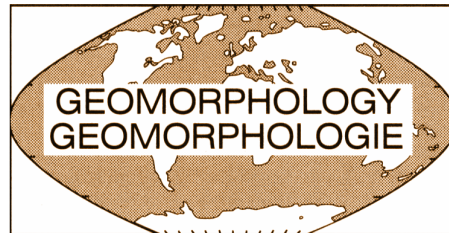


# INTERNATIONAL ASSOCIATION OF GEOMORPHOLOGISTS



## **Final Reports from Working Group activities, 2009–2013 Updated version**

Note 1: The reports received were not modified in any way by Piotr Migoń, unless for editorial purposes

Note 2: Final reports from GEOMORPHOSITES and SEDIBUD activities are attached separately, as pdf files.

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## APPLIED GEOMORPHOLOGICAL MAPPING

**Coordinators:** Chair: Dr Mike Smith (Kingston University, UK); Vice-Chair: Dr Paolo Paron (UNESCO-IHE, Institute for Water Education, Netherlands)

**Contact:** Mike Smith, School of Geography, Geology and the Environment, Kingston University London, Penrhyn Road, Kingston-upon-Thames, Surrey, KT1 2EE, UK. T:+44 207 099 2817, F:+44 870 063 3061, E: michael.smith@kingston.ac.uk.

### Aims

- Develop and deepen the theoretical basis of applied geomorphological mapping;
- Develop standards, specific mapping procedures and legend systems for different applications and scales;
- Disseminate the importance and effectiveness of the use of geomorphological mapping as a basic tool for those who deal with the physical environment;
- Put a bridge between our and other scientific and professional communities.
- **Update:** currently completing second term as a WG with the final activity a planned session in IAG Congress Paris. After IAG Paris, the WG will formally close.

### Outputs

- A web-site and an e-mail discussion list (under the umbrella of IAG) as a permanent forum on the use of maps between our and other communities of scientists and professionals (*complete*);
  - **Update:** This has now been archived with the IAG, including all ancillary materials for the published volume (<http://www.geomorph.org/wg/wgagm.html>)
- A state-of-the-art volume by international experts on the application of geomorphological mapping for particular purposes (*complete*; <http://www.amazon.co.uk/dp/0444534466>);
  - **Update:** 2011-12 royalties return "782 euro to IAG on sales of 344 physical books. Also sold by chapter via Science Direct.
- A standardized geomorphological legend to be used within GIS software (*partial, supported through book*);
- A collection of articles and book chapters on applied geomorphological mapping, translating into English the main contributions from schools and languages from all the countries (*ongoing*);
- A collection/library of geomorphological maps to serve as a reference for the WG (*limited support*);
  - **Update:** this will likely continue with an online Atlas of Geomorphological Maps; currently under discussion.
- A glossary of terms strictly related to geomorphological mapping (like terrain, landscape, landform, land systems, land unit, physiography, etc) (*in progress*);
- A summer school/short course to disseminate the understanding, importance, and use of geomorphological maps (*minimal interest*).

### Activities for the year to date

- we have members and visitors from all the continents  
<http://www4.clustrmaps.com/counter/maps.php?user=ae652702>
- Session at the IAG Regional meeting in Addis Ababa, Ethiopia

- Organization of the Workshop on Object Oriented Geomorphological Mapping in Salerno for 2012;
  - **Update:** this is complete and was successfully attended by 50 participants from a range of countries
- special issue on geomorphological maps to be published in the Journal of Maps (autumn 2012) resulting from the IAG meeting, Addis Ababa;
  - **Update:** complete
- publication of book by Elsevier titled “Geomorphological Mapping: a professional handbook of techniques and applications”, as part of the edited series “Developments in Earth Surface Processes”;

## **CARPATHO-BALKAN-DINARIC REGIONAL WORKING GROUP**

### **1. Final report**

**The Carpatho-Balkan-Dinaric Regional Working Group (CBDRWG) Council members:** Miloš Stankoviansky (Chair), Christine Embleton-Hamann (Austria), Mariyana Nikolova (Bulgaria), Andrija Bognar (Croatia), Karel Kirchner (Czech Republic), János Kovács (Hungary), Ivica Milevski (Macedonia), Zofia Rączkowska (Poland), Dan Bălțeanu (Romania), Jelena Čalić (Serbia), Ján Lacika (Slovakia), Karel Natek (Slovenia), Andriy Mykhnovych (Ukraine).

### **Main activities**

#### **Conferences**

-The *Carpatho-Balkan-Dinaric Conference on Geomorphology* was held in Ostravice, Czech Republic (October 17-20, 2011). The 4<sup>th</sup> Joint Council Meeting of the IAG CBDRWG and the Carpatho-Balkan Geomorphological Commission (CBGC) was held in the framework of the conference.

-The jubilee *Carpatho-Balkan-Dinaric Conference on Geomorphology* was held in Stará Lesná, Tatranská Lomnica, Slovakia (June 24-28, 2013) on the occasion of the 50<sup>th</sup> anniversary of the founding the Carpatho-Balkan Geomorphological Commission. The last, 5<sup>th</sup> Joint Council Meeting of the IAG CBDRWG and the CBGC was held in the framework of the conference.

### **Tangible outputs**

#### **Books**

-Dénes Lóczy, Miloš Stankoviansky, Adam Kotarba (eds.). *Recent Landform Evolution: The Carpatho-Balkan-Dinaric Region*. Springer, 2012.

The monograph consists of Part I (General: Geological and tectonic settings, Climate, Rivers, Land cover and land use), Part II (national chapters: Poland, Czech Republic, Slovakia, Ukraine, Hungary, Romania, Slovenia, Croatia, Serbia, Bulgaria, Macedonia) and Part III (Conclusions). Foreword was written by the IAG President Michael Crozier.

-Dénes Lóczy (ed.). *Geomorphological impacts of extreme weather: case studies from Central and Eastern Europe*. Springer, 2013.

In Part I a paper outlines the hydrometeorological background to extreme events, Part II includes 11 case studies mainly on floods, Part III 6 case studies on landslides and Part IV 4 case studies on other impacts. Part V gives a general assessment of geomorphological impacts as a conclusion.

#### **Thematic Issues of Journals**

-Journal of the Carpatho-Balkan Geomorphological Commission – *Studia Geomorphologica Carpatho-Balcanica*, is dedicated to landform evolution in mountain areas in general, though especially in the Carpatho-Balkan area. Overwhelming majority of its volumes after the creation of the IAG/AIG CBDRWG are thus in fact thematic issues concerning the Carpatho-

Balkan-Dinaric area. It fully concerns Vol. XLIII (2009), XLIV (2010), XLV (2011) and XLVI (2012), published in the assessed period.

*-Geomorphologia Slovaca et Bohemica, 13, 1, 2013* represents the Book of Abstracts and Excursion Guide of the jubilee Carpatho-Balkan-Dinaric Conference on Geomorphology, held in Stará Lesná, Tatranská Lomnica, Slovakia, June 24-28, 2013.

## **2. Letter from the Convenor received on 17 August 2013**

Dear Piotr Migon, IAG Vice-President,

The IAG Carpatho-Balkan-Dinaric Regional Working Group (IAG CBDRWG) was approved by the IAG Council in its meeting held in the framework of the 6<sup>th</sup> International Conference on Geomorphology, Zaragoza, September 7-11, 2005. The CBDRWG was proposed by geomorphologists of 11 countries associated in the Carpatho-Balkan Geomorphological Commission (CBGC). They were original CBGC member countries (Bulgaria, Hungary, Poland, Romania), successor states formed by disintegration of the original CBGC member countries (Czechia, Slovakia, Croatia, Serbia, Slovenia, Ukraine), as well as the state which had no chance to be the CBGC member country in the past for political reasons (Austria). In the meantime the group of the IAG CBDRWG countries complemented Macedonia. The main expectation of geomorphologists from Carpatho-Balkan-Dinaric countries after the approval of the IAG CBDRWG was the opening up the CBGC to the world. The principal long-term goal became to study the Carpatho-Balkan-Dinaric mountain system and adjacent depressions as a unit and to explain disparities of geomorphic evolution in its northern and southern parts.

The 1<sup>st</sup> Joint Council Meeting of the IAG CBDRWG and the CBGC was held in Olomouc, Czechia in April 10, 2006. The first tangible output of the new IAG CBDRWG was a special volume of *Studia Geomorphologica Carpatho-Balcanica (Vol. XL, 2006)*, entitled "Recent Geomorphological Hazards in Carpatho-Balkan-Dinaric Region". In October 24-28, 2007, the *Carpatho-Balkan-Dinaric Conference on Geomorphology* was held in Pécs, Hungary. The 2<sup>nd</sup> Joint Council Meeting of the IAG CBDRWG and the CBGC was held in the framework of this conference. The 3<sup>rd</sup> Joint Council Meeting was held in the framework of the Regional AIG Conference, Braşov, Romania, September 15-26, 2008. In the course of this first CBDRWG tenure the main its task became to write and publish the monograph on recent landform evolution in the Carpatho-Balkan-Dinaric area. Unfortunately, this objective was not fulfilled until the end of this tenure.

This is why we were pleased when the operation of the CBDRWG was extended by one more tenure on the basis of decision of the IAG Council meeting in Melbourne in 2009, though we did not asked for it. I shall not write on our activity in this second tenure on this place, it is introduced in the attached „Report on the IAG CBDRWG activities in the period 2009-2013“. We concentrated above all to the Carpatho-Balkan-Dinaric monograph, which was issued by Springer in 2012. Until the end of the second tenure, in 2013, we managed to publish one more book at Springer on geomorphic impact of extreme weather in the same area.

Finally, let me express our gratitude to the IAG that it „took us below its protective wings“. It helped us to increase our activity and working on the monograph to broaden the picture on recent landform evolution in the Carpatho-Balkan-Dinaric area. Since the middle of the 1960s there was not written any geomorphological book dedicated to this region! It was big debt of current geomorphologists towards the generation of their predecessors.

We were very lucky that we could act under the auspices of the IAG. We express our gratitude to members of the EC IAG between Tokyo and Zaragoza, between Zaragoza and Melbourne and also between Melbourne and Paris. We especially thanks to Mario Panizza, Andrew Goudie and Michael Crozier for their personal support, to last of them also for his emotionally written foreword to our monograph on the „diverse and fascinating“ Carpatho-Balkan-Dinaric area.

I hope that increased activity of Carpatho-Balkan-Dinaric geomorphologists within the period 2005-2013 will last still many years, though the protective wings of the IAG end their operation. Since the Paris IAG Conference at the end of August 2013, our geomorphologists will act exclusively under the auspices of the Carpatho-Balkan Geomorphological Commission, that celebrated the 50<sup>th</sup> anniversary of its founding on the jubilee *Carpatho-Balkan-Dinaric Conference on Geomorphology*, Stará Lesná, Tatranská Lomnica, Slovakia, June 24-28, 2013. Its presidents in the period of organizational incorporation in the IAG were Miloš Stankoviansky (2003-2007) and Dénes Lóczy (2007-2013), the new president elected some weeks ago in Stará Lesná is Petru Urdea.

With wishing all the best to you and all IAG,

Miloš Stankoviansky  
AIG/IAG CBDRWG Chair

# **DANXIA GEOMORPHOLOGY**

## **1. Background**

Danxia Geomorphology Working Group was established at the 7<sup>th</sup> International Conference on Geomorphology in Melbourne, in July 2009. At that time, the aims of the group were defined as follows:

- to undertake global survey of landforms/terrains developed on coarse clastic deposits, including geomorphometry of Danxia terrains
- to develop vocabulary appropriate to scientifically describe the variety of Danxia landforms
- to explore similarities and differences between landscapes developed on lithified and unlithified coarse clastic deposits
- to encourage process-oriented research in selected Danxia-type landscapes
- to provide a platform of information exchange between geomorphologists from different countries, as well as between geomorphologists and sedimentologists

These objectives were later re-formulated into the four main aims in the following way:

1. To define, as far as possible, the distinctive nature of Danxia landscapes in terms of form, to account for both its variability experienced in the type area for Danxia – southern China, and its distinctiveness among other morphologies associated with specific rock types.
2. To identify processes which have shaped Danxia landscapes, both in the past and now.
3. To recognize conditions (geological and others) necessary for the development of Danxia landscapes, in particular whether terrestrial origin of clastic deposits is essential for Danxia formation.
4. To identify global distribution of Danxia type landscapes and its controlling factors.

In addition, to clarify the scope of the group a subtitle was added 'Red beds as supporters of distinctive landscapes'.

Initial membership consisted of 12 people, from China and abroad, mainly participants of the 1<sup>st</sup> International Conference on Danxia Landform, held in Shaoguan, China, in June 2009. Membership of the Group was not formalized, although it was indicated that active participants in Danxia research may receive a letter from the Working Group secretariat, confirming their involvement.

Proposed activities include questionnaire survey, establishment of website/database (including web-available annotated pictures), field meetings/workshops, in China and elsewhere, including one main meeting in China mid way through the four year term, and final publication and session at the 8<sup>th</sup> International Conference on Geomorphology in 2013.

## **2. Activities and achievements**

The following activities were undertaken during the term:

### **2.1. Conferences**

- On 28-31 October 2011 The First Conference of Danxia Geomorphology Working Group of IAG and The Second International Symposium on Danxia Landform was held in Shaoguan, Guangdong, China, close to the mountains of Danxiashan. It was jointly organized by the Sun-Yat Sen University, Guangzhou, China and the

Administrative Committee of Danxiashan World Natural Heritage and Global Geopark, with the key support of local government of Shaoguan. The conference was attended by 95 participants, including 15 from overseas (Germany, Great Britain, Italy, Japan, Korea, New Zealand, Poland, United States). Most members of the working group were present. The conference was divided into sessions and field trips. There were 30 presentations, some focused explicitly on Danxia landscapes in China or their morphological equivalents elsewhere, whereas others addressed broader issues of geoheritage, hazard management at protected sites, and outreach activities in Earth Science. Field trips were organized to see red cliffs and sandstone mesas of Danxiashan and to the adjacent Nanxiong Basin, where red beds give rise to a rather subdued landscape, occasionally turned into badlands.

- On 24-28 April 2012 Danxia Geomorphology Working Group co-organized, supporting local organizers, the interdisciplinary conference Sandstone Landscapes III (followed previous conferences under this title from 2002 and 2005) in Kudowa Zdrój, Poland. It attracted more than 60 participants from 8 countries, with foreign participation accounting for half of the total. Some talks and posters were specifically focused on Danxia landscapes in China, whereas others explored different aspects of sandstone geomorphology. The conference was divided into sessions (2 days) and field trips (2 days), followed by an optional trip to further sandstone and red bed localities in the area.
- thematic session organized by Danxia Geomorphology Working Group will take place at the 8<sup>th</sup> International Conference on Geomorphology in Paris, August 2013, entitled 'Sandstone geomorphology, extended to quartzites'. It will consist of 7 oral presentations and 7 posters.

## 2.2. Publications

2.2.1. For both conferences listed in #2.1 volumes of abstracts have been prepared for the participants. A field guidebook for the Sandstone Landscapes III conference accompanied the abstract volume.

- *World Danxia. Collected Papers of the Second International Symposium on Danxia Landform.* IAG Danxia Working Group – Geography and Planning School of Sun Yat-sen University - Administrative Committee of Danxiashan World Natural Heritage and Global Geopark, Danxiashan, Guangdong, China, 2011.
- *Sandstone Landscapes III. Diversity, Ecology and Conservation. Stołowe Mountains National Park, 25-28 April 2012, Kudowa-Zdrój, Poland,* Duszyński F., Świrad Z. (eds), Abstract booklet, Wrocław 2012.
- *Góry Stołowe. Geology, Landforms, Vegetation Patterns and Human Impact. Excursion Guidebook prepared in association with the Sandstone Landscapes III conference, Kudowa Zdrój, 25-28 April 2012,* Kasprzak M., Migoń P. (eds), Instytut Geografii i Rozwoju Regionalnego Uniwersytetu Wrocławskiego, Wrocław, 74 pp. (ISBN 978-83-62673-19-3)

2.2.2. The volume of Conference Proceedings has been prepared after the Sandstone Landscapes III conference, containing extended abstracts of nearly all papers submitted to the conference ([http://www.geogr.uni.wroc.pl/images/publikacje/sandstone\\_landscapes.pdf](http://www.geogr.uni.wroc.pl/images/publikacje/sandstone_landscapes.pdf))

- *Sandstone Landscapes. Diversity, Ecology and Conservation. Proceedings of the 3<sup>rd</sup> International Conference on Sandstone Landscapes, Kudowa-Zdrój (Poland), 25-28 April 2012.* Migoń P., Kasprzak M. (eds), Instytut Geografii i Rozwoju Regionalnego Uniwersytetu Wrocławskiego, Wrocław, 237 pp. (ISBN 978-83-62673-29-2).



2.2.3. Following the Sandstone Landscape III conference, a thematic issue of Zeitschrift für Geomorphologie is being prepared. 12 papers have been submitted and these are now under review. The volume is expected to be published in mid-2014.

### **2.3. Website**

- Danxia Geomorphology Working Group website (<http://www.dxdm.com/IAGdxwg/>) has been established and it is linked to the main IAG webpage. It is bilingual and offers an opportunity for international membership to learn about Danxia research in China.

### **2.4. National meetings in China**

2.4.1. Besides international meetings, the strong Danxia Geomorphology community in China organized its two national meetings:

- The 12<sup>th</sup> National Conference on Red beds and Danxia Landform was held in Mt. Longhushan Geopark, Guixi, Jiangxi Province, China in August, 2011.
- The 13<sup>th</sup> National Conference on Red beds and Danxia Landform & the First Conference on Red Beds and Danxia Research Working Group of the Geographical Society of China was held in Bayannur, Inner Mongolia, China from August 15 to August 17, 2013.

2.4.2. In order to combine with IAG Danxia Geomorphology Working Group, the Standing Council of the Geographical Society of China approved the establishment of the Red Beds and Danxia Research Working Group in August 2011.

2.4.3. The IAG umbrella helped in two successful applications for long-term research projects focused on Danxia geomorphology of research project in May, 2013.

- Landslide hazard and risk assessment for UNESCO World Heritage Site, Danxia, China (within the framework of China-Slovakia International Cooperation programme).
- National basic data survey of Danxia landform (2013-2018) from the Special Program for Key Basic Research of the Chinese Ministry of Science and Technology.

### **2.5. Other business**

- During The First Conference of Danxia Geomorphology Working Group of IAG in October 2011 an agreement between the Working Group and the Administrative Committee of Danxiashan World Natural Heritage and Global Geopark was signed, with the latter offering a research base to conduct further scientific activities focused on Danxia landscapes. The opportunity is yet to be used by an international red beds geomorphological community.

## **3. Plans for the future**

The Danxia Geomorphology Working Group intends to continue its activity, under the leadership of Professor Peng Hua, with the following working plan:

### **1. Scientific background**

Based on Chinese research achievements, global research on red beds and Danxia landform needs implementation, leading to gradual establishment and improvement of a universal system of red beds and Danxia landform.

The key scientific issues on red beds and Danxia landform are thus the following:

- (1) The age, depositional environment, and lithologic characteristics of red beds, and the resistance ability against weathering and erosion.
- (2) Geological setting and evolution process of red bed basins.
- (3) Comparison study on the geomorphic features of Danxia landform developed on various types of red bed rocks.
- (4) The controlling factors on the development process of Danxia landform.
- (5) The developmental mechanism of ecological environment and geologic hazard in Danxia landform area.

## **2. Objectives for 2013–2017**

- (1) Complete the national survey on basic data of Danxia landform, and promote the global survey and comparison study of Danxia landform.
- (2) Formulate a scientific and universal definition of Danxia landform, publish monographs on red beds and Danxia landform.
- (3) Make a clear understanding of the global distribution of Danxia landform.
- (4) Make a universal classification system of Danxia landform.
- (5) Research the development conditions and evolution process of Danxia landform formed on various types of red bed rocks in different countries.
- (6) Build a universal database and information sharing platform of Danxia landform.

## **3. Alternation of the name of Danxia Working Group**

In order to combine with Red Beds and Danxia Research Working Group of the Geographical Society of China, and also because in some arid regions, the relatively soft and fine-grained red siltstone and mudstone can also form Danxia, it is suggested to use the phrase of Red beds and to alter the current name of the working group into **IAG Red Beds and Danxia Geomorphology Working Group**.

## **4. Website**

The website of Danxia Working Group will be further improved, including expansion of the database of Danxia landform in China to a database of global red beds and Danxia landform, introduction of modules to introduce the major sites and red beds and Danxia landform, addition of a section to inform on research progress on red beds and Danxia landform (survey activities, latest findings, and conferences). It is hoped that the website will become a forum for communication and discussion of red beds and Danxia geomorphology.

## **5. Conferences**

We plan to organize two international symposiums on the establishment of Danxia landform database and comparison study of red beds and Danxia landform in next four years, one in China and at least one abroad, in a typical Danxia area outside China (possibly Slovakia and United States). In addition, we will also take an active part in the IAG international conference and some other regional conferences to develop academic exchanges with international colleagues related to red beds and Danxia landform.

## **6. Publications**

Based on the existing research achievements a few monographs in English or in both Chinese and English are envisaged, including Proceedings of international symposium on Danxia Landform, books on research at the China Danxia World Heritage sites, Red beds and Danxia in the world, and Danxiashan. A Dictionary of red beds and Danxia geomorphology is planned.

Peng Hua and Piotr Migoń

Guangzhou – Wrocław, August 2013

## **EFFECT OF CLIMATE CHANGE ON LARGE RIVERS AND DELTAS**

The working group published two special issues of the journal *Geomorphology* and acted as a co-convenor of an international conference, details of which are given below.

- 2010. Introduction to management of large European rivers, Editors: Jean-Paul Bravard and Avijit Gupta, *Geomorphology* 117, 3-4, special issue on selected papers from the river conference in Lyon and the field trip along the Rhone, 2007.
- 2012. Geomorphology of large rivers – cases from the 7<sup>th</sup> IAG conference, Melbourne, Editors: Zhongyuan Chen and Avijit Gupta, *Geomorphology*, 147-148.

The International conference was titled Remote Sensing, Natural Hazards and Environmental Change, and was organized by the Centre for Remote Imaging, sensing and Processing, National University of Singapore, Laboratoire Magmas et Volcans, Université Blaise Pascal, and IAG Working Group on Large Rivers and Climate Change, Singapore, 2011.

Apart from these, the Working Group is also responsible for organizing multiple sessions of paper and poster presentation on large rivers and climate change at both the 7<sup>th</sup> (Melbourne) and 8<sup>th</sup> (Paris) IAG Conferences.

Avijit Gupta  
Zhongyuan Chen

Co-convenors

## EXTREME EVENTS IN GEOMORPHOLOGY

The new Working Group “GEOMORPH-X” has been approved by the IAG Council in February 2011 and will be officially launched at the IAG Paris 2013 Conference.

### Present actions:

#### 1 - Publication of a blog:

<http://geomorphx.blogspot.com>

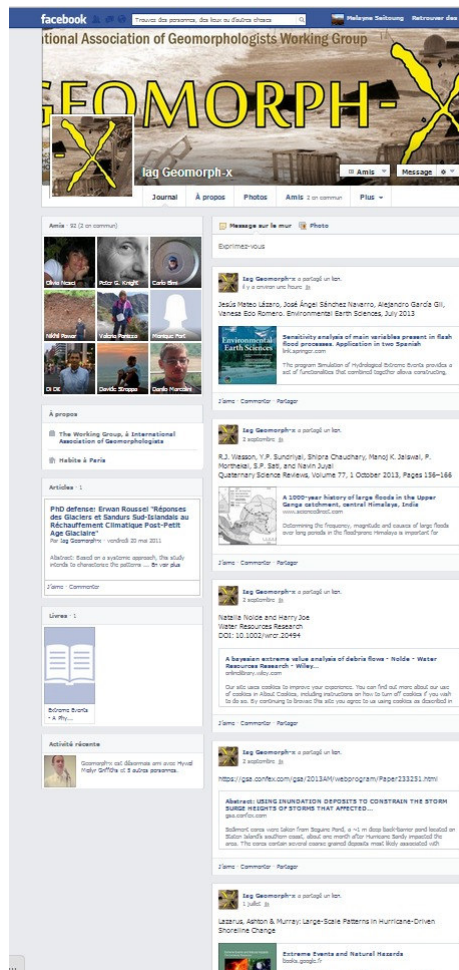
The blog is dedicated to the promotion of any specific actions conducted by the WG.

#### 2 - Literature and events watch

Papers in press or recently published in peer journal, books and thesis are regularly surveyed and promoted via the WG Facebook page. From March 2011 to Dec 2012, 47 papers, books or PhD thesis have been referred to. Upcoming conferences or sessions on extreme events in geosciences are also announced through this social media. 7 events were announced in 2011, 3 in 2012. On July 1<sup>st</sup>, 2013, we had 92 subscribers to our Facebook page. Frequent feedbacks from users mean that this WG activity works well.

Look for user: **Iag Geomorph-x** on Facebook®.

<http://www.facebook.com/profile.php?id=100002148896604>



#### 2 – Conference sponsorship

In 2012, we sponsored the session "Coastal change: the response of coasts to sea-level changes, geological processes and catastrophic events" at Asia-Oceania Geosciences Symposium, Singapore, August 2012. Convenors were Adam Switzer, James P. Terry (secretary of the WG), Ben Horton, and Robert Weiss.

#### 3 – Planned activities

- In 2013, we will organize our first official GEOMORPH-X session at the IAG Paris Conference. Papers presented at the conference will be published in a Special Issue of a peer journal (in discussion with editors).

- In 2014, the WG will organize a special session “Extreme events in coastal areas” at the ICS Conference in Durban, South Africa.

- A collective book is planned, to be published with Cambridge University Press.

### **Steering Committee**

Prof. Samuel Etienne (Ecole Pratique des Hautes Etudes, France, Chairman),

Dr James Terry (National University of Singapore, Singapore, Secretary),

Prof. John Clague (Simon Fraser University, Canada)

Prof. Jonathan Nott (James Cook University, Australia)

Dr Liz Safran (Lewis & Clark College, Portland, USA)

Dr Richard Chiverrell (University of Liverpool, UK).

Send any information to: [geojpt@nus.edu.sg](mailto:geojpt@nus.edu.sg) or [samuel.etienne@ephe.sorbonne.fr](mailto:samuel.etienne@ephe.sorbonne.fr)

## **GEOARCHEOLOGY**

The IAG/AIG Working Group on Geoarchaeology formed at the 1997 International Conference of Geomorphology in Bologna. Morgan de Dapper, who created the group, chaired it together with Jose Luis Pena-Monné and John Boardman as vice-chairmen.

Two conferences have been organized by the Working Group: the first one, entitled "Geoarchaeology of the Landscapes of Classical Antiquity", by Morgan de Dapper in Ghent (Belgium) (23-25 October 1998), was arranged in cooperation with the European Commission for Education (COST Action G2). 120 researchers attended this conference, whose proceedings were published in 2001. The second conference, entitled "Geoarchaeology in Northwestern Europe", was organized by Vice-chairman John Boardman and Martin Bell in Reading (UK) (15-17 December 1999) in collaboration with the British Geomorphological Research Group, and brought 150 participants together. This first four-year term allowed to set up a network of researchers and confirmed the vitality of geoarchaeology and the importance of geomorphology.

In Tokyo the Working Group was renewed for four years. Eric Fouache (University of Paris XII, France) was appointed chairman of the Group, with Morgan de Dapper (Ghent, Belgium) and Zhongyuan Chen (Eastern China University, Shanghai) as vice-chairmen. In 2003 Professor Kosmas Pavlopoulos (Harokopio University, Athens, Greece) joined the Working group as General Secretary. During this last term, the Working Group encouraged regional syntheses in geoarchaeological studies.

During the Sixth International Conference on Geomorphology, the Working Group on Geoarchaeology (WG3) obtained a new term of four years and announced that a formal association, the 'International Working Group of Geoarchaeology' (IWGG) was funded under the aegis of the IAG. The head-office of this association is found in Athens, in Harokopio University, 70 El. Venizelou Str. 17 671 Athens. The main object of this association is to provide a permanent basis for the Working Group on Geoarchaeology and to increase the notoriety of the Working Group. For this new term Eric Fouache (University of Paris XII) is Chairman, Kosmas Pavlopoulos (University of Harokopio, Athens) and Jose Luis Pena-Monné (University of Zaragoza) Vice Chairmen and Stephane Cordier (University of Paris XII) General Secretary in charge of the Newsletter.

After the 7<sup>th</sup> International Conference of the IAG in Melbourne the Working Group was renewed for four years (2009-2013). Kosmas Pavlopoulos (University of Harokopio, Athens) is Chairman, Pr. Dr Patricia Fanning (Macquarie University, Sydney, Australia) and Sanja Faivre are the Vice Chairmen and Dr. Stéphane Desruelles, Senior Lecturer (University of Amiens, France) is General Secretary in charge of the Newsletter.

For this new term, the Working Group encouraged regional syntheses in geoarchaeological studies. Many conferences have been organized so far:

- **6-11 July 2009:** 7<sup>th</sup> International Conference on Geomorphology (ANZIAG) entitled 'Ancient landscapes, modern perspectives', was held on 6-11 July 2009 in Melbourne, Australia. 804 abstracts in 37 thematic sessions on several geomorphologic subjects from all over the world were presented with great success, giving new scientific data to the development of geomorphology. The session dedicated to 'Geomorphology and Geoarchaeology: cross-contribution' was held on 10 July 2009 with main chairmen

Prof. De Dapper, Prof. E. Fouache, Prof. K. Pavlopoulos and Prof. P. Fanning. 19 oral presentations and 19 posters were given, emphasizing to the interaction of geomorphology with archaeology and the uptake of multi-disciplinary geoarchaeological projects from all over the world. The papers of this session will be published in a special issue of *Geodynamica Acta* in 2010.

- **5-15 September 2009:** Workshop entitled “Methodological approaches in Geoarchaeology’, in Argos, northern Peloponnesus, Greece, for ten post graduated students. Organized by Prof. Eric Fouache and Prof. Kosmas Pavlopoulos, supported by Ecole Français d’ Athènes, Working Group on Gearchaeology and Harokopion University.
- **2-7 May 2010:** European Geosciences Union General Assembly, Vienna. A session on geoarchaeology will be also provided at the EGU Meeting, as part of Geomorphology Programme group (general sessions – GM1), entitled ‘Methods and techniques of Geosciences applied to Geoarchaeology: a multidisciplinary approach’. Conveners of this session will be Dr. Matthieu Ghilardi and Co-Conveners: Prof. Eric Fouache and Prof. Kosmas Pavlopoulos.
- **3-6 June 2010:** International Geobiology Conference, Co evolution between organisms and environments at critical periods of geological history, Wuhan, China. A special session dedicated to ‘Quaternary global change and geoarchaeology (combined with IAG working group for Geoarchaeology) will take place with conveners Prof. Zhongyuan Chen Prof. Eric. Fouache and Prof. Kosmas Pavlopoulos.
- **19-21 September 2010:** International Colloquium on Geoarchaeology, ‘Landscape archaeology, Egypt and the Mediterranean world’, Cairo. This conference is organized by the institut français d’archéologie orientale (IFAO) in association with the centre européen de recherche et d’enseignement des géosciences de l’environnement(CEREGE) and the centre franco-égyptien d’étude des temples de karnak (CFEETK,) under the patronage of the working group on geo-archaeology of the international association of geomorphologists (IAG). Organisers: Dr. Yann Tristant and Dr. Matthieu Ghilardi.
- **22-25 September 2010:** Workshop for the young Geomorphologist will take place from in Upper Egypt (Karnak and west bank of Nil) for fifteen doctoral students. Five of them are fellowshipped. Organizers: Dr. Yann Tristant and Dr. Matthieu Ghilardi.
- **18-22 February 2011 – IAG/AIG Regional Conference on Geomorphology 2011,** ‘Geomorphology for human adaptation to changing tropical environments’, 18-22 February, Addis Ababa, Ethiopia. A special session on Geoachaeology was organised by our working group.
- **3-8 April 2011,** A Session at EGU Conference. Advances in geoarchaeology: Using geomorphological techniques and digital applications for the analysis of past man-environment systems Convener: Christoph Siart; Co-Conveners: Matthieu Ghilardi, Markus Forbriger
- **20-27 July 2011-XVIII.** INQUA-Congress, in Bern, Switzerland, a session supported by the INQUA Commission on Humans and Biosphere (HaB) and the International Working Group on Geoarchaeology (IAG) will be provided, entitled "Geoarchaeology: Paleoenvironments and Human Interactions". Conveners: Kosmas Pavlopoulos, Sorcha Diskin, Vanessa Heyvaert, Brigitte Schutt.
- **22-27 April 2012,** EGU 2012, Session on Geoarchaeology,
- **20-24 August 2012** International Conference ‘Geomorphic processes and geoarchaeology’, Russia,
- **27-30 August 2013** 8<sup>th</sup> International Conference on Geomorphology , session Geoarchaeology, conveners Kosmas Pavlopoulos, Vanessa Hayvaert, Paris 2013.



### ***Projects 2009-2013***

A workshop entitled « Methods and techniques in geoarchaeology », under the auspice of the IAG and of the Working Group on Geoarchaeology, was organised by Kosmas Pavlopoulos at Porto Heli, Greece on 22-25 June 2008. The participants of the Workshop published their work to special issues of *Quaternary International* and *Zeitschrift für Geomorphologie*.

A **special issue** entitled ‘Palaeo-environmental dynamics and archaeological sites’, edited by Prof. Kosmas Pavlopoulos and Prof. Eric Fouache, was published in *Zeitschrift für Geomorphologie* vol.53, June 2009.

A **special issue** entitled ‘Landscape Evolution and Geoarchaeology’ edited by Prof. Eric Fouache, Prof. Kosmas Pavlopoulos and Prof. S. Stiros, was published in *Quaternary International*, vol.216, April 2010.

### ***The Newsletter***

The object of the Newsletter is to diffuse all information in the field of Geoarchaeology, about conferences, field trip, publications, calling for scientifically projects, that “active members” (Institutions or individuals scientists) will have ask us to announce (after a control from the Working Group executive committee).

### **Our main objective for 2013-2017:**

1. To structure an international network of national associations, and scientists (geomorphologists, geologists, archaeologists, paleo-environmentalists etc...) involved in the field of Geoarchaeology and to increase the distribution of the electronic newsletter.
2. To promote regional area of interest on the point of view of Geoarchaeology.
3. To publish a collective geoarchaeological field book.
4. To organized at least two Intensive Field Trip for young Geoarchaeologists .
5. To continue to encouraged regional syntheses in geoarchaeological studies.

### **We propose:**

Renewal of the working group for the next four years 2013-2017

Kosmas Pavlopoulos as Chairman

Stéphane Desruelles as Vice-Chairman

Yasuhisa Kondo Research Fellow (Archaeology & GIS), Department of Computer Science, Tokyo Institute of Technology as General Secretary.

Morgan De Dapper as Honoured Chairman

## **GEOMORPHOLOGICAL HAZARDS**

The aim of this document is to report to you the activities of the Geomorphological Hazards Working Group (GHWG).

During the 6<sup>th</sup> IAG International Conference that took place on September 2005 in Zaragoza, Spain, the Working Group devoted to Geomorphological Hazards was established by Prof. Andrew Goudie, the then President of IAG. After that the group got further extension for another 4 years term at Melbourne Conference.

After its inception the working group has completed the following missions:

- ◆ Established international scientific collaboration among geomorphologists and other scientists interested on Geomorphological hazards and disaster prevention.
- ◆ Published a book of geomorphological hazards under the umbrella of the International Association of Geomorphologists as a special contribution from our field (providing all royalties to our Association).
- ◆ Organised special sessions within the framework of national, regional and international conferences, particularly on those arranged by the IAG itself and IAG National Members.
- ◆ Organised symposiums, field workshops and round table discussions
- ◆ Participated in different international forums concerning disaster prevention.

The aim of this document is to report to you the activities of the Geomorphological Hazards Working Group (GHWG) during the last period, in addition to ask you about the possibility of continuing our work during the next four years (2013-2017).

### **Activities during the last 4 (four) Years**

#### International Conference/Workshop

1. 4<sup>TH</sup> SESSION OF IAG WORKING GROUP ON GEOMORPHOLOGICAL HAZARDS AND INTERNATIONAL WORKSHOP ON GEOMORPHOLOGICAL HAZARDS, 21-23rd July, 2010 organized MS University, Tirunelveli, India.
2. INTERNATIONAL CONGRESS ON DISASTER RISKS AND SUSTAINABLE TERRITORIAL DEVELOPMENT (CIRiDe spanish name). Catamarca, Argentina, April 22-24, 2013. Participants from the Americas were gathered in the meeting  
Objectives:
  - i. Building a comprehensive view of the relation among territorial development, sustainability, democratization, reduction and resilience of disaster risk.
  - ii. Fostering a debate and spreading scope for applied researches and methodologies, related to disaster risk.
  - iii. Understanding the real threat for the development of peoples and the safe life of the communities.
  - iv. Raise awareness in governmental agencies and decision-makers about the need to consider as a first-priority measure the reduction of disaster risk and the adjustment to climate change, fostering policies and actions in the sustainable development process.
  - v. Involving the academic-scientific sector providing the appropriate setting for the discussion and dissemination of the results concerning the origin and evolution of disaster risks.

- vi. Drawing attention and raise awareness of the private sector and the whole community, about the need to understand the existence of the risk and the role that each sector plays before it.
- vii. Tackling the prevention of disaster risk from the educational sector, as a compounding factor of knowledge, through its assessment and description, and the spreading of precautionary measures.
- viii. Encouraging the building of relationships among the highrisk population, the academic-scientific sector of the universities and governments, posing joint actions of precaution and mitigation of its effects on society.

Symposia

- i. Public policy and its relation in the management and reduction of risks.
- ii. The disaster risks and the territorial sustainability.
- iii. Legislation and disaster risks.
- iv. Training on civil protection for new actors.
- v. Territorial planning before the risk.
- vi. Infrastructures and disaster risks.
- vii. New technologies on Geographical Information Systems (GIS) and Spatial Data Infrastructures (SDI) before the disaster risks.
- viii. Early warning system and response faced with the event of disaster risks.
- ix. The disaster risks and the climate change.
- x. The academic research and the disaster risks.
- xi. The educational sector and the disaster risk precaution.
- xii. The health system in the presence of emergencies and disasters.
- xiii. The rebuilding and resilience faced with disaster risks.

Books Published

**GEOMORPHOLOGICAL HAZARDS AND DISASTER PREVENTION** - edited by Alcántara-Ayala, I and Goudie, A. Cambridge University Press (2010).

**Prof. Irasema Alcantara Ayala**  
Chair

**Prof. Sunil Kumar De**  
Co-Chair

## **GEOMORPHOSITES**

### **1. Final report – see attached pdf document**

### **2. Request for extension**

#### **IAG Working Group on Geomorphosites, period 2013-2017**

Dear colleagues,

In Melbourne, the IAG general assembly kindly accepted that the WG on Geomorphosites – created in 2001 in Tokyo – could continue its activities for a new 4-year period. During this time, we put to energy on three main directions (see the final report 2009-2013):

- Geoheritage mapping and visualisation;
- Integration of Geoheritage issues in territorial management;
- Education on geomorphosites.

A paper published by the two chairmen (Reynard and Coratza, 2013, see final report) showed the improvements on geomorphological heritage studies made by the IAG during the last twelve years, under the impulsion of the WG on Geomorphosites. The Geomorphosites session, with 22 oral contributions and 34 posters will be one of the largest sessions in the next Conference in Paris. Even if important improvements have been made, several topics need to be explored in the next years, and as the WG on geomorphosites is the only structure that deals specifically on geomorphological aspects of geoheritage and geotourism studies, we ask the General Assembly of the IAG to allow us to continue our activity for a new period of four years (2013-2017).

Focus of the activities will be put on the five following themes:

- Focus on geomorphosites as key sites for environmental education (to sustainable development or climate change) for various publics (tourists, school children, in particular); in particular, we plan to develop specific tools on environmental issues based on particularly sensitive geomorphosites (e.g. in coastal, desert or mountain areas).
- Development of specific activities in developing countries (geomorphosites as tools for local and regional development). During the first years of activity, the WG was mainly based in European countries. During the last years, we have received several demands from countries from other continents, in particular Asia, Africa and South-America. We plan to focus part of our activities in developing countries.
- Development of teaching activities for advanced students (MSc, PhD), in particular in developing countries. We plan in particular to develop digital tools for university education. Such tools could be a good alternative to the book published in 2009, and not easily accessible in developing countries.
- Concentration of part of the activity in mountain areas. Following the creation of the Network on Mountain Geomorphosites in October 2012, the plan is to focus some research on mountain ranges. A collaboration with the Mountain Research Initiative and the ISCAR (Alpine research) is developed.
- Finally, we plan to develop specific research on geoheritage and geodiversity. Geodiversity as a concept in Earth sciences has been recognised for less than two decades and several attempts have been done for its definition and assessment. Nevertheless a rigorous research on scientific foundation and on methodology of measurement of the concept of geodiversity is

still missing. In order to improve the knowledge on geodiversity the following issues will be explored by the working group: (1) the relationships between geoheritage assessment and geodiversity assessment, especially in terms of geoconservation; (2) the issue of indices of geodiversity; (3) the application of the concept of geodiversity to geotourism.

Several specific activities are already planned. A conference on geomorphosites is planned in Morocco (University of Beni Mellal in 2014). A conference on geomorphosites and geotourism could be tentatively organised in Poland in 2015. A workshop/intensive course on geodiversity has been proposed by the university of Valladolid. A geoheritage session is already planned at the European Geoscience Union general assembly in Vienna in 2014, as well as a session on geoheritage in the Congress of the International Association for Engineering Geology in Turin in 2014.

Prof. Emmanuel REYNARD, Dr Paola CORATZA  
Chairs IAG WG on Geomorphosites

## HUMAN IMPACT ON THE LANDSCAPE

1. At the IAG/AIG Regional Conference "Geomorphology for Human Adaptation to Changing Tropical Environments" (Addis Ababa, Ethiopia, February 18-22, 2011) human impact was a central topic of discussion. In session #12, Environmental Change and Human Impact, six papers and several posters were presented, mostly by members of the Working Group. The session was chaired by Andrew Goudie (Oxford, UK) and Alfredo Pérez-Gonzales (Madrid, Spain).
2. Contributions to the IAG/AIG Working Group meeting held in Bochum, Germany, on 8-12 September, 2008, were published as a Supplement Issue of *Zeitschrift für Geomorphologie* (Vol. 55. Suppl. 1. 137 p.). It is a collection of 10 papers entitled Human Impact on the Landscape and was edited by Stephan Harnischmacher (Koblenz, now in Marburg) and Dénes Lóczy (Pécs).
3. Under the aegis of IAG/AIG SAGE Publishing (London) issued a comprehensive overview of present-day geomorphology, entitled "The SAGE Handbook of Geomorphology" in 2011. Chapter 15 ("Human activity and geomorphology", 32 pages) was written by HILS Working Group chair Dénes Lóczy in collaboration with another Hungarian anthropogeomorphologist, László Sütő (College of Nyíregyháza). The chapter is a conceptual and thematical introduction to anthropogeomorphology.
4. The monograph "Recent Landform Evolution – The Carpatho-Balkan-Dinaric Region" published by Springer Verlag in 2012 and edited by Dénes Lóczy, Miloš Stankoviansky and Adam Kotarba includes subchapters on human impact in the 11 national chapters.
5. Unfortunately, the next Working Group meeting planned to take place in Wales could not be organized in lack of financial resources.
6. Presentations were recruited for the 8th International Conference in Geomorphology (Paris, 27-31, August, 2013), where session S13 will be devoted to Human Impact on the Landscape.

15 August, 2013.

Dénes Lóczy  
Chairman  
Working Group "Human Impact on the Landscape"

## **PLANETARY GEOMORPHOLOGY**

### **Activities 2009-2013**

#### **Planetary geomorphology Image of the Month:**

The Working group hosts the successful Image of the month series. This is a guest blog that highlights interesting and unique images of landforms in our solar system. Since the Melbourne Congress in August 2009 we have successfully released forty two 'Planetary Geomorphology Image of Month' posts.

#### **Special sessions and conferences:**

The following is a list of conferences, meetings and fieldtrips that the working group have been involved in.

#### **2013**

- Special Session on Planetary Geomorphology at the 8th International Conference on Geomorphology , Paris, August 2013, (Mary Bourke, Nicholas Mangold)
- Planetary Geomorphology EGU, April 2013, Matt Balme, Colman Gallagher
- DIGGER - Digital Geoscience (geology, geomorphology, geography) in Education & Research. Science teacher workshops, Australia. 1. Outback and Beyond: Craters, Space Rocks and Life. Mark Bishop.
- DIGGER - Digital Geoscience (geology, geomorphology, geography) in Education & Research. Science teacher workshops, Australia. 2. Dust, Dirt, Sand and Salt: Deserts, Records of Climate Change. Mark Bishop.

#### **2012**

- 3rd Conference on Terrestrial Mars Analogues , Marrakech, Morocco. (Gordon Ozinski and others).
- Planetary Dune workshop, Flagstaff, Arizona, June 2012 , (Mary Bourke, Jim Zimelman and others)
- Planetary Geomorphology EGU, April 2012 , (Matt Balme, Colman Gallagher and others)

#### **2011**

- Special Session on Planetary Geomorphology at the IAG/AIG Regional Conference on Geomorphology, Addis Ababa, Ethiopia, February 18 -22, 2011
- Planetary Geomorphology EGU, April 2011 , (Matt Balme, Colman Gallagher)
- PERC Planetary Geology Field Symposium in Kitakyushu, Japan (Goro Komatsu)

#### **2010**

- Planetary Dune workshop, Alamosa, Colorado, May 2010 , (Mary Bourke, Jim Zimelman and others).
- Planetary Geomorphology EGU, April 2011 (Matt Balme, Colman Gallagher)

#### **Special publications:**

2013: Dr Bishop is convening the special virtual issue on Planetary Dune Systems for Earth Surface Processes and Landforms (all papers are currently available online).

2010: Bourke, M.C, Fenton, L.K. and Lancaster, N. (Eds.), (2010). Planetary Dune Systems, Geomorphology 121, 1-132 pp.

## **Proposed Activities 2013-2017**

In Phase III of the Working Group we will continue to act as a focal group for the international community to assist in the organization and dissemination of information on Planetary geomorphology. We will continue to provide details of meetings, recommend special sessions in the more mainstream geomorphology conferences and provide resources that will encourage collaboration and incorporation of planetary geomorphology themes into university curricula.

Aims:

- To encourage (international) collaboration between Earth and planetary scientists.
- To improve our understanding of terrestrial and planetary geomorphology through international collaboration.
- To encourage and facilitate the introduction of planetary geomorphology data into mainstream geomorphology courses at universities.
- To promote comparative planetary geomorphological studies through the use of analogue field sites on Earth

### **Proposed activities:**

Over the next four years we will propose the following:

- 1) Continue the maintenance and updating of the working group web page <http://www.psi.edu/pgwg> linked to the IAG/AIG web site to facilitate the organization and dissemination of information regarding planetary geomorphology. The web site is currently migrating to <http://planetarygeomorphology.wordpress.com/>
- 2) Continue monthly release of Geomorphology Image of the month
- 3) Organize special sessions at national and international conferences with a view to publishing thematic journal issues.
  - a. Special session at the European Geoscience Union meetings (Gallagher and Balme)
  - b. Special session at the British Society for Geomorphology annual meeting 2014. (Viles)
  - c. Planetary Session at the 8th International Congress on Aeolian Research (ICAR 8), China, (Mary Bourke)
  - d. Planetary Dunes workshop (Mary Bourke and Jim Zimbelman)
  - e. Propose a Working Group session at the 10th IAG/AIG (Bourke).
- 4) Organize field trips (associated with conferences) to terrestrial analog field sites (Komatsu).
- 5) Make educational resources available via the web page.
- 6) Continue the successful STEM program DIGGER - Digital Geoscience (geology, geomorphology, geography) in Education & Research. Science teacher workshops, Australia. (Bishop).



At the Paris Congress we will endeavor to expand the number of nations represented and elect new national representatives. Drs Ivanov, Mangold and Zimbelman are thanked for their service and commitment.

To facilitate the international collaboration, the following have agreed to continue as national representatives on the Planetary Geomorphology working group committee.

Vic Baker (USA)

Mary Bourke (Chair)

Matt Balme (UK)

Hirohide Demura (Japan)

Alberto Fairén, (Spain)

Colman Gallagher (Ireland)

Vacant (Russia)

Daniela Tirsch (Germany)

Goro Komatsu (Italy)

Vacant (France)

Gordon Osinski (Canada)

Mark Bishop (Australia)

Heather Viles (UK)

Each of these members will advertise the Working Group among their own national organizations and propose sessions on planetary geomorphology where possible

## **REEForm: REEF AND REEF LANDFORM RESPONSES TO CLIMATIC AND ENVIRONMENTAL CHANGE**

**WEBSITE:** <http://geography.exeter.ac.uk/reeform/>

Established in 2009 (proposal to run for at least next 4 years to 2017)

### **Key topics and major goals of IAG REEForm**

The REEForm network was established in 2009 to provide an academic framework for quantitative studies of the geomorphic responses of coral reefs and reef landforms to past, present and future environmental and climatic change. A key driver of this was to provide a focal point for geomorphological research contributions to the pressing issues surrounding global coral reef ecosystem degradation. In this context, the REEForm WG originally set out four major goals:

1. To provide a multinational and multidisciplinary forum for the presentation and discussion of research data and ideas relating to the above topics, and a forum within which to develop collaborative research links and research proposals.
2. To undertake the development and testing, through a series of field-based meetings, standardized methodologies for quantifying carbonate production rates on both coral reefs and associated key reef landforms such as reef islands.
3. To utilise an improved understanding of reef landform responses to environmental and climatic change during the Holocene and Quaternary to predict future response modes of reef landforms.
4. To improve understanding of reef landform development under presently more marginal marine conditions as an aid to understanding likely future reef states under changed marine environmental conditions.

### **Summary of core activities and outputs since 2009:**

The core activities of the REEForm WG have been undertaken through a series of field-based research and networking meetings. These have provided an opportunity not only for WG theme related presentations, but also for specialist field site visits and workshop sessions (related to the key goals outlined above).

Copies of the REEForm annual reports can be found at <http://geography.exeter.ac.uk/reeform/reports/> but the following provides a summary of the main REEForm activities to-date and of the main research outputs:

#### **1. Field-based research meetings:**

**June 2010. Maldives** – REEForm inception and kick-off meeting.

**May, 2011. Maldives** – Field research meeting “Faro infilling and reef island evolution”.

**June 2012. Great Barrier Reef, Australia** – Field research meeting “Evolution of reef platforms and islands in the northern GBR”.

**April 2013. Maldives** – Field research meeting “Developing methods to quantify reef-reef island sediment linkages”.

## **2. Key published outputs:**

- **RF-013** Perry C.T., Murphy G.N., Kench P.S., Smithers S.G., Edinger E.N., Steneck R.S. and Mumby P.J. (2013) Caribbean-wide decline in carbonate production threatens coral reef growth. *Nature Communications*. doi: <http://dx.doi.org/10.1038/ncomms2409>
- **RF-012** Perry C.T., Kench P.S., Smithers S.G., Yamano H., O’Leary M. and Guilliver P. (2013, in press) Timescales and modes of reef lagoon infilling in the Maldives and controls on the onset of reef island formation. *Geology*
- **RF-011** Perry C.T., Smithers S.G., Gulliver P. and Browne N. (2012) Evidence of very rapid reef accretion and reef growth under high turbidity and terrigenous sedimentation. *Geology* 40, 719-722
- **RF-010** Yamano H., Sugihara K., Watanabe T., Shimamura M, and Hyeong K. (2013) Coral reefs at 34°N, Japan: Exploring the end of environmental gradients. *Geology* 40, 835-838
- **RF-009** Purkis S.J., Rowlands G.P., Riegl B.M. and Renaud P.G. (2010) The paradox of tropical karst morphology in the coral reefs of the arid Middle East. *Geology* 38, 227-230
- **RF-008** Kayanne, H., Ysukochi, T., Yamano, H. And Yoneda, M. (2011) Rapid settlement of Majuro Atoll, central Pacific, following its emergence at 2000 years CalBP. *Geophysical Research Letters* 38, L20405
- **RF-007** Perry, C.T., Smithers, S.G., Roche, R. and Wassenburg, J. (2011) Recurrent patterns of coral community and sediment facies development through successive phases of Holocene reef growth and decline. *Marine Geology* 289: 60-71.
- **RF-006** Kench, P.S., Smithers, S.G. and McLean, R.F. (2012) Rapid reef island formation and stability over an emerging reef flat: Bewick Cay, northern Great Barrier Reef, Australia. *Geology*. 40: 347-350.
- **RF-005** Perry C.T., Kench P.S., Smithers S.G., Riegl B., Yamano H. and O’Leary M.J. (2011) Implications of reef ecosystem change for the stability and maintenance of coral reef islands. *Global Change Biology*. 17: 3679-3696.
- **RF-004** Webb A.P. and Kench, P.S. (2010) The dynamic response of reef islands to sea level rise: evidence from multi-decadal analysis of island change in the central Pacific. *Global and Planetary Change*. 72: 234-246
- **RF-003** O’Leary M.J. and Perry C.T. (2010) Holocene reef accretion on the Rodrigues carbonate platform: an alternative to the classic ‘bucket-fill’ model. *Geology*, 38: 855-858.
- **RF-002** Perry, C.T. and Smithers, S.G (2011) Cycles of coral reef ‘turn-on’, rapid growth and ‘turn-off’ over the past 8,500 years: a context for understanding modern ecological states and trajectories. *Global Change Biology* doi: 10.1111/j.1365-2486.2010.02181.x. 17: 76-86.
- **RF-001** Perry, C.T. and Smithers, S.G (2010) Evidence for the episodic ‘turn-on’ and ‘turn-off’ of turbid-zone, inner-shelf coral reefs during the late Holocene sea-level highstand. *Geology* 38: 119-122.

## **Other published outputs:**

- Forthcoming special journal of *Geomorphology* (due out early 2014) on the theme of *Reef and reef landform responses to climatic and environmental change*. 13 papers accepted for this special issue.

**Thematic conference sessions:**

- *Reef and reef island geomorphology*: 12th International Coral Reef Symposium, Cairns July 2012
- *REEForm WG thematic session*: IAG Meeting, Paris, August 2013

**Proposed future activities:**

We propose to continue the activities of REEForm for at least the next 4 years. Through its initial period of operation the WG have organised four very successful and highly productive research expeditions aligned to key areas of the WGs research interests. These have allowed us not only to fund trips to more remote research areas, but also to share research interests, to develop new research networks and, importantly, to provide opportunities for younger researchers (postgraduates and postdocs) to gain additional research experience.

The plan for the next four years will be to continue to run annual research expeditions for WG members and we envisage these trips having two main areas of focus. The first will be to increase the geographical scope of our studies in relation to key ideas about reef island development and stability. The second will be to increase our understanding of reef carbonate production regimes in different reef-building environments. In addition, we hope to be able to incorporate methodological training elements into these trips to include aspects of remote sensing, modelling and hydrodynamic process measurement applications within our field research. We also aim to continue to provide opportunities for younger researchers to become involved in the WGs activities.

Chair: Prof Chris Perry (University of Exeter, UK) E-mail: c.perry@exeter.ac.uk  
 Vice-Chairs: Prof Paul Kench (University of Auckland, New Zealand)  
 Assoc Prof Scott Smithers (James Cook University, Australia)

## **ROCKY COASTS GEOMORPHOLOGY**

### **1. Preamble**

The rocky coast working group of the IAG/AIG was established in 2005 to further geomorphic enquiry into a relatively unstudied landform system, the rocky coast. The working group was extended at the 2009 Melbourne Congress. The working group currently has around 80 members in 20 countries and is continuing an active academic and policy discussion on the evolution and dynamics of rock coasts. It has seen the development of a process-approach to rocky coasts and application of new radioisotope methodologies (e.g. cosmogenic dating) to the study of cliffs and shore platforms.

### **2. Chair of working group**

The working group is currently chaired by Dr David Kennedy (Australia) and Dr Wayne Stephenson (New Zealand) with Dr Larissa Naylor (UK) (former chair) also having a critical role in the working groups activities.

### **3. Achievements over the past 4 years**

The momentum of the working group has been maintained since the 2009 congress in Melbourne, Australia. Several detailed discussions have been held within the group and a number of successful tangible outcomes have been achieved. These include:

- ✓ A special session on rocky coasts at the European Geophysical Conference in early May 2010. 17 poster and oral abstracts were received for the session on a very wide range of topics. These include the role of bioerosion in forming shore platforms, cosmogenic dating of platform surfaces, abrasion process on the rocky coast, the role of ice in coastal erosion and relationships between rocky mass strength and cliff retreat.
- ✓ A session at the 2013 International Coastal Symposium in England.
- ✓ A session at this year's Paris congress, with over 30 oral and poster presentation to be delivered.
- ✓ The special issue of *Geomorphology* (Volume 114, Issues 1-2, Pages 1-100 (1 January 2010)) started during the 1<sup>st</sup> term of the working group was published. This was edited by Drs Larissa Naylor and Wayne Stephenson.
- ✓ A special issue of *Marine Geology* focussing on "Boulders as a signature of storms on rock coasts" was produced. This volume was edited by Drs Raphael Paris, Larissa Naylor and Wayne Stephenson.

(<http://www.sciencedirect.com/science/journal/00253227/283/1-4>)

Its details are:

- Boulders as a signature of storms on rock coasts, R. Paris, L.A. Naylor and W.J. Stephenson p 1 – 11.
- Geological controls on boulder production in a rock coast setting: Insights from South Wales, UK, W.J. Stephenson and L.A. Naylor, p 12 - 24
- In situ exhumation from bedrock of large rounded boulders at the Giant's Causeway, Northern Ireland: An alternative genesis for large shore boulders (mega-clasts), J. McKenna, D.W.T. Jackson and J.A.G. Cooper, p 25 - 35
- Quarrying, transport and deposition of cliff-top storm deposits during extreme events: Banneg Island, Brittany, B. Fichaut and S. Suanez, p 36 – 55.
- Boulder dynamics on an Atlantic-facing rock coastline, northwest Ireland  
J. Knight and H. Burningham, p 56 - 65

- Emplacement and movement of boulders by known storm waves — Field evidence from the Okinawa Islands, Japan, K. Goto, K. Miyagi, T. Kawana, J. Takahashi and F. Imamura. p 66 - 78
  - Recent storm and tsunami coarse-clast deposit characteristics, southeast Hawaii
  - B.M. Richmond, S. Watt, M. Buckley, B.E. Jaffe, G. Gelfenbaum and R.A. Morton p 79 – 89
  - A wave-competence approach to distinguish between boulder and megaclast deposits due to storm waves versus tsunamis, M.S. Lorang, p 90 - 97
  - Storm wave currents, boulder movement and shore platform development: A case study from East Lothian, Scotland, A.M. Hall, 98 - 105
  - Morphodynamics of a boulder beach, Putuo Island, SE China coast: The role of storms and typhoon, B. Chen, Z. Chen, W. Stephenson and B. Finlayson, p 106 – 115
- ✓ Maintenance of an email discussion list.
  - ✓ Continued development of a web page.
  - ✓ An edited book on *The Rock Coasts of the World* to be published by *The Geological Society* is currently in the final stages of production with all chapters now accepted. It is anticipated this book will be published in late 2013 or early 2014.
  - ✓ We have also had a special issue approved for *Earth Surface Processes and Landforms* to contain papers presented at the Paris Congress.

#### **4. Conclusion**

The rocky coast WG has been very successful in the past 4 years. The group looks forward to further discussing the dynamics and evolution of the rocky coast in Paris. Given our success over the past 4 years we would also like the working group to be approved for another 4 years. No funding is required from the IAG for the group's extension.

Dr David Kennedy (The University of Melbourne, Australia) & Dr Wayne Stephenson (University of Otago, New Zealand).

**SEDIBUD, Sediment Budgets in Cold Environments**

**Final report and request for extension – see attached pdf document**

## **SMALL CATCHMENTS**

### **Basic objective of the programme**

The IAG/AIG Working Group on Small Catchments was formed at the 6th International Conference on Geomorphology in Zaragoza in 2005. The basic objective of the program is to capture the uniqueness of operation of small catchments situated in a variety of morphoclimatic conditions. The study of the geoecosystem of a small catchment embraces the identification and determination of its environmental controls, internal structure, supply sources, and the pathways of circulation and outflow of energy and matter in the conditions of climate change and multi-directional human impact. Defined in those terms, the operation of small river catchments can provide a basis for determining their uniqueness in various morphoclimatic zones and for working out a programme of their protection and conservation in the world's landscape structure.

The objective of the programme is achieved by comparing and discussing research results from small catchments located in different morphoclimatic zones around the world. These results are presented at the international seminars organized since 2008.

In the program of the group participate small catchments located in the following countries: Antarctica, Austria, Iran, Israel, Italy, Norway, Poland, Portugal, Scotland, Slovenia, Republic of South Africa, Spain, United Kingdom.

### **International seminars**

On May 6-8, 2009 in Palma, Mallorca, Spain was held the **2nd seminar**. The Seminar was organised by the University of the Balearic Islands. The Seminar was explored our current knowledge of geomorphologic processes within small catchments, examining sediment delivery systems and human impacts as well as physical, chemical and biological interactions. Considering that 1st working meeting was based on measuring systems and monitoring methods of river catchments in various morphoclimatic zones, the aim of Mallorca's Seminar was to analyze sediment sources and transfers ranging spatially at small catchment scale and temporally from short-term event processes to longer term historical records.

Therefore, the meeting was devoted to the following topics:

- Sediment response to disturbances.
- Sediment sources and transfer to the fluvial system from small catchments: measurement techniques and modelling.
- Water and sediment management.

The first day of the seminar was dedicated to the hydrological and sediment dynamics of river catchments in various morphoclimatic zones. In the introductory paper coordinator prof. Andrzej Kostrzewski presented basic assumptions of the program of the group. Professor Maria Sala presented a keynote introducing the participants in the history of small catchments research in Spain, emphasizing the different applied methods and the width of analyzed morphoclimatic zones. In the second day a field trip took place. The field trip was focused on the different spatial and temporal scales analysis of the water and suspended sediment yields in the agricultural Na Borges River catchment. The last day was centred on the catchment analysis carried out by experimental plots and modeling. Professor Desmond Walling presented a keynote focused on the use of tracers to help understand contemporary sediment budgets. Professor Ian Foster explained – as a keynote also – the temporal dimension i.e. changing response and how we can use lake sediment records to reconstruct past catchment behaviour. The presented papers will be published in the special issue of the international journal “Zeitschrift für Geomorphologie”.



The **3rd seminar** was held in Melbourne, Australia on July 6-11, 2009. The seminar was one of the session at the 7th International Conference on Geomorphology (ANZIAG). The special session “Functioning of Small Catchments in Different Morphoclimatic Zones” was focused on:

- The influence of hydrometeorological conditions and land use on the dynamics of fluvial transport.
- Extreme processes and their effect on the operation of small river catchments.
- Changes in the landscape structure of the catchment in the conditions of climate change and growing human impact.
- Simulation and forecasting studies.

There were five oral presentations and nine posters presented at the seminar.

The **4<sup>th</sup> seminar** was held in Israel in November 22 – 25, 2010. The Seminar was organized by the Soil Erosion Research Station together with the *small CATCHMENTS* Working Group of the International Association of Geomorphologists. The seminar explored different aspects of landscape connectivity in small catchments:

- Water, sediment, nutrient & contaminant delivery and storage in natural and disturbed systems
- Signals of climate change and their impact on hydrological connectivity and sediment delivery
- Formative events and their impacts
- Hillslope-channel coupling and decoupling
- Organization of a network of small catchments in various morphoclimatic zones on the basis of the adopted assumptions of geocosystem operation.

Organization of the **5<sup>th</sup> seminar** was planned for September 22-25, 2012. Unfortunately due to low interest seminar was not held.

Next seminar will be held at the 8th IAG/AIG International Conference on Geomorphology in Paris, France, August 27-31, 2013. Presented papers at the conference in Paris will be published in Special Issue of the journal *Geomorphology* or *Landform Analysis*.

Also I would like to inform that I do not plan to extend the activities of the Small Catchment Working Group.

I would like to thank all management for enabling activity of Small Catchment Working Group.

Chair  
Prof. Andrzej Kostrzewski

Secretary  
Dr Marcin Winowski

## **TROPICAL RIVERS**

The Tropical Rivers Geomorphology working Group was established at the 7th International Conference on Geomorphology in Melbourne, in July 2009.

The Chairs of this working group are:

- a)<sup>1</sup>Edgardo M. Latrubesse, The university of Texas at Austin, USA;  
[latrubesse@austin.utexas.edu](mailto:latrubesse@austin.utexas.edu)
- b) Jose C. Stevaux (Universidade Estadual de Maringa and UNESP, Brazil);  
[josecstevaux@gmail.com](mailto:josecstevaux@gmail.com)
- c) Rajiv Sinha IITK-Kanpur, India, [rsinha@iitk.ac.in](mailto:rsinha@iitk.ac.in)

<sup>1</sup>Contact, full address, The University of Texas at Austin, Dep. of Geography and the Environment, 305E, A3100, Austin TX, 78712, USA  
Phone: 512-2214321; [latrubesse@austin.utexas.edu](mailto:latrubesse@austin.utexas.edu)

### **Aims:**

The overall scope of our working group is to provide new insights on tropical rivers geomorphology and to develop an integrated assessment of long-term direct impacts of climate variability and human-induced change and management of tropical rivers basins by identification, quantification and modeling of key hydro-geomorphologic indicators during the past and present times. The potential impacts of global change on fluvial systems and of their socio-economic implications had been also analyzed.

### **Strategies and outputs:**

Our activities were closely related to the IGCP 582-Unesco project *Tropical Rivers hydro-physical processes, impacts, hazards and management* which is also led by us. During the period 2009-2014 more than five hundreds (500) researchers from 15 countries participated in our activities.

### **Meetings and training courses**

We organized meetings and training courses in:

- a) Argentina (2009) Special Session, 1<sup>st</sup> Argentinean-Brazilian Congress on Quaternary Research, La Plata, Argentina and International Training Cours, RCEM 2009 (International River, Coastal and Estuarine Morphodynamics Symposium), Santa Fe, Argentina.
- b) Brazil (2010), Special Session Brazilian Congress of Geology, Belem.
- c) Colombia (2011), special Session and International training course, Latin American Congress of Geology, Medellin.
- d) India (2010-2011), several local activities with the IGCP local committee and the Geological Society of India.

- e) Peru (2012), International Symposium on Tropical Rivers (IAG-IGCP 582) and International training course, Iquitos.
- f) Paris (2013) Session 24A, 8<sup>th</sup> International Symposium on Geomorphology-IAG.

The activities mentioned above included “*in loco*” field discussions in large rivers such as the Ganges, the Parana, the Amazon, the Congo and others. Participants:

**Publications:**

Several special issues were published. A major goal of our group has been encouraging the participation of researchers from in development countries and young scientists.

1. Latrubesse, E., Stevaux, J.C. and Young, K. (Guest Editors). (2013). Abiotic controls in South American Riverine wetlands. *Journal of South American Earth Sciences*, 46, 110-198.
2. Sinha, R., Latrubesse, E. and Nanson, G. (Guest Editors). (2012). The Quaternary of tropical and subtropical rivers. *Palaeogeography, Palaeoclimatology Palaeoecology*, 356-357, 108p.
3. Stevaux, J.C. and Latrubesse, E. (Guest Editors), (2010) Ambientes Fluviais, *Revista Brasileira de Geociências* 41(4) 80p.
4. Latrubesse, E. and Stevaux. (Guest Editors), (2010). Hydro-geomorphology, sediment transport and human impacts in large South American rivers. *Latin American Journal of Sedimentology and Basin analysis*, 16 (2), 77-131.