAMAS) debacker@oma.be
Koninklijk Meteorologisch Instituut
Ringlaan 3
1180 Brussel

Decleir, H. (N – IAMAS) hdecleir@vub.ac.be
Vrije Universiteit Brussel
Dept. Geografie
Pleinlaan 2
B-1050 Brussel

Defraigne, P. (F -IAG) pascale.defraigne@oma.be
Observatoire Royal de Belgique
Av. Circulaire 3
1180 Bruxelles

Deleersnijder, E. (F – IAPSO) ericd@uclouvain.be
Centre for Systems Engineering and Applied Mechanics (CESAME)
Universite catholique de Louvain
4 Avenue G. Lemaitre (Euler building, Office a.113)
1348 Louvain-la-Neuve

Delobbe, L. (F – IAMAS) delobbe@oma.be
Institut Royal Météorologique
Av. Circulaire 3
1180 Bruxelles

Errera, Q. (F – IAMAS) errera@bira-iasb.oma.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Everaerts, M. (F - IAG) michel.everaerts@oma.be
Observatoire Royal de Belgique
Avenue Circulaire 3
1180 Bruxelles

Fussen, D. (F – IAGA) didier.fussen@oma.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Gérard, J.-C. (F – IAMAS) jc.gerard@ulg.ac.be
Lab. Phys. Atm. Et Planétaire
Université de Liège
Allée du 6 août 17, B5C
4000 Liège

Goosse, H. (F – IAPSO) hgs@astr.ucl.ac.be
Georges Lemaître Centre for Earth and Climate Research (TECLIM)
Earth and Life Institute
Université Catholique de Louvain
2 Chemin du Cyclotron
B-1348 Louvain-la-Neuve

Joukoff, A. (F – IAMAS) joukalex@skynet.be
Institut Royal Météorologique
Av. Circulaire 3
1180 Bruxelles

Kruglanski M. (F – IAGA) kruglanski@aeronomie.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Lamy H. (F – IAGA) lamy@aeronomie.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Legrand, Juliette (F -IAG) juliette.legrand@oma.be
Observatoire Royal de Belgique
Av. Circulaire 3
1180 Bruxelles

Loutre, M.-F. (F – IAMAS) loutre@astr.ucl.ac.be
Georges Lemaître Centre for Earth and Climate Research (TECLIM)
Earth and Life Institute
Université Catholique de Louvain
2 Chemin du Cyclotron
B-1348 Louvain-la-Neuve

Muller, C. (F – IAGA) c.muller@oma.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Müller, J.-F. (F – IAMAS) jfm@oma.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

Muls, A. (N – IAG) alain.muls@rma.ac.be
Royal Military Academy
Renaissancelaan 30
1000 Brussel

Pattyn, F. (F – IACS) fpattijn@ulb.ac.be
Laboratoire de Glaciologie
Université libre de Bruxelles
CP 160/03
Av. F. D. Roosevelt 50
1050 Bruxelles

Pauwels, V. (N – IAHS) valentijn.pauwels@ugent.be
Universiteit Gent
Laboratory of Hydrology and Water Management
Coupure Links 653
9000 Gent

Rasson, J. (F – IAGA) jean.rasson@oma.be
Institut Royal Météorologique
Centre de Physique du Globe
5670 Dourbes (Viroinval)

Roosbeek, F., (F -IAG) fabian.roosbeek@oma.be
Observatoire Royal de Belgique
Av. Circulaire 3
1180 Bruxelles

Rosenblatt, Pascal (F -IAG) rosenb@oma.be
Observatoire Royal de Belgique
Av. Circulaire 3
1180 Bruxelles

Rouvas-Nicolis, C. (F – IAMAS) cnicolis@oma.be
Institut Royal Météorologique
Av. Circulaire 3
1180 Bruxelles

Schoon, N. (N -IAMAS) schoon@bira-iasb.oma.be
Belgisch Instituut voor Ruimte Aëronomie
Ringlaan 3
1180 Brussel

Van Camp, M. (F – IAG) mvc@oma.be
Observatoire Royal de Belgique
Avenue Circulaire 3
1180 Bruxelles

Vanclooster, M. (F – IAHS) vanclooster@geru.ucl.ac.be
AGRO/MILA/GERU
Université Catholique de Louvain,
Place Croix du Sud 2 (bte 2)
1348 Louvain-la-Neuve

Vanhellemont, Ph. (N -IAMAS) vanhellemont@bira-iasb.oma.be
Belgisch Instituut voor Ruimte Aëronomie
Ringlaan 3
1180 Brussel

Van Hoolst, T. (N – IAG) tim.vanhoolst@oma.be
Koninklijke Sterrenwacht van België
Ringlaan 3
1180 Brussel

Vannitsem, St. (F – IAMAS) vannitsem@oma.be
Institut Royal Météorologique
Av. Circulaire 3
1180 Bruxelles

Van Roozendael, M. (F – IAMAS) vanroozendael@bira-iasb.oma.be
Institut d'Aéronomie Spatiale de Belgique
Av. Circulaire 3
1180 Bruxelles

van Ruymbeke M. (F – IAVCEI) labvruy@oma.be
Observatoire Royal de Belgique
Avenue Circulaire 3
1180 Bruxelles

van Ypersele, J.-P. (F – IAMAS) vanypersele@astr.ucl.ac.be
Georges Lemaître Centre for Earth and Climate Research (TECLIM)
Earth and Life Institute Université Catholique de Louvain
Chemin du Cyclotron 2
1348 Louvain-la-Neuve

Warnant, R. (F – IAG) rene.warnant@oma.be
Observatoire Royal de Belgique
Avenue Circulaire 3
1180 Bruxelles

Yseboodt, Marie (F -IAG) m.yseboodt@oma.be
Observatoire Royal de Belgique
Av. Circulaire 3
1180 Bruxelles

3. Meetings of the Committee in 2010

- **Dates and main conclusions**

During 2010, the CNBGG had one General Assembly (21.01.2010) and two other meetings (29.04.10 and 21.10.10) with several talks. Detailed reports (with attendance and conclusions) for the GA and for each other meeting are provided in French and Dutch on the website of the committee: bncgg.oma.be (activities)

The following talks were given to the Committee:

21.01.10 at 14h00 at the Royal Observatory of Belgium. The General Assembly was preceded by the talk of **Prof. Philippe Huybrechts (VUB)**

Overview of cryospheric science in Belgium

The cryosphere is one of the most dynamic spheres on the Earth's surface on almost any time scale owing to the Earth's temperatures being around the freezing point of water. Recent interest in cryospheric research is fueled by its sensitive role in the Earth's climate system and by the threat of substantial sea level rise if land ice starts to melt in a warmer greenhouse world. Belgium harbours a very active cryospheric research community despite the fact that Belgium has no ice on its soil or that it was covered by large ice sheets during the Quaternary ice ages. Among other reasons, this is rooted in Belgium's historic presence in Antarctica and by theoretical palaeoclimatic research on the origin of the ice ages since the seventies. Cryospheric research groups at Belgian universities are currently involved in glacier studies in Alaska, the Alps, and the Himalaya and participate in glaciological field activities in Greenland and Antarctica, as well as on Arctic islands. Several groups play an important role in large international programmes for ice coring in Antarctica and Greenland. Moreover, Belgian research groups are deeply involved in sea-ice and ice-sheet modeling and in the modeling of the surface mass balance of the large polar ice sheets. As such, Belgian scientists have co-authored subsequent IPCC assessment report chapters dealing with the cryosphere, the modeling of ice-climate interactions, and the projection of sea-level changes. This presentation intends to give a (selective) overview of Belgian cryospheric science and its role in international scientific activities.

29.04.10 at 14h00 in Heverlee (KULeuven):
A meeting was held with two talks:
Prof. Patrick Willems (Hydraulics Division, **KULeuven**) presented in English a talk entitled

" Climate change impacts on hydrological extremes along rivers and urban drainage systems in Belgium."

Summary:

Based on the most recent data and climate modelling results, the climate change impact on the risk of hydrological extremes along rivers and urban drainage systems in Belgium has been studied in a detailed objective way. For rivers, the risk of both floods and low flows has been considered. For urban drainage systems, the impact on sewer flood and overflow frequencies were analyzed. The study required the simulation results from global and regional climate models (GCMs and RCMs) to be downscaled to the time and space scale necessary for the hydrological impact analysis. The modelling approach was based on ensemble modelling and probabilistic analysis of simulation results, enabling the uncertainty on the climate model-based results to be taken into account. The climate change scenarios furthermore were to be compared / verified with the results from a statistical analysis on the present and past climate and flow records. This research task aimed to bring together the two separate science domains of physically-based climate modelling and statistical hydrology.

The research consisted of two main phases. In Phase 1, climate change scenarios were being developed after statistical analysis of trends and cycles in long-term series of historical rainfall, evapotranspiration and river flow, and after the analysis and statistical downscaling of climate model simulation results. Phase 2 focused on

the impact modelling towards flood risks and low flows risk along rivers, and flood risks along urban drainage systems, making use of hydrological and hydrodynamic models.

After the coffee-break, the meeting continued at 15h10 with **Prof. Niko Verhoest (Ghent University)** who presented in English a talk entitled:

"**Stochastic rainfall modelling for hydrological design**"

Summary:

For the hydrological design of rivers, design criteria have to be defined, including the maximal frequency of the failure of hydraulic structures to be designed or a minimization of floods. As these events are generally caused by extreme rainfall, it is important to have tools that allow for generating representative extreme rainfall which can then be used in the design. Often, Intensity-Duration-Frequency curves are used in order to characterize a design storm with a given duration and return period. The internal storm structure can then be improved by using the mass curves or Huff curves concept. However, as this framework does not allow for much flexibility, alternative methods, making use of long time series of simulated rainfall, have been developed that may lead to an improved design as it allows for assessing the uncertainty on the failure of the system. Such time series can be obtained through stochastic rectangular pulses models, however, it is shown that these models may lead to incorrect extreme discharge behaviour of river basins.

In this talk, this problem is demonstrated and some solutions, including the introduction of a stochastic copula-based design storm generator, are given. Therefore, copulas, which are flexible functions for describing the dependence structure between two variables (in our case storm characteristics), are briefly introduced and their application in an alternative comparative frequency analysis is demonstrated.

11.10.2010 14h00 at the University of Gent: **Dr. Elie Verleyen**
(postdoctoral researcher of FWO-Flanders, Laboratory of Protistology & Aquatic Ecology, Department of Biology, **Ghent University**)
presented in English a talk entitled

Coastal Antarctic lakes: recorders of past changes in climate and relative sea level

During the past decades increasing ice-mass loss in Antarctica is dominated by changes in the Antarctic Peninsula and the Amundsen Sea sector of West Antarctica and more recently to a lesser extent also in coastal regions of East Antarctica. Despite this, there is relatively little geological data constraining the geometry, volume and melt history of the Antarctic Ice Sheets after Termination 1 and their response to Holocene climate anomalies. Here we first briefly review the deglaciation history and past climate variability in coastal East Antarctica based upon terrestrial and shallow marine sedimentary archives. Second, we reconstruct relative sea level (RSL) curves for Beak Island (north-eastern Antarctic Peninsula), and Skarvsness, Lützow Holm Bay region (East Antarctica), based on a combination of geomorphological evidence of former marine limits and records from 14C dated marine-freshwater transitions in isolation basins. The isolation of the lake basins was determined using a combination of sedimentological, microfossil and biogeochemical markers.

Nearly all Antarctic records show a near-synchronous Early Holocene climate optimum (11.5-9 ka BP), coinciding with the deglaciation of parts of the Antarctic Peninsula Ice Sheet and currently ice-free regions in East Antarctica. Shallow marine and coastal terrestrial climate anomalies appear to be out of phase after the Early Holocene warm period, and show complex regional patterns, but an overall trend of cooling in the terrestrial records and a climate optimum in the majority of the marine records. A Mid to Late Holocene warm period is present in many Antarctic lake and shallow coastal marine records. Although there are some differences in the regional timing of this warm period, it typically occurs somewhere between 4.7 and 1 ka BP. The differences in the timing of these sometimes abrupt warm events in different records and regions points to a number of mechanisms that we have yet to identify. Nearly all records show a Neoglacial cooling from 2 ka BP onwards. There is no evidence for an equivalent to the Northern Hemisphere Medieval Warm Period and there is only weak circumstantial evidence in a few places for a cool event crudely equivalent in time to the Northern Hemisphere's Little Ice Age.

In the Antarctic Peninsula RSL fell from a maximum of 14.91 m above present at ca. 8.7 ka BP, with rates declining from 2.16 mm per year between 6.9 and 2.9 ka BP, dropping to 1.68 mm per year between 2.9 and 1.8 ka BP, and finally to 0.28 mm per year during the last 1.8 ka. There is no evidence of glacial still stands or advances during the Holocene in the Antarctic Peninsula region. In Skarvsnes, the RSL shows more complex patterns and was below 28 m a.s.l. around c. 6.9 ka BP. The Holocene RSL maximum could not be determined exactly, but was above 28 m a.s.l. between c. 6.9 and 2 ka BP. RSL fell at 31.4 mm/yr between c. 2 and 1.1 ka BP, dropping rapidly to 1.3 mm/yr during the last 1.1 ka. The RSL curve in Skarvsnes is consistent with deglaciation of parts of the East Antarctic Ice Sheet during the Late Holocene warm period, but a modeling approach using a suite of glacio-isostatic adjustment models has to confirm or reject this hypothesis.

14h55: **Dr. Jasper Moernaut** (postdoctoral researcher of FWO-Flanders, Renard Centre of Marine Geology, Department of Geology and Soil Science, **Ghent University**)

Recurrence of 1960-like earthquake shaking in South-Central Chile revealed by lacustrine sedimentary records

Summary :

Megathrust earthquakes at the South-Central Chilean subduction zone (e.g. 1960 earthquake; M_w : 9.5) pose a major threat to society. A reliable seismic hazard assessment requires establishing if such mega-events occurred in the past and determining their recurrence pattern. The Lake District (39-42°S) in South-Central Chile, located in the northern half of the 1960 rupture zone, contains several large glacigenic lakes, the sedimentary deposits in which are highly susceptible to earthquake-triggered slope instability. To establish the recurrence interval of earthquakes during the Late Holocene, we mapped the spatial distribution of seismically-induced 'event' deposits and sedimentary structures in each lake using very-high resolution reflection seismic data, and collected a series of short gravity cores and long piston cores. Multi-proxy sedimentary analyses (color, magnetic susceptibility, density, geochemistry, grain size), radiocarbon dating and varve-counting were used to identify 'event' deposits in each core and correlate paleoseismic horizons across basins. The sediment sequences investigated contain four main types of earthquake fingerprints: 1) multiple mass-wasting deposits and turbidites on a single stratigraphic level, which are relicts of basin-wide subaqueous slope failure; 2) homogenites indicative of lake seiches and tsunamis; 3) fluid-escape structures (e.g. sediment volcanoes), which reflect sudden liquefaction in buried mass-wasting deposits and subsequent vertical fluidization flow; 4) in-situ/ /deformed units in nearly-flat layers, which reflect strong horizontal ground accelerations. It appears that the distribution of (liquefiable) volcanic deposits and local sedimentation rates strongly controls the extent and timing of large subaqueous slope failures. However, comparison with historical earthquakes suggests that spatial extent and nature of turbidites might provide key quantitative information about local earthquake intensity. In three lake basins, we identified and correlated 12 paleoseismic 'events' with a sedimentary signature comparable to that of the giant 1960 earthquake, in sedimentary records spanning the last 3600 yr. This paleoseismic reconstruction points out that strong 1960-like earthquake shaking occurred approximately every 320 yrs along the northern part of the 1960 rupture zone. Sites characterized by a very-high earthquake recording capacity also recorded events of less strong shaking. More paleoseismic records in the southern half are needed to constrain if the revealed events ruptured the entire 1960 zone, or whether partial ruptures were more common.

4. General Assemblies of the Scientific Union in 2010

There was no Assembly of the Scientific Union in 2010.

5. Other activities of the committee

No other activities were organized in 2010.

6. Future perspectives

- The next XXV General Assembly of IUGG will be held on June 27 - July 8, 2011 in MELBOURNE Australia (http://www.iugg.org/assemblies/2011melbourne/).