January 2012
Issue n. 33

IGCP Italian Report

IGCP 40th Anniversary Celebration scheduled

The IGCP is celebrating its 40th anniversary on 22 February 2012 at UNESCO headquarters in Paris with a series of publications, exhibitions and events. This is an occasion to reflect on past success and, more importantly, the future of the IGCP *(more details in p.2)*.

C.N.R. hosts new Italian IUGS National Committee

Continuing a long-standing tradition, CNR (the Italian National Research Council) has recently reinstated the Commission for the participation of the Italian geoscientists in the IUGS activities, including the IGCP. The initiative was supported by Dr. Virginia Coda Nunziante –head of CNR International Relations and Agreements Office- and signed by CNR President Prof. Francesco Profumo, currently Minister of Education, University and Research of the Italian Government.

The new Commission –whose members are listed in the last page of this report- officially met for the first time on Nov. 28th 2011 at CNR headquarters in Rome. The first issue being tackled by the Commission is the organization of the Italian participation in the coming 34th International Geological Congress (Brisbane, 5-10 August), including the set-up of the GeoItalia2012 booth in the GeoExpo. The booth will showcase the major results of the activities undertaken during the last four years by the main Italian scientific organizations and institutions, including those stemming from participation in IGCP projects.

IGCP Projects with Italian leaders in 2011

Project No.526 – "Risks, Resources and Record of the Past on the Continental Shelf". Leader: Francesco L. Chiocci (University of Rome "La Sapienza")

Project No.540 – "Gold-bearing Hydrothermal Fluids of Orogenic Deposits". Leader: Paolo S. Garofalo (University of Bologna)

Project No.565 – "Geodetic Monitoring of the Global Water Cycle". Leader: Susanna Zerbini (University of Bologna)

Project No.591 – "The Early to Middle Paleozoic Revolution". Leader: Kathleen Histon (University of Modena and Reggio Emilia)

(see details inside)

In spite of the relatively small level of funding provided by the programme, the IGCP has proved a formidable scientific and financial springboard for most projects. All geoscientists interested in submitting a proposal for a new IGCP project should visit the IGCP website. Those wishing to join an existing project or just learn more about it should contact the project leaders or visit its website (see inside). The IGCP Italian National Committee (see back cover) is available to provide information about the IGCP and to advise people considering submitting an IGCP proposal.

Contents:

IGCP 40th Anniversary Celebration

UNESCO Headquarters - 7, Place de Fontenoy, Paris 7e - Room IV - 22 February 2012
(Tel: +33 (0)1 45684126)

Draft Programme

9.00 a.m. Reception of participants

9.30 a.m. Opening ceremony

Welcome from UNESCO Director-General
IUGS welcome - A. Riccardi, President of IUGS
Main results of IGCP's 40 years - V. Vajda, IGCP Chair
Importance of Geosciences for Society - I. Stewart, Plymouth University

10.45–11.00 a.m. Coffee break + exhibit

11.00 a.m.–12.30 p.m. Panel discussion on The Geoscience Challenges for the Planet

H. Campbell, New Zealand IGCP National Committee Chair, moderator
J. Adegoke, South African Council for Scientific and Industrial Research
G. Chaliand, geopolitics specialist
S. Dong, Chinese Academy of Geological Sciences
S. Kimball, Deputy Director, United States Geological Survey
G. McBean, President-elect, ICSU
X. Le Pichon, French Academy of Sciences

12.30–14.00 p.m. Lunch break + exhibit

2.00–3.50 p.m. Talks on Relevance of IGCP

IGCP themes presented by project leaders. I. Stewart, moderator
Presentation of key results and vision for the future of the theme
discussion with the floor

2.00–2.10 p.m. Introduction and IGCP history (E. Derbyshire, former IGCP chair)

2.10–2.30 p.m. *Earth Resources: Sustaining our society* (R. Seltmann, Natural History Museum, London)

2.30–2.50 p.m. *Global Change and Evolution of Life: Evidence from the geological record* (P. Vickers-Rich, Monash University)

2.50–3.10 p.m. *Geohazards: Mitigating the risks* (M. Sintubin, Leuven University)

3.10–3.30 p.m. *Geoscience of the water cycle* (C. Zhang, International Research Center on Karst)

3.30–3.50 p.m. *The deep Earth: How it controls the environment* (Y. Dilek, Miami University)

3.50–4.15 p.m. Coffee break + exhibit

4.15–5.15 p.m. Panel discussion on IGCP and other Earth Science global programmes
J. Ludden, British Geological Survey and Global Geoscience Initiative, moderator

5.15–5.45 p.m. Synthesis and conclusions. A prospective vision for the future of IGCP (I. Stewart, Plymouth University)

6.00 p.m. Reception and geological wine and cheese tasting (UNESCO Restaurant, 7th Floor)

Preface

This newsletter serves a double purpose: (i) it reports to the IGCP Headquarters at UNESCO what is the current status of the Italian involvement in the IGCP and (ii) provides the Italian geological community with information on ongoing IGCP projects and activities, in order to promote participation and dissemination of information. For these reasons, the newsletter has wide distribution within the Italian geological community.

This issue contains, among other items:
1. the Summary Report 2011 of the IGCP Italian National Committee;
2. the Summary Report 2011 of the IUGS Italian National Committee;
3. an outline of the new IGCP projects;
4. the complete list of IGCP projects active in 2011, with contact addresses of leaders and Italian coordinators.

If you have suggestions for improving this newsletter do not hesitate to get in touch with William Cavazza (william.cavazza@unibo.it).

Summary of IGCP guidelines

(full set of guidelines available at http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/international-geoscience-programme/)

1. Purpose and objectives of the IGCP

The International Geoscience Programme (IGCP) - formerly International Geological Correlation Programme - is a joint endeavor of UNESCO (United Nations Educational, Scientific and Cultural Organization) and IUGS (International Union of Geological Sciences). The primary aims of IGCP are to facilitate international collaboration amongst scientists from around the world in research on geological problems, particularly between those individuals from more industrialized and those from developing countries. Through long-term joint research efforts, meetings, field trips, and workshops, IGCP aims to promote the use of geosciences in global issues.

IGCP pursues four broad objectives:

1. improving our understanding of the geoscientific factors affecting the global environment in order to improve human living conditions;
2. developing more effective methods to find and sustainably exploit natural resources of minerals, energy and ground water;
3. increasing understanding of geological processes and concepts of global importance, including an emphasis on socially relevant issues;
4. improving standards, methods and techniques of carrying out geological research, including the transfer of geological and geotechnological knowledge between industrialized and developing countries.

2. Operational policy

The objectives of IGCP are met through individual projects. The number of active projects in any given year depends on the current priorities of UNESCO and IUGS, the availability of funds, the success and progress of existing projects and the quality and merit of newly submitted proposals.

IGCP projects are approved for a period not exceeding five years. Individual projects are reviewed annually after the second year and may be terminated following review for their poor performance.

The annual allocation of support for each project depends upon its quality and, for an already funded project, upon its performance during the previous year. The financial support provided annually by UNESCO and IUGS for IGCP projects covers part of the costs of organizing and managing research, meetings, and workshops, related to the project, as well as to facilitate participation by scientists from developing countries. These limited funds provide 'seed money' to assist in the acquisition of additional funds from other sources. Past experience indicates that successful IGCP projects are able to secure significant additional funding from other sources. The actual amount of funding provided annually all IGCP projects reflects the collective decisions of UNESCO and IUGS.

IGCP projects must successfully meet the following criteria:
1. focus on high-quality science relevant to the scientific objectives of the IGCP;
2. meet a need of international importance and societal relevance;
3 emphasize interdisciplinary cooperation;
4. constitute international participation including scientists from developing countries;
5. demonstrate potential for both long-term and short-term geoscientific and/or societal benefits;
6. explicitly acknowledge the sponsorship of UNESCO, IUGS, and IGCP; and,
7. promote global geoscience visibility. For example, through the publication of scientific results using internationally recognized journals or other media.

3. Topics for IGCP project proposals

IGCP welcomes proposals on the following topics:

(i) topics of particular interest to IGCP (as outlined in the following);
(ii) topics defined annually by UNESCO and IUGS;
(iii) other relevant topics in fundamental and applied geoscience.

(i) Topics of particular interest to IGCP

Geoscience of the Water Cycle
Life on Earth depends on water and its sustainable use is crucial for continued human existence. Earth's water resources include surface/ground water, ocean water, and ice. The study of Earth's water involves understanding and managing both surface and groundwater systems, including sources, contamination, vulnerability and history of water systems.

Geohazards: Mitigating the Risks
Geohazards include earthquakes, volcanic activity, landslides, tsunamis, floods, meteorite impacts and the health hazards of geologic materials. Geohazards can range from local events such as a debris slide or coastal erosion to events that threaten humankind (e.g., supervolcano eruption or meteorite impact). Earth scientists undertake research to better understand such hazards and contribute to risk reduction.

Earth Resources: Sustaining our Society
Earth resources include minerals, hydrocarbons, geothermal energy, air, and water. The future well-being of society depends on sustainable use of these resources. The environmentally responsible exploitation of these resources is a challenge for geoscience research. The progress of technological development is equally bound to this premise.

Global Change and Evolution of Life: Evidence from the geological record
Changes in the Earth's climate and of life on Earth are preserved in the rock record. Ice and dust records, terrestrial and ocean sediments, and sequences of fossil plant and animal assemblages all comprise parts of this record. Life has impacted Earth's atmosphere, oceans, and land surface. Several major extinctions have punctuated Earth's history, associated with dramatic environmental and ecosystem change. Past environmental lessons shed light on present and future challenges.

The Deep Earth: How it controls our environment
The Earth's surface, including our habitable environment, is a product of, and controlled by deep Earth processes. The study of this environment (ranging from changes in the Earth's magnetic field to plate tectonics) using for example, geophysical and geodynamical techniques, enhances our understanding of the working of System Earth.

(ii) Topics defined annually

These are specific topics identified cooperatively by UNESCO, IUGS and the IGCP Scientific Board that are perceived to be of timely relevance in any given year.

(iii) Other relevant topics in fundamental and applied geosciences

The IGCP encourages submission of project proposals in all aspects of the geosciences, provided they meet the requirements outlined above (see list of criteria in Section 2 - Operational Policy).

4. Project proposals

IGCP project proposals may be submitted by individual scientists or by a group of scientists. The IGCP Scientific Board is ready to advise project leaders, regarding the scientific quality, content, scope, viability, budget and relevance of potential project proposals (e.g., advice regarding the inclusion of other qualified scientists, bridging to other initiatives, outputs).

Assessments of proposals for new IGCP projects (and the Annual Reports of ongoing projects) are conducted once a year by selected representatives of the IGCP Scientific Board, usually during the first half of February. Assessments are based upon the criteria and objectives of IGCP (e.g. the scientific potential and feasibility of proposals, adherence to the overall goals of IGCP, qualifications of the proposers, scientific progress of the projects, significance of their results, adherence to an approved budget and so on). Projects are ranked into one of three funding levels: high, medium, or low.

The deadline for submission and receipt of new project proposals to the IGCP Secretariat is 15 October 2008. Each project leader must include a letter of endorsement from his or her respective IGCP or IUGS National Committee. The IGCP Secretariat will promptly inform proponents of the decisions regarding individual proposals. Proposal forms are available from the IGCP Secretariat or through the following website:
http://www.unesco.org/science/earth/igcp.shtml

5. Young Scientist Projects

The IGCP Young Scientist Project is a special type of IGCP Project which aims at fostering international cooperation between prospective young scientists from developing and developed countries early in their careers. It is expected that this will recruit and train young scientists to establish future cooperative projects. Proposals and projects should follow these guidelines:

- Proposers should be within 10 years of their PhD.
- Proposers should provide a CV and include a copy of at least one international peer-reviewed publication in their field.
- Proposers are encouraged (but not required) to find an experienced scientist as advisor to help guiding the project.
- Proposers need to demonstrate an affiliation to a research institute, university, geological survey, or equivalent organization for the duration of the project.
- Projects may, but do not need, to be linked to an existing IGCP project.
- The project duration is three years; the project should involve at least three young scientists from a minimum of two countries. The principal proposer must be from a developing country.
- The Young Scientist Project will be awarded a maximum of US$5,000 per year.
- These funds are provided to support:

- field meetings with at least five participants, which should including the group leaders,
- travel to IGCP-organized or any other international scientific conference,
- participation in training courses,
- research equipment (max. 20% of the allocated funds).

6. Funding

IGCP is not a funding programme. The annual allocation of support for each project will depend upon its quality and, for an already funded project, upon its performance during the previous year. The financial support provided annually by UNESCO and IUGS for IGCP projects covers part of the costs of organizing and managing research, meetings, and workshops, related to the project, as well as to facilitate participation by scientists from developing countries. These limited funds (average ca. 30,000 USD for the entire length of the project) provide 'seed money' to assist in the acquisition of additional funds from other sources. Past experience indicates that successful IGCP projects are able to secure significant additional funding from other sources.

Summary Report 2011 of the IGCP Italian National Committee

1. *Name, address, telephone, fax, e-mail address of the Chairperson of the National Committee:* see back cover.

2. *Members of the Committee:* see back cover.

3. *Projects led by Italian scientists during 2011:*
- Project No. 526 - Risks Resources and Record of the Past on the Continental Shelf [2007(-2011)] (Francesco L. Chiocci, Italy; Lindsay Collins, Australia; Michel Michaelovitch de Mahiques, Brazil; Renée Hetherington, Canada)
- Project No. 540 - Gold-bearing hydrothermal fluids of orogenic deposits (2007-2011) (P.S. Garofalo, Italy; J.R.Ridley, USA; Vsevolod Prokof'ev, Russia)
- Project No. 565 - Geodetic Monitoring of the Global Water Cycle (2008-2012) **(**Hans-Peter Plag, USA; Richard S. Gross, USA; Markus Rothacher, Germany; Norman L. Miller, USA; Susanna Zerbini, Italy; Chris Rizos, Australia)
- Project No.591 – The Early to Middle Paleozoic Revolution (Kathleen Histon; Italy).

4. *Projects with active Italian Working Groups:*
During 2011 Italian geoscientists were active in at least seven other IGCP projects.

5. *IGCP meetings held in Italy in 2011*
None was reported.

Summary Report 2011 of the IUGS Italian National Committee

1. Country: Italy

2. Name of National Committee:
A new "Commissione CNR-IUGS" was set by the Consiglio Nazionale delle Ricerche (CNR) on July 18th, 2011. The CNR is the Italian National Agency representing Italy within the IUGS since its foundation. Officially, the Commission promotes the participation of CNR in IUGS activities (including the IGCP), *de facto* it stimulates the participation of the entire Italian Earth Sciences community.

3. Name and address of person preparing form:
Prof. W. Cavazza, Dipartimento di Scienze della Terra e Geologico-Ambientali, Università degli Studi di Bologna, Piazza Porta San Donato 1, I-40126 BOLOGNA
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4. Number of people on Committee: ten
The members of the Committee are: Dr. Marco Amanti, Prof. Attilio Boriani, Prof. Antonio Brambati, Prof. William Cavazza, Prof. Carlo Doglioni, Prof. Domenico Rio, Dr. Marco Sacchi, Dr. Pierluigi Soddu, Dr. Fabio Trincardi, Dr. Gianluca Valensise.

5. Number of meetings during 2011: two
A first, unofficial meeting was held during the VIII GeoItalia Conference of FIST, the Italian Federation of Earth Sciences (Turin, 19-23 September 2011). The Commission was invited courtesy of Prof. Silvio Seno, FIST President. The first official meeting was hosted by CNR in Rome on 28 November 2011. In view of the Italian participation in the next International Geological Congress in Brisbane (5-10 August 2011), the main topic discussed during the meeting was the preparation of the Italian booth at the IGC.

Active IGCP Projects

Following is a link to the UNESCO webpage listing all active IGCP projects. All Italian colleagues interested in joining the projects or just wishing to receive additional information are invited to visit the relevant webpages and/or get in touch with the project leader(s):

http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/international-geoscience-programme/igcp-projects/#

Italian Contributions to the IGCP - Year 2011

The following are short descriptions of the Italian participation in the IGCP during 2011. This year's report includes only the summaries of the activities of IGCP projects led by Italian geoscientists. All material included was received by December 31, 2011. Some Italian involvement in IGCP projects may not be documented in this publication because the National IGCP Committee of Italy did not receive the relevant information. If you are participating in an IGCP project –as project leader or participant- and your name does not appear in this list get in touch with W. Cavazza (see address and contact numbers on the back cover). All Italian colleagues interested in joining the projects or just wishing to receive additional information are invited to get in touch with the relevant project leader(s) or with the Italian coordinators.

Project No. 526 - **Risks Resources and Record of the Past on the Continental Shelf Coastal Vulnerability related to Sea Level Change (**2007-2011)

Project leaders:
Francesco L. Chiocci (Italy), Lindsay Collins (Australia), Michel Michaelovitch de Mahiques (Brazil), Renée Hetherington (Canada**)**

Website address related to the project: http://igcp526.io.usp.br

Italian participation in the project:

- Francesco Latino Chiocci (University of Rome La Sapienza) – Project Leader
- Daniela Basso (University of Milan)
- Daniela Mencucci (CSA)
- Sandro De Muro (University of Cagliari)
- Salvatore Critelli (University of Calabria)
- Salvatore Milli (University La Sapienza)
- Sergio Silenzi (ICRAM)

Project No. 540 **- Gold-bearing hydrothermal fluids of orogenic deposits** (2007-2011)

Project leaders:
P.S. Garofalo (Italy), J.R.Ridley (USA), Vsevolod Prokof'ev (Russia)

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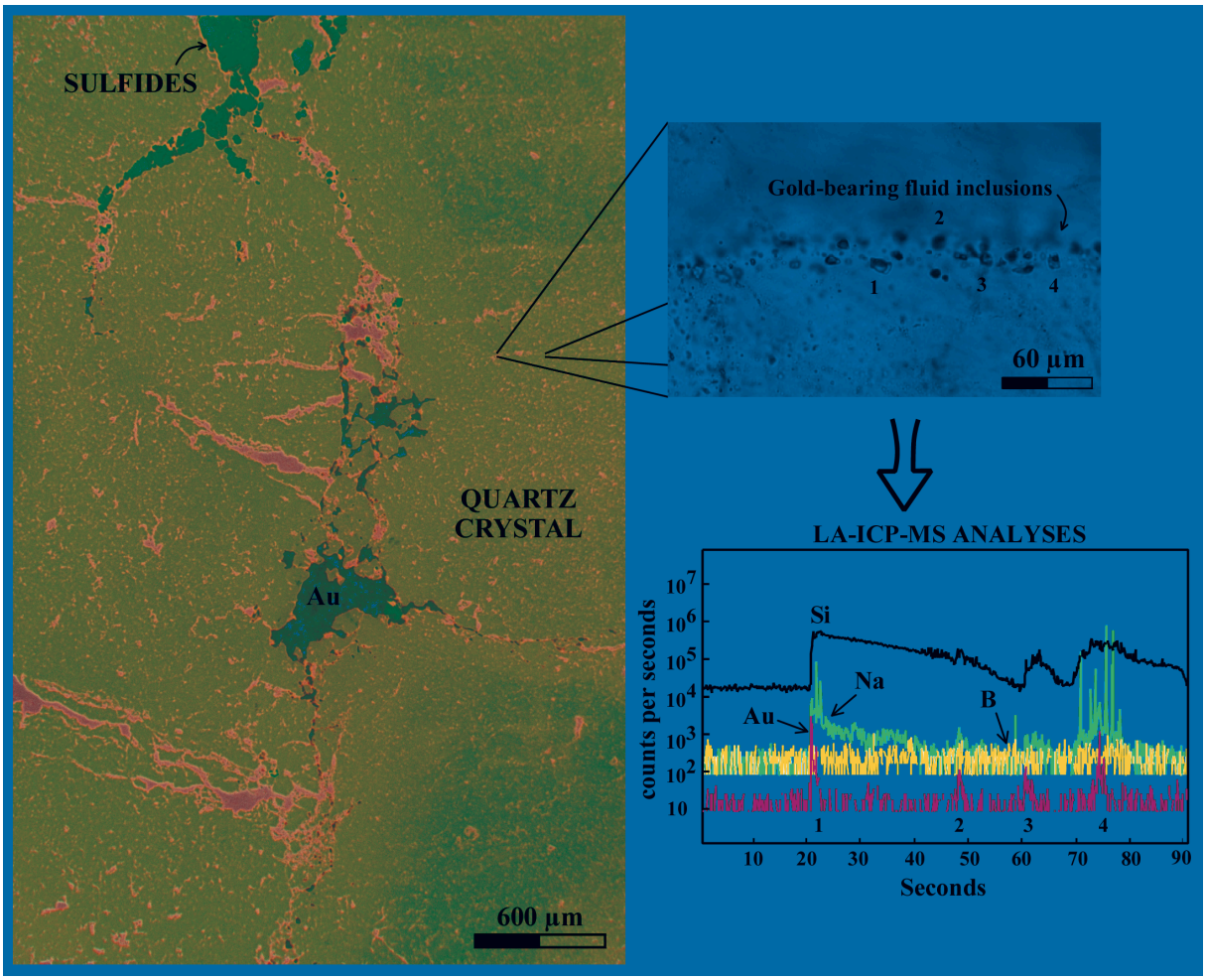
Website:
http://www.geomin.unibo.it/Personale/Pagine/template_docente.aspx?pagina=garofalo

Participating countries
Australia, Brazil, Canada, Chile, China, Czech Republic, Germany, Hungary, India, Italy, Ivory Coast, Russia, Slovakia, Switzerland, USA.

Overall achievements
Since 2007, our activity focused on **1)** the selection of orogenic and intrusion-related Au deposits for the construction of a database on the physical-chemical properties of Au-transporting hydrothermal fluids in the Earth's crust using fluid inclusions (FIs), and **2)** on the actual set-up of the database. As expected, among the large pool of deposits initially considered for our multi-technique study, only few showed fluid inclusions with good characteristics for being studied in detail. These deposits are from the Abitibi greenstone belt of Canada (Beaufor and Sigma), from different Australian terrains (Wattle Gully, Red Hill, and Mount Charlotte), from a Tertiary terrane of Alaska (Fairbanks district), from the Italian W Alps (Pestarena), and from different Russian terrains (Berezovskoye-Urals; Darasun-East Transbaikalia). The selection criteria of the samples have been very stringent, as they aimed at

defining low-strain FI assemblages associated with Au precipitation, which are in general difficult to find especially in shear zone-hosted orogenic deposits.

Consistent with our plans, we collected microthermometric properties, Raman spectra, volume fraction of fluid phases via spindle stage measurements, and Laser Ablation-ICP-Mass Spectrometric analyses for a set of 25 *fluid inclusion assemblages* (*i.e.*, co-genetic groups of FIs) contained in several well-documented Au deposits belonging to the orogenic (Sigma and Beaufor-Canada; Wattle Gully-Australia; Berezovskoe-Russia; and Pestarena-Italy) and intrusion-related (Fairbanks district-Alaska; Teremkin and Talatui-Russia) classes. This dataset corresponds to thousand of measurements of individual inclusions. In short, our database provides the following evidence: irrespective of geological location, the Au-bearing fluid of orogenic deposits is consistently a two- to three-phase fluid (H_2O-CO_2-NaCl model fluid made of aqueous liquid, carbonic liquid, and vapour phase), with a relatively low bulk salinity (<7.1 eq. wt% NaCl), a φ=13-50 vol% vapour fraction, and a relatively uniform vapour composition (CO_2±CH_4-N_2). A subordinate H_2O-NaCl fluid is also present within the Au veins. *T*h(total) range from values as low as 200°C (Wattle Gully) to 400°C (Sigma), and homogenization occurs by bubble and liquid disappearance. LA-ICP-MS data show that the most abundant analyte in this fluid is Na (4000-28000 µg/g), with subordinate K (300-4500 µg/g) and B (200-2800 µg/g), and minor to trace amounts of (in the most commonly recognized order of decreasing abundance) Cu, Sr, Rb, Mg, Mn, Li, Ba, Cs, Sb, and Pb (range: 1-450 µg/g). These trace components are not systematically determined in all the studied deposits or samples. Au has been determined only in few high-temperature assemblages from the Sigma deposits to be in the 0.5-5 µg/g range, which is a very high concentration.



Au-bearing fluid inclusions of a quartz-tourmaline-sulfide-Au vein from the Sigma deposit (Canada). Note the occurrence of fluid inclusion trails parallel to the Au-filled microfracture. This is considered a strong petrographic indication of fluid entrapment coeval with Au deposition. The Laser-Ablation-ICP-Mass Spectrometry of these inclusions lead to the determination of the metal budget (including Au) in this and similar veins.

Intrusion-related deposits contain two-phase aqueous (liquid, vapour) FIs, multi-phase aqueous inclusions with one or more solids (halite and opaque phases), and a two- to three-phase aqueous-carbonic fluid. Compared to the fluid from the orogenic deposits, these three fluid types correspond to a much broader range of bulk salinities (0.4-56 eq. wt% NaCl) of the ore fluid. The volume fraction of the vapour phase is similar to that of orogenic deposits, and its composition is dominated by CO_2 ($\pm CH_4$). The *T*h(total) documented in quartz associated with early- and main-stage Au range from about 300°C to 600°C, and homogenization occurs by bubble and liquid disappearance. LA-ICP-MS data show that the most abundant analyte in this fluid is Na (3500-55000 µg/g), with subordinate K (850-9000 µg/g) and B (400-1500 µg/g). With the exception of Fe, Zn, Pb, and Mn, which have a high bulk concentration in the halite-saturated fluid (*e.g.* 28000 µg/g of Fe), the subordinate components As, Cu, Sr, Rb, Mn, Li, Ba, Cs, and Pb have been determined in the liquid-vapour and vapour-rich inclusions to be in the 2-300 µg/g range.

The main insight provided by our work has been the remarkable compositional similarity between the ore fluids of orogenic and intrusion-related deposits. This similarity provides an unexpected relation between the two types of ore fluids, as it points to a possible genetic link between the magmatic sources that generate the intrusion-related Au deposits and the source region of orogenic deposits. The exact definitions of these relations represent the objective of future research; however, two general conclusions can be drawn from our results. First, our database might provide considerable new ideas to the current genetic and field exploration views of the two types of Au deposits. Second, our methodological approach of collecting high-resolution FI properties proved to be a useful working tool.

Achievements of the project this year

In this last year of activity, the scientific achievements of IGCP540 have been the proposal for a Special Publication of the Geological Society of London (titled "*Au-transporting hydrothermal fluids in the Earth's crust*"), the publication of six papers in several international journals, and the presentation of a number of abstracts in three international meetings. The proposal for the Special Publication is attached at the end of this report; therefore, it will not be explained in detail here. We just highlight the fact that the proposed book gathers 14 manuscripts co-authored by about 40 leading specialists from 16 different research institutes, some of which did not participate to the IGCP540 project in the first place. We consider this large involvement of colleagues a distinct measure of the importance of our scientific work, and a success of our initiative. Presently, the proposal is under review by the internal committee of the Geological Society and the evaluation is expected to arrive within 2-3 weeks. Thus, we are not able to say if (and within which time frame) the Special Publication will be finally accepted for publication. However, the commissioning editor Angharad Hills judged it informally as a good proposal, and we are confident that the Geological Society will receive our proposal positively. We are also aware that additional contributions related with this project will be submitted for publication in the near future in international journals.

Considering the poor external and institutional funding received by our group members also this year, the possibilities to organize outreach initiatives that would attract the attention of a broader public to our results have been quite limited. On the other side, social benefits were also limited by the relatively long time needed to construct the database. We note that LA-ICP-MS analyses of single FIs are a cost intensive and analytically demanding activity, and that their collection still constitutes a technological barrier for most scientists worldwide. This makes our work more a methodological advancement, which is not easy to include in outreach initiatives. In the future, if our analytical strategy and the fundamentals of the lab techniques will be taught to students, we will have obtained a widespread benefit. On this regard, an Ivorian PhD student from the Université de Cocody (Zié Ouattara), who joined the project late in 2010 and works on an orogenic deposit of the Oumé-Hiré gold district, will carry out part of his FI work in one of our labs.

List of meetings

Following an invitation from the "***S**ociety for **G**eology **A**pplied to Mineral Deposits*" (SGA), a large group of participants presented their scientific results in the 11th SGA Biennial Meeting that took place in Antofagasta, Chile, on the 26th-29th September 2011. For that meeting, the group leaders Garofalo and Ridley organized an IGCP540 thematic session titled "*Au-transporting fluids in the Earth's crust*", which took place on Thursday 29th. The session was very successful, as it hosted 13 oral presentations and 11 posters and attracted a large audience from both academia and industry. About 80 scientists and industry geologists from 12 countries (Australia, Brazil, Canada, Denmark, Germany,

Italy, Namibia, New Zealand, Portugal, S. Africa, Spain, and Switzerland), part of which not participating to the IGCP540, presented their works in our thematic session. We also estimated an audience of 150-200 congress participants continuously attending the session. All these figures represent an indicator of success, and highlight the impact of our research topic on the geological community.

Other IGCP540 members (Zachariáš J., Prokofiev V., Selektor S., and Hollings P.) attended the 21st ECROFI meeting (**E**uropean **C**urrent **R**esearch **O**n **F**luid **I**nclusions), and the Goldschmidt meeting. The 21st ECROFI was held at the Montanuniversität Leoben, Austria (9th–11th August 2011), and the Goldschmidt at the Prague Congress Centre of Prague, Czech Republic (14th–19th August 2011). All authors presented abstracts whose contents were submitted or under publication in international journals.

Project No. 565 – **Geodetic Monitoring of the Global Water Cycle** (2008-2012)

Project leaders:
H.P. Plag (USA), R.S. Gross (USA), M. Rothaker (Germania), N.L. Miller (USA), S. Zerbini (Italia), C. Rizos (Australia)

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Website: geodesy.unr.edu/igcp565/about_igcp/

List of countries involved in the project:
United States of America, Canada, Germany, Italy, Australia, Korea, South Africa.

Project No. 591 - **The Early to Middle Paleozoic Revolution** (2011 – 2015)

Project leaders:
Bradley D. Cramer (USA), Živilė Žigaitė (Lithuania), Thijs R.A. Vandenbroucke (France), Kathleen Histon (Italy), Renbin Zhan (China), Guillermo L. Albanesi (Argentina), Michael J. Melchin (Canada), Mikael Calner (Sweden)

Contact: Kathleen Histon
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Website: www.igcp591.org

Project Summary
The Early Ordovician to Early Devonian interval contains several of the most significant paleoclimate and paleobiological events in Earth history. This interval of Earth history also contains the acme and amelioration of the Early Paleozoic Ice Age, which provides an important historical analogue for researchers of modern climate change. Additionally, this interval contains the roots of the invasion of life onto land. The Earth did not go quietly into the Middle Paleozoic and the primary research objective of IGCP 591 – *'The Early to Middle Paleozoic Revolution'* is to investigate this dynamic and important interval in the history and evolution of life and our planet.

Main Project Activities 2011
The initial conferences of the IGCP project 591 (approved April 2011) were held jointly with the 2011 Meetings and Field Excursions of the International Subcommissions on Ordovician and Silurian Stratigraphy in Madrid, Spain, and Ludlow, England, respectively and Italian participants presented their research at both events. Activites related to the *Digital Integrated Stratigraphy Project* (DISP), the innovative technological aspect of IGCP 591, also got underway with scanning of many of the Silurian GSSP's in the UK being completed within a pilot project funded by the German Research Council (DFG). Funding applications to further the aims of DISP are being submitted to a variety of grant agencies (ERC, NSF) and more details may be found on the website under links to DISP and Project news. The 2012 annual meeting will be held in July in Cincinnati (USA). Related symposia will be held at the EGU in Vienna (April 2012) and IGC in Brisbane (August 2012).

Italian participation in the project:

- Kathleen Histon (University of Modena and Reggio Emilia) – Project Leader
- Gabriela Bagnoli (University of Pisa)
- Carlo Corradini (University of Cagliari)
- Maria Corriga (University of Cagliari)
- Annalisa Ferretti (University of Modena and Reggio Emilia)
- Laura Gaggero (University of Genoa)
- Alfredo Loi (University of Cagliari)
- Gian Luigi Pillola (University of Cagliari)
- Claudia Puddu (University of Cagliari)

Individual Research Activities of the Italian Participants in IGCP 591

Name: **Kathleen Histon (Project leader)**
Università degli Studi di Modena e Reggio Emilia
Dipartimento di Scienze della Terra
L.go S. Eufemia 19, I-41121 Modena, Italy

Research Focus: current research forms part of an international multidisciplinary study of sea-level changes, oceanic cycles and biotic response in the Ordovician/Silurian of the Carnic Alps and is focused on a systematic, taphonomic, paleoecologic and paleobiogeographic study of Silurian cephalopods with a view to defining the migrational pathways of pelagic faunas as a tool for timing of open seaways and microterrane position along the North Gondwana margin. Radiometric dating of the K-bentonite levels from these sequences is in progress which will provide precise instances within which to collocate these results from the Carnic Alps.

Direct comparison of eustatic cycles and sequence stratigraphy in the Wenlock of the Carnic Alps (Austria) and the standard sections of the Wenlock Series (UK) is on-going with correlation extended across the paleocontinents of Laurentia, Avalonia and Peri-Gondwana Terranes.

I am convener of the IGCP 591 related symposium to be held at the 34th IGC (Brisbane, 2012)

I am currently involved in preparation of funding applications to the ERC Program to gain support for the DISP activities planned within Europe under IGCP 591 and for establishing the related stratigraphic correlation database.

Name **Gabriela Bagnoli**
Affiliation Università di Pisa
Dipartimento di Scienze della Terra
Via S. Maria, 53 56126 PISA

Research Focus: Cambrian and Ordovician conodonts from North China, South China, and Sweden; potential GSSP for base of Cambrian Stage 10; Cambrian-Ordovician boundary. Cambrian acritarchs from Baltica. Ordovician biodiversity changes related to asteroid breakup from Baltic sections.

Name **Carlo Corradini**
Affiliation Università di Cagliari
Dipartimento di Scienze della Terra ,
via Trentino 51, I-09127 Cagliari, Italy

Research Focus: I'm investigating the Silurian and Devonian sequences of Sardinia and the Carnic Alps. The main interest is conodont biostratigraphy, with the goal to propose a standard global zonation for the upper Silurian and lowermost Lochkovian in the near future. The depositional sequence of the Carnic Alps in investigated also from a lithostratigraphic point of view, within a large project involving colleagues from several Italian and foreigner institutions.

Name **Maria Corriga**
Affiliation Università di Cagliari
Dipartimento di Scienze della Terra ,
via Trentino 51, I-09127 Cagliari, Italy

Research Focus: Silurian-Devonian conodont biostratigraphy of Sardinia and the Carnic Alps.

Name **Annalisa Ferretti**
Affiliation Università degli Studi di Modena e Reggio Emilia
Dipartimento di Scienze della Terra
l.go S. Eufemia 19, I-41121 Modena, Italy

Research Focus: I am involved (with K. Histon, P. McLaughlin and C. Brett) in editing a P3 Special Issue on "Time-Specific Facies: The Colour and Texture of Biotic Events".There is included a study on the significance and nature of peculiar colours in some Silurian sequences from N Gondwana that has revealed a distinct signal of microbial activity. A provocative study on the significance of black shales throughout the Phanerozoic has been recently completed with Mike Melchin and Alessandra Negri. I am actually studying some Late Ordovician conodont faunas from the Cellon Section (with H.P. Schonlaub and S. Bergstrom) where the HICE event has been recently documented (Schonlaub et al., 2011) and from several sections in Wales (with C. Barnes and S. Bergstrom).

Name Laura Gaggero
Affiliation Università degli Studi di Genova
Dipartimento per lo Studio del Territorio e delle sue Risorse
Corso Europa 26, I-16132 Genova, Italy

Research Focus: The research activity is addressed to detailed geochemical and radiometric analyses of Late Ordovician-early Silurian volcanic products enclosed in two key sections of the Lower Paleozoic sequences of the Carnic Alps (Austria). As a general statement, Upper Ordovician K-bentonites are rare and have few European equivalents. Histon et al., 2007 report 97 K-bentonites from the Upper Ordovician (Hirnantian) to Lower Devonian (Lochkov) sequences, constrained

biostratigraphically within the international standard biozones. Volcanism belongs to a tectonically active terrane dominated by calc-alkaline mafic lavas of clear volcanic arc affinities, most samples fall within the andesite and rhyodacite/dacite fields. In order to carry out a finely tuned radiometric dating of the transition two successions (Nölblinggraben and Cellon) were addressed for sampling of bentonites and preliminarly characterized for clay mineralogy, petrography and geochemistry, confirming the literature features. In order to support the biostratigraphic record wth a high resolution radiometric stratigraphy, the U-Pb analyses are carried out at the Beijing SHRIMP Center within a bilateral agreement between the Research Center and the Italian Research Group on Gondwanan basement. Results are expected in spring 2012 to support geotectonic and paleogeographic inferences and internationally important *time-lines* for chronostratigraphy within both a regional and global context.

Name: **Alfredo Loi**
Affiliation: Università degli Studi di Cagliari
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09127 Cagliari (Italy)

Research Focus: The main research topics are focused on Sedimentology and Sequence Stratigraphy of terrigeneous successions of Ordovician platform. Main research subjects are: (1) genetic model of condensation for terrigenous and mixed shelves (facies analysis, taphonomy and geochemistry) in the Upper Ordovician sequences of Brittany, Morocco and Sardinia; (2) facies analysis, eustatic control, and faunal content of the Upper Ordovician Veryarc'h section (Armoricain Massif, Crozon - France); (3) eustatic curve at high, medium and low frequencies of the lower Palaeozoic of the north Gondwana domain (Sardinia, Armorican Massif and Marocco) based on facies analysis, sequence stratigraphiy and genetic stratigraphy.

Name: **Gian Luigi Pillola**
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Research Focus: Cambrian trilobites and Ordovican trilobitomorphs from circum-Mediterranean areas. However, this year I published mainly on Quaternary faunas!
In addition, I will prepare for next july the post Conference Escursion in Sardinia within the Trilo-2012, including Ordovician topics.

Name: **Claudia Puddu**
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Research Focus: Structural geology of the Sardic Phase in SW Sardinia (Italy)

ITALIAN CONTRIBUTIONS TO IGCP PROJECT 591 FOR YEAR 2011 – CONFERENCE PRESENTATIONS

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Summary of the Minutes Draft, 39th Session, IGCP Scientific Board

Venue UNESCO Headquarters, 1, rue Miollis, 75015 Paris, France
16-18 February 2011

1. Welcome

The IGCP Executive Secretary (Robert Missotten) welcomed the board members. He announced that the new Assistant Director General of Natural Sciences, Dr Gretchen Kalonji, was very supportive of the Earth Sciences. In outlining the plan for the next few days, he noted that the agenda simplified in order to have more time for deliberations and drew attention to the open-session presentation of those deliberations on Friday morning. With more new proposals than usual, IGCP very alive but he stressed that it must continue to reach out better to certain parts of the world, e.g. Africa. In that regard, he thanked the Chair of the Science Committee, Dr Vivi Vajda, for securing an extra budget for Africa/Arabic area and reported that a system needed to be put in place for managing this.

Several items of wider interaction with other UNESCO bodies were recorded, including IGCP involvement in a meeting on 'Biosphere Reserves and Earth Resources', and a meeting between IGCP and our engineering and oceanographic programme on 'Geo-engineering'. He also reported that a recent European meeting had indicated that IGCP procedures were still considered overly bureaucratic and attention was needed to address that issue.

Several broader matters were highlighted. One was the 40th anniversary of IGCP which will be celebrated in February 2012 at UNESCO HQ and also at IGC in Brisbane. In the IGC event in particular it was emphasised that there was an expectation of a strong visibility of IGCP groups, projects and activities. Also mentioned was an IYPE follow-up initiative to strengthen the science by organising research on one or two key projects: Global Geoscience Initiative. The GGI was, in some respects, structured along lines of the IGCP model and if the Board agreed to support this, a positive endorsement could make. Attention was also drawn to the 'Africa Alive Corridors' initiative within the GGI.

Finally, attention was drawn to the 50th anniversary celebration of the IUGS on the Monday, followed by the executive committee meeting.

2. Introduction of the Board Members

The board members were introduced as follows: John Bern (USA) - Theme 1 Water; Iain STEWART (UK) - Theme Leader 2 Hazards; Andor LIPS (The Netherlands) - Theme 3 Resources; Vivi VAJDA (Sweden) - Theme 4 Global Change; Yildirim DILEK (USA) - Theme 5 Deep Earth.

Also introduced were the representatives of the field offices: Denise GORFINKIEL (Montevideo), Giuseppe ARDIUNO (Jakarta), Felix TOTEU (Nairobi). The field representative of the Cairo office had

been delayed by the recent troubles in Egypt and would be introduced later. Finally, members of the IGCP Secretariat were introduced: Robert Missoten, Margarete Patzak and Sarah Gaines.

3. UNESCO Field Office Reports

Jakarta (Arduino) outlined activities under the following themes: (1) IGCP Projects (507, 567); (2) Support of Geo-Park initiatives (Dong Van Karst Plateau Geopark proposal); (3) Earth Observatory of Singapore; (4) Support for journal of the International Commission on Landslides; CCOP Strategic Plan.

Montevideo (Gorfinkiel) reminded the Board of the characteristics and attributes of the geoscience context of Latin America and the Caribbean. The main line of action was related to Sustainable Management of Terrestrial Resources. Activities had also been undertaken in relating to two IGCP projects (546 and 586Y) and also in developing a Geo-Park action plan, with the initial mapping of 20 potential sites. A project n Earth Science for Sustainable Development had involved a seminar on coastal erosion in Buenos Aires in Nov 2010. The plan for 2011 targeted work in Brazil on geoscience education and sustainable mining. A question from the Board about the perceived increase in interest from Spanish-based geoscientists was discussed and it was agreed that they seemed to be more active and had more funding, the result perhaps of the IGCP meeting convened late last year in Spain to foster more activity. Following a query about the Haiti earthquake it was noted that no specific geoscience response had been organised by the field office.

Nairobi (Toteu) reported that the new field officer had inherited two projects, one on Geo-education and one on Geohazards, a project proposal that would be discussed and evaluated later in the IGCP business. He outlined some key questions that underpinned IGCP involvement in Africa and reflected its unique characteristics: limited financial resources, difficulty in converting 'seed funds' to serious research budgets, the high cost of fieldwork in Africa, the long process of releasing funds from UNESCO, the isolated research environment, the poor awareness of geoscience organisations in Africa and the absence of a non-operational IGCP Committee. There was a brief overview of the Africa Alive Corridor initiative, with its emphasis on interactions between geology, biodiversity and human history, which had been endorsed by the African Earth Science community. Finally, the field office had identified Geoparks as a specific action measure and noted that Kenya was especially interested.

4. Presentation to UNESCO / IUGS of the Project Rankings

The Chair summarised the main grades and ranking of new proposals, the preferred allocation of SIDA project funding, and the evaluation of existing projects. This will be reported formally at the Open Session business meeting on Friday. Clarification was sought on the various proposed project mergers, particularly on how these projects will be designated by the Secretariat and how the mergers would be communicated to the applicants.

Clarification was requested from IUGS Secretary (Peter Bobrowsky) to confirm that projects assigned 4-years of SIDA funding would not require or expect IUGS top-up funding for the 5th year; there was a discussion of how to handle to the disparity between 'normal' 5-year IGCP projects and 4-year 'SIDA-funded' IGCP projects and it was agreed that the Secretariat would make clear in the formal letter to SIDA-designated projects that results would have to be completed in accord with the donor's 4-year term.

It was recommended that some SIDA funds would be disseminated to field offices to facilitate the objectives of the SIDA support for IGCP projects: Nairobi - $20,000, Cairo - $10,000, Montevideo - $5000, Montevideo - $5000. The remaining $7000 would be allocated for general capacity building in support of the SIDA field office activities. This view was broadly supported.

5. Review of IGCP Board Membership

There was a discussion about the effectiveness of board members. Two Themes (Deep Earth and GeoHazards) noted that some assessors were not delivering and needed to be replaced, and they requested that additional evaluators should be co-opted onto the Board.

The IUGS representative (Peter Bobrowsky) strongly urged significantly expanding the number of assessors in line with previous IUGS recommendations. Ideally each theme should be able to draw from an evaluation pool of 10 or so members, which would require an additional 50 assessors in the 'virtual board'. The Secretariat reminded the Board that individuals could be recommended from National Committees, from the IUGS and from individuals. The key requirement was the need for international scientists that are effective and respond in a timely fashion. The Executive Secretary supported this enlarging of the scientific board, noting that IGCP is considered by some external agencies as needing a lighter touch so would welcome more applications. However, one reservation he noted was that with a doubling of the Board membership it became less likely that individual board members would be elevated to Theme Leader role in the future so that potential expectation would have to be carefully managed. The Secretariat proposed that individual Theme Leaders be encouraged to take on additional members to the virtual board but not set a specific recruitment target number.

Regarding regarding the transfer of Theme Leadership role, it was agreed that the Secretariat needs that info as soon as possible to arrange changeover.

6. Role of IGCP National Committee Reports

There was a broad ranging discussion about the nature and purpose of the National Committee reports. Some reports, such as that from China, was highlighted as good practice and it was agreed that their representative would be asked to outline their procedure for their compiling the information therein.

There was a general discussion about wider communication issues between the Secretariat, IUGS and the Scientific Board.

7. Fundraising and Participation of Developing Countries

There was a discussion of whether the SIDA-type external funding initiatives could be extended to other countries. Iain Stewart stated that UK international development office or Natural Environment funding agency might be open to a similar approach, albeit modified for the UK context. It was stressed that industrial sponsors tended to want to have a very direct relationship with the communities that are affected by their work and so might be less willing to fund generic capacity-building measures.

8. 'Celebration of 40 years IGCP' event: February 2010

The Secretariat (Margarete Patzak) outlined ideas relating to a 2-day 'event' in February 2012 for the 40th anniversary celebration of IGCP. The plan would be to have a half-day 'interesting event' followed by a day and a half of scientific meeting: the proposed theme is 'Earthquake Hazard and Cultural Heritage' which was proposed by Iain Stewart as an outcome of the IGCP 567 project 'Earthquake Archaeology'.

In the discussion that followed it was suggested that something topical could be put together on climate change and water resources, and global climate change (e.g. Snowball Earth and mass extinctions etc) might also be of wide interest. It was agreed that Board members would communicate ideas and thoughts on this to the Secretariat

9. Visibility of IGCP in the next IGC 2012

The meeting received a report from Ian Lambert, Sec General of the 34th IGC in Brisbane (5-10 Aug 2012). The meeting would have a 5-day timespan due to the high-capacity venue allowing 37 consecutive sessions and reflecting the likely time constraints of participants in the current economic

climate. General symposia (~200) will reflect the role of the IGC as the major forum for presenting geoscience information from IUGS affiliated groups. Specialist sessions available for those groups and would be organised by those groups assuming they satisfied basic requirements. Business meetings of IUGS and related groups will be accommodated on the pre-conference day and on any of the five conference days. The organisers welcomed further comments/suggestions from the IGCP scientific committee.

The second circular was expected to go out in April 2011. The aim of second circular is to have as much detail on the general symposia as they can. It will include a general statement on specialist sessions, although if specific titles of specialist sessions were known then that information could be included. Information on specialist sessions needed to be received by the organisers by mid March 2011.

Exhibit space will be provided at the conference venue at a cost of around AUS$4000 for a 3 x 3 m space. There is a plan for some special general interest exhibits and the anticipated cost of these would be considerably less. The Congress organisers are exploring how to fit these into the exhibition area or whether to have a dedicated display at the nearby Queensland Museum - the centre of the outreach activity. The plan is also to have a large 'geospace' within the exhibits where people can meet, leave messages, eat and drink etc and in that central space videos will be shown, so proposals are welcomed on this.

For measures supporting conference participants (GeoHost programme) two elements were highlighted. Firstly, financially support individuals from low-income nations attending specific training workshops, e.g. sustainable mining (African programme of the Australian government), geohazard modelling; carbon geosequestration. Secondly, a delegate support programme for developing nation scientists and young scientists would provide free registration or free registration plus sponsorship. This would depend on the success of sponsorship packages already circulated to universities and companies but the organisers were confident that additional sponsorship deals would come in. Expect only 50% of costs (AUS$5-6M) of the meeting would be covered by delegate registration fees.

In a question from the Board about the profile of Geoheritage and GeoTourism, it was confirmed that this would be represented in a general symposium.

10. Update on the Global Geoscience Initiative (GGI)

The Executive Secretary (Robert Missotten) outlined the scoping document of the Global Geoscience Initiatives and suggested a resolution giving IGCP support for the GGI. The board expressed a positive interest in this development and suggested that interested members draft a specific response to the GGI proposers giving a specific statement of support.

11. Global Geoparks Network

The board received an update on the Global Geopark initiative from Patrick McKeever, which now has 77 members spread over 25 countries and 6 continents. His presentation outlined how to create a Geopark - the prerequisites needed - and how to join the GGN. The assessment process was explained and the close working relationship with World Heritage was stressed. The geo-education and earth heritage component is fundamental to a successful geo-park, which equally is a natural science laboratory. Highlighted the forthcoming conference in Norway (Langesund, 16-20 Sept).

In response to questions, related to the extent to which the integrity of fragile but important scientific environments would be protected, and issues in maintaining the quality of the Global Geopark 'brand'. Africa seems to be missing out in GeoPark initiative - is there an African network Is this a lack of awareness and how is the GGN addressing this. In response, Latin America and Africa is missing - Nov 2010 a special workshop was hosted in Brazil and this year will organise one in Morocco (one geo-park proposed there). Need to work with delegates to improve this situation. The Secretariat noted that IGCP is very happy that an African network is started to come together and the creation of the African Association of Women Geologists will help in this regard. Need to wait 2 years to see the

impact of SIDA funding in capacity building in the region and highlighted the importance of the following agenda item: the ESEA .

12. UNESCO Earth Science Education in Africa

S Gaines (DEES) reported on an update of the scoping exercise on this initiative, alongside the field officers from Cairo (M Al-Aawah) and Nairobi (F Toteu). Initiative emerged out of IYPE proposal for an earth science education programme for all of Africa. Noted the partners (Geol Soc Africa, CIFEG, Assoc African Women Geoscientists, IYPE, IUGS). 5 regional workshops to identify capacities, needs and strategies. This hghlighted the lack of a societal awareness of the relevance of geosciences and identified a number of common recommendations e.g. promote teacher and student exchange, establish regional networks of expertise, increase outreach, increase geoheritage, geoparks. Some of these recommendations are being put into action. Strong levels of female participation in these initiatives.

Cairo field office announced a forthcoming Geoparks conference in El Jadida, Morocco (21-28 Nov 2011) on 'Aspiring Geoparks in Africa and the Arab World'

3 activities emerged out of the 23rd Colloquium of African Geology: (1) Network of African Earth Science Institutions; (2) Geological Mapping Training (allows African counties to assess their own wealth); and (3) Early Education in Earth Science.

Following the scoping exercise, a major launch event will be held in Paris in 2011 to validate the workshop synthesis, finalise an action plan and present the initiative to funders, partners and governments.

In response to a question about how many universities in Africa offer geology degrees, the Secretariat noted that there was a UNESCO article on this which could be circulated to those that want this.

Delegate from Ghana suggested strengthening links with research centres, such as the karst centre.

In response to a question that many university laboratories are under-equipped and they need equipment - is that being addressed. The Secretariat highlighted a mechanism within UNESCO Participation Programme which could tackle this issue. FT emphasised that this was exactly what the NAESI research network is meant to tackle - will show the potential for exchange between institutions.

MM - would like to see UNESCO coordinating a geohazard training for Africa. After the training, some countries support training of geologists so would be good to link with those. Also, improving access of African teachers to scientific publications. The Secertariat noted that UNESCO does organise training workshops around the Med in seismic hazard, and through the category 1 centre in Trieste organise training workshops in seismic hazard there is a chance for more African students to join this. UNESCO starting a new co-operation with Nature and other scientific publication group to allow greater access to scientists in developing countries.

13. Co-operation with the Commisssion for the Geological Map of the World

Manuel Pubellier gave an update on the CGMW's ambition to publish small-scale thematic Earth Science maps of the continents, the oceans and the world. In partnership with IUGS and UNESCO. Complementary but distinct from the 'One Geology' project, which is a project to make web-accessible geological map data worldwide. The latest integrated digital maps from various surveys were shown and the remaining challenges were summarised. Important conclusion was the need to sustain the One Geology initiative with the enduring work of the CGMW.

CNR-IUGS-IGCP Italian National Committee

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IGCP Italian Report
is a publication of the National IGCP Committee of Italy.

A Reminder:
If you participate in an IGCP Project do not forget to submit a short report by December 15th, 2012, to be included in the next issue of the IGCP Italian Report. The report should be <1,500 words long and should include the following information:
- number, title and duration of project;
- leader(s) and affiliation(s);
- name and affiliation of Italian correspondent;
- description of Italian involvement in the project during the year 2012 (including research interests and results, participation and organization of meetings, etc.);
- publications authored by Italian participants during the year 2012.