COMMISSION DE LA CARTE GÉOLOGIQUE DU MONDE
COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD

BULLETIN 56

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Resolutions of the General Assembly
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SECRETARIAT

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COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD (CGMW)

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(AS AT FEBRUARY 2010)

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COMMISSION DE LA CARTE GEOLOGIQUE DU MONDE (CCGM)
COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD (CGMW)

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(AS AT FEBRUARY 2010)

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EDITORIAL

*At a time when the world is facing all sort of difficulties these days, thanks to the continuing support of all the geological surveys and other stakeholders, the past two years have been rich in the completion of large projects. This involvement of all contributors including the private sector for punctual operations indicates that large NGOs with international recognition constitute an effective means to ensure the sustainability of international projects. Communication among all the participating countries has been very fruitful not only at the General Assembly and but also at the CGMW booths in various international meetings, including EGU and, since 2009, at the AGU. Following the accomplishment of the Geological Map of the World at 1:25M, several maps at scale 1:5M have been completed. They all added to the existing geological map series: the recent geological maps of Europe (*IGME*) and South America. One of the largest projects ever conducted is the International* Geological Map of Asia at 1:5M *(IGMA5000) which is now complete and will be published in 2012. Meanwhile, the International* Geological Map of the Middle East (IGMME) *is following closely. After two decades of work, another successful project, also at the scale of 1:5M, is indeed the* Tectonic Map of Africa*, published in 2010, which constitutes a milestone in the world of tectonic maps. New options have been utilized in the display of features such as the sedimentary basins. Geophysical maps are also on-going. The first* World Gravity Map *is being compiled and will be published next year. As for the Seafloor Maps, the whole* Structural Map of the Atlantic *is under completion. Several parts of seafloor such as the Arctic and the Antarctic regions have been incorporated into the current tectonic maps. The next challenge is to combine these maps with the Pacific Ocean towards a* World Ocean Map *that is due to be presented at the IGC in Brisbane next August.*

In the meantime, the size of the compilation with increasing details requires that part of the information be included within a database associated with the paper maps. CGMW is recognizing a growing demand of digital data which must be met without jeopardizing quality and legibility of printed maps. The strengthening collaboration with the OneGeology *project is also a way to present CGMW-validated data such as the World Ocean Map data, or the 1:5M geological maps. This way, end users are free to combine the information with the one furnished by* OneGeology. *Certainly, the coordinated efforts of all of us will continue to provide more accurate and scientifically sound international geological information. You are invited to visit CGMW booth next August 2012 in Brisbane!*

EDITORIAL

Malgré la conjecture difficile de ces derniers temps, mais grâce au soutien sans faille des services géologiques et de tous nos partenaires, les deux années passées ont été fructueuses dans l'achèvement de grands projets de cartographie globale. Cette participation de tous y compris de plusieurs partenaires industriels sur des projets ponctuels confirme que des organismes internationaux comme notre ONG sont un moyen fiable et durable de mener à bien des projets internationaux. La communication entre tous, notamment lors de l'Assemblée Générale, mais aussi par notre présence remarquée dans des réunions internationales comme l'EGU, et depuis 2009 l'AGU a été productive. Après la publication de la Carte Géologique du Monde à l'échelle 1 :25M, plusieurs cartes à l'échelle du 1:5M ont vu le jour. Elles s'ajoutent aux cartes géologiques récentes de l'Europe (IGME) et de l'Amérique du Sud. Un des projets grandioses terminé est la *Carte Géologique Internationale de l'Asie au 1 :5M* qui sera publiée en 2012. La *Carte Géologique internationale du Moyen Orient* suit de peu. Parmi les autres projets remarqués figure bien entendu la *Carte Tectonique Internationale de l'Afrique*, publiée en 2010 et qui par les choix faits dans l'homogénéisation et dans la représentation de certains éléments comme les basins sédimentaires, constituera un jalon dans le monde des cartes tectoniques. Les cartes géophysiques entreprises à la CCGM, comme la nouvelle *Carte Gravimétrique du Monde* avancent également, ainsi que les cartes des fonds marins. Ainsi, la *Carte Structurale de l'Atlantique* est achevée. Les parties extrêmes des fonds marins des zones polaires, étant incluses dans les cartes tectoniques de l'Arctique et de l'Antarctique respectivement, il ne restera que le Pacifique pour être à même de construire la *Carte de l'Océan Mondial* qui devrait être présentée à l'IGC de Brisbane en Août 2012.

Bien sûr, en raison de la taille des cartes et du niveau sans cesse croissant de détails, il convient de stocker une partie de l'information importante dans les bases de données qui sont de plus en plus associées aux cartes imprimées. Le besoin de données digitales par les utilisateurs est lui aussi sensible et la CCGM se doit de conserver l'équilibre entre fournir des informations plus denses et préserver la qualité et la lisibilité des cartes imprimées. Ainsi, la collaboration renforcée avec le projet *OneGeology* constitue une façon appréciable de fournir des données validées scientifiquement par la CCGM, telles celles puisées dans les cartes des fonds marins ou des cartes des continents à l'échelle du 1 :5M, à celles sélectionnées par l'utilisateur dans *OneGeology*. Certainement, ce type de collaboration et la mise en commun de tous nos efforts continueront à produire de l'information géologique solide sur les prochaines cartes. Rendez-vous au stand de la CCGM à Brisbane en août 2012 !

Manuel Pubellier
Secretary General

Paris, December 2011

GENERAL ASSEMBLY
Paris, UNESCO
15-16 February 2010

CGMW GENERAL ASSEMBLY

Plenary Sessions: Unesco-Bonvin

Paris, 15th -16th February, 2010

1, rue Miollis 75015 Paris (Building VI, level: -2, Room XIII)

PROGRAMME

MONDAY 15TH FEBRUARY 2010	**MORNING**	**PLENARY SESSION**
09:00 – 09:15	Registration and coffee welcome.	
09:15 – 10:00	Opening addresses – Jacques Charvet (IUGS Vice-President) – Robert Missotten (UNESCO)Chief, Earth observation section. Division of Ecological and Earth Sciences. – Report of the Bureau Meeting by the President and Secretary General. Changes in the composition of the Bureau, ratification by the General Assembly. **Reports of CGMW Vice-Presidents in charge of Continental Subcommissions**	
10:00 – 10:15	– **Europe**: K. Asch • Report on the activity of the subcommission.	
10:15 – 10:35	– **Northern Eurasia**: O. V. Petrov Current projects and the Circum-Polar Tectonic Map.	
10:35 – 10:45	COFFEE BREAK	
10:45– 11:10	– **Africa**: J.P. Milesi, F. Toteu. • The tectonic map of Africa • The seismotectonic Map of Africa • Booklet "The changing faces of Africa"	
11:10 – 11:25	– **Asia**: Jin Xiaochi • The International Geological Map of Asia: IGMA, 1:5M.	
11:25 – 11:45	– **South America**: C. Schobbenhaus • The GIS of the Geological Map of South America. • The Geological Map of Patagonia. • The Tectonic Map of South America: U. Cordani.	
11:45 – 12:00	– **North America** • Current projects: The Geological map of North America at 1:5 M scale.	
12:00 – 12:30	– **Antarctica**: G. Leitchenkov, G.Grikurov. • The Tectonic Map of Antarctica. END OF THE MORNING SESSION	
12:30 – 13:30	LUNCH	

MONDAY 15TH FEBRUARY 2010 AFTERNOON	PLENARY SESSION
	Reports on the activity of thematic Subcommissions
13:30 – 14:00	– **Seafloor Maps:** P. Miles. • The South Atlantic Structural Map: P. Miles. • The structural map of the Mediterranean: J. Mascle
14:00– 14:15	– **Metamorphic Maps:** R. Oberhänsli • The Metamorphic Map of the Eastern Mediterranean.
14:15 – 14:30	– **Metallogenic maps**: E. Zappettini. • The GIS Mineral Deposits: S. Cherkasov.
14:30 – 14:45	– **Tectonic maps**: I. Pospelov • Report on the progress of the Subcommission 2008-2010
14:45 – 15:00	– **Middle-East**: A Saidi, A. Haghipour. The IGMME International Geological Map of the Middle East (2nd edition).
15:00 – 15:15	COFFEE BREAK
15:15 – 16:00	– **Geophysical maps,** M. Mandea • The World Digital Gravimetric Anomalies Map (WDGM): S. Bonvalot. • OtheProject MATEO (Observed **M**agnetic **A**nomaly Lineations and **T**ectonic **E**lements of the World's **O**cean): J. Dyment. • European map of magnetic declination, M. Mandea. • World Magnetic Anomaly Map – WDMAM 2011: J. Korhonen
16:00 – 16:15	– **Hydrogeological Maps** • Current projects: W. Struckmeier.
16:15 – 16:30	– **Natural Hazards Maps**: H. Kato • Report on the activity of the subcommission.
16:30 – 16:45	Pedagogic projects. CGMW Secretary General • The Geodynamics of Asia: M. Pubellier, Jin Xiaochi. • Géoscience Education in Africa. S. Gaines (UNESCO)
16:45 – 16:55	– **IGC 34 Brisbane:** Ph. Rossi • Information on the 34th IGC.
16:55 – 17:00	Any other projects
	END OF THE AFTERNOON SESSION.

TUESDAY 16TH FEBRUARY 2010	MORNING — PLENARY SESSION
09:00 – 09:30	**ONEGEOLOGY** : State of the art : Ian Jackson.
10:00 – 12:00	Reading and approval of the resolutions by the General Assembly.
12:00 – 13:30	LUNCH
14:00 -18:00	**INVITED LECTURES** — PLENARY SESSION
14:00 – 14:30	S. Finney, President of the International Commission of Stratigraphy (ICS). "The International Commission on Stratigraphy: objectives, progress, challenges"
14h30-15h00	C. Harrison. "The Geologic Map of the Arctic"
1500-15h30	Ph. Bouysse: "The Geological Map of the World, 3rd edition"
15h30-16h00	Jin Xiaochi: "The International Geological Map of Asia (*IGMA)*and some international geological problems in Asia"
16h00-16h30	D. Frizon de Lamotte. "The representation of sedimentary basins on the tectonic map of Africa"
16h30-17h00	U. Cordani. "The Tectonic Map of South America"
17h-17h30	M. Mandea. "Lithospheric features seen by magnetic and gravity CCGM maps"
17:30	Closing of the General Assembly - Cocktail

RESOLUTIONS OF THE CGMW GENERAL ASSEMBLY

PARIS, FEBRUARY 2010

RÉSOLUTIONS DE L'ASSEMBLÉE GÉNÉRALE DE LA CCGM

PARIS, FÉVRIER 2010

THE COMMISSION

1. **expresses its thanks** to the UNESCO for its essential support to the activities of the CGMW and for providing the facilities for the holding of this General Assembly in Paris, and

2. **thanks** Dr. R. Missotten , Chief of UNESCO Global Earth Observation Section, for his support to CGMW mapping programs, and

3. **thanks** IUGS Vice-President J. Charvet who, on behalf of Prof. A. Riccardi IUGS President, confirmed its support to CGMW, and EPISODES's Chief Editor for contributing to the promotion and visibility of CGMW publications, and

4. **acknowledges** the resignations of Prof. J. P. Cadet, A. Haghipour, E. dos Santos, José Macharé, Peng Qiming from their positions respectively as President of CGMW, Vice-President of the CGMW S/C for the Middle East, CGMW Deputy Vice-President of the CGMW S/C for South America, Secretary General of the CGMW S/C for South America, Deputy Secretary General of the CGMW S/C for South and East Asia and,

5. **endorses** the appointment of the following new Bureau Members:

   - Dr Philippe Rossi, BRGM, as CGMW President, and
   - Dr Manuel Pubellier, CNRS-Ecole Normale Supérieure, Paris, as CGMW Secretary General,
   - Dr Abdollah Saidi, General Director of the National Geosciences Database of Iran, as CGMW Vice-President of the Subcommission for the Middle East,
   - Mrs Marzieh Esterabi Ashtiani, Geological Survey of Iran, as CGMW Secretary General of the Subcommission for the Middle East,
   - Mr Varoujan K. Sissakian, Geological Survey of Iraq, as CGMW Deputy Secretary General of the Subcommission for the Middle East,
   - Dr. Mark Jessell, IUGS Tectask Commission, as Deputy Secretary General of the CGMW Subcommission for Tectonic maps,
   - Dr. Paula Cornejo, SERNAGEOMIN, Chile, as CGMW Secretary General of the Subcommission for South America,
   - Mr. Jorge Gómez Tapias, INGEOMINAS, Colombia, as CGMW Deputy Secretary General of the Subcommission for South America,
   - Prof. Jin Xiaochi as CGMW Deputy Secretary General of the Subcommission for South and East Asia,
   - Dr Bruno Vrielynck, CNRS-Université Pierre & Marie Curie, as Financial Supervisor,

6. **After recommendation** of the CGMW Bureau, **nominates** the outgoing President of CGMW Jean-Paul Cadet, as Honorary President and lifetime member of CGMW Bureau for his achievements and services to CGMW and,

7. **takes note** that the CGMW Financial Committee placed under the chairmanship of Prof. R. Oberhänsli has approved the Commission's accounts for 2008 and 2009, and

8. **thanks** the Geological Surveys who besides their membership fees provide also to the Commission support especially as concerns the contribution of their geologists, researchers and, engineers and technicians who had been working in regional and/or continental and/or oceanic syntheses to compile CGMW maps, and

9. **extends** its most sincere thanks to the BRGM (French Geological Survey) for its continuous and generous support, and more particularly for renewing the nomination of a member of its staff to fulfil the duties of President of CGMW, and

10. **thanks** CNRS-INSU for allowing Dr. M. Pubellier to dedicate part of his time to CGMW Secretariat General, and

11. **approves** the sponsorship of private companies in order to publish specific maps as well as the inscription of such sponsorships in the maps, after case by case analysis, and

12. **warmly thanks** Mrs. Clara Cardenas for her strong involvement in the preparation of this General Assembly, and

CONTINENTAL SUBCOMMISSIONS

SUBCOMMISSION FOR EUROPE

13. **supports** the CGMW Subcommission for Europe to scrutinize future work on user-oriented cross-boundary geochemical maps and databases, and

14. **appreciates** the BGR's useful endeavour, supported by the European FP6 TRACE project, to vectorize the *International Quaternary Map of Europe* and **encourages** them to continue, and

15. **congratulates** the work of OneGeology-Europe Workpackage 3 led by Dr. Kristine Asch and her team to create a common vocabulary of scientific terms and definitions (citable) to enable future semantic and geometric harmonisation of geological maps at a 1 : 1 Million scale within Europe, and

16. **appreciates** the close cooperation of OneGeology-Europe Workpackage 3 with the global standard vocabulary group of the IUGS-Commission on Geoscience Information (CGI) Vocabulary Task Group and the OneGeology initiative to ensure global consistency, and

17. **thanks** the CGMW DIMAS Working Group to provide valuable input into this vocabulary, and

SUBCOMMISSION FOR AFRICA

18. **acknowledges** the presentation at the General Assembly of the completed 2nd edition of the *Tectonic Map of Africa* and GIS, to be printed this year after peer review, and

19. **congratulates** the CGMW Sub-Commission for Africa for the efforts towards the finalization of the *Tectonic Map of Africa* and **thanks** all the organizations, geological surveys and companies that supported the long term project of the *Tectonic Map of Africa* at 1:5M Scale: the UNESCO, the Council for Geoscience (South Africa), the BRGM, the Geological Society of Africa, TOTAL, AREVA, CNRS-INSU, for their support to gather and synthesize the geology of onshore and offshore basins, and

20. **acknowledges** the progress in the growth of the Organization of African Geological Surveys (OAGS), knowing that many regions in Africa have not been surveyed for years and lack basic geological maps, and **encourages** CGMW to provide its expertise on large scale syntheses to this organization towards developing strategies to fill the gap of mapping coverage in the continent, and

21. **recalls** that the *Seismotectonic Map of Africa* (project *SeTMA*) is a high priority project under the CGMW and UNESCO aegis with the full support of IUGS, **acknowledges** the leading role of the Council of Geoscience of South Africa (CGS) in this project, in cooperation with the Geological Society of Africa (GSAf), and the ICSU Regional office for Africa; and **asks** these bodies to speed up the project and to set up Working Groups that include experts various regions of Africa with a strong mandate to complete it before the 23rd Colloquium of African Geology in Johannesburg in January 2011, and

22. **expresses** its satisfaction for the publication of the booklet "Changing Face of Africa, elements of African geology" and **urges** the CGMW and African partners (Geological Society of Africa, ICSU-ROA, and others) to find efficient ways to widely disseminate at low cost the booklet throughout Africa and other teaching institutions worldwide, and

23. **acknowledges** the UNESCO Earth Science Education initiative in Africa, the recent progress made during the five Regional Workshops organized in Africa, and **urges** the International Union for Geological Sciences (IUGS) to give its full support to this initiative so vital in increasing the impact of Earth Sciences for the development of African continent, and

SUBCOMMISSION FOR NORTH AND CENTRAL AMERICA

24. **acknowledges** the realization, by the US Geological Survey (USGS) of the digital *Geological Map of North America at the 1:5 M scale*, and **thanks** USGS for providing free copies of the CD-ROM of the map to be distributed during the CGMW General Assembly, and

25. **encourages** the discussions between USGS and the Geological Society of America about possible production of a reduced scale version of the above-mentioned map dedicated to education, and

26. **takes note** of the proposal from Dr. Jorge Ellis (UNESCO) of the necessity to launch the preparation and publication of the CGMW *Geological Map of Central America* (*Mapa geológico de Mesoamérica: Centroamérica y parte de México*) at 1:5 M scale, this synthesis still requiring funding, and

SUBCOMMISSION FOR SOUTH AMERICA

27. **congratulates** Profs. U. Cordani and V. Ramos for the completion of the first draft of the *Tectonic Map of South America at 1:5 M scale,* with the support of the Geological and Mining Survey of Argentina (SEGEMAR) and the Geological Survey of Brazil (CPRM), to be completed in 2011, and

28. **expresses** its satisfaction for completion of the map sheet NA.22 of the *Geological and Mineral Resources Map of South America project at 1:1 M scale, and related data bases (GIS-South America 1:1 M)*, prepared by the geological surveys of Brazil (CPRM) and France (BRGM), harmonizing trans-boundary geological and geophysical information, and

29. **appreciates** the progress achieved in the preparation of several map-sheets of the *Geological and Mineral Resources Map of South America project at 1:1 M scale, and related data base (GIS-South America 1:1 M),* carried out by several geological surveys of South America, and

30. **appreciates** the advancement of the project of the *Geological Map of Patagonia at 1:1 M scale* synthesized by SEGEMAR (Argentina) and SERNAGEOMIN (Chile), and recommends its presentation at the next IGC in Brisbane and,

SUBCOMMISSION FOR SOUTH AND EAST ASIA

31. **expresses** its deepest satisfaction with the preparation of an upgraded complete draft of the *International Geological Map of Asia (IGMA)* at 1:5 M scale displayed during the General Assembly, and

32. **thanks** the Geological Survey of China for its full support to the completion of the IGMA project and the funding of the 4th workshop on the IGMA held in Beijing, China, October, 24-27, 2009, and

33. **was informed** that the final IGMA meeting to be held in 2011 is planned to be accompanied by a scientific international meeting on the geological evolution of Asia where international specialists of the geology of Asia will be invited; a thematic symposium has been planned for the next 34th IGC (Brisbane 2012), in collaboration with a related IGCP project, about the IGMA map under the chairpersonship of Prof. Acad. Ren Jishun (cf. resolution n°9 of the Minutes of the 4th workshop on IGMA 5000, Beijing, China, October, 24-27, 2009), and

34. **recognizes** that, as planned at the first Workshop of the project held in 2005 in Beijing, a new draft map as compiled that filled up all the planned coverage of the *International Geological Map of Asia* (1:5 M) (IGMA 5000) has constructed also a related database, and

35. **expresses** thanks to CGMW and its Subcommission for Northern Eurasia, Subcommission for Middle East and Subcommission for Seafloor Maps, and to the five regional groups and the compiling group of IGMA 5000; their support and efforts enabled the scheduled completion of the new draft of IGMA 5000, and

36. **encourages** to promote bilateral and multi-lateral collaboration and field investigation, in order to solve problems of IGMA 5000 and critical geological issues in Asia, and

37. **was informed** about plans to promote the step by step compilation of thematic geological maps on the basis of IGMA 5000, such as maps of Asia on geological hazards, paleotectonics and paleogeography, metamorphism, magmatism, mineral resources, etc., and

SUBCOMMISSION FOR THE MIDDLE EAST

38. **appreciates** the efforts of the Subcommission especially as concerns the presentation of a digital draft of the second edition of the *International Geological Map of the Middle East (IGMME) at 1:5 M scale* being compiled with the support of the Geological Survey of Iran, and **thanks** all the collaborators who have and/or are providing to the authors the relevant unpublished, or last published information to update the map, prior to submission for peer review before publication, and

39. **asks** the Subcommission for Middle East to take into account the corrections/modifications discussed with the experts during the different meetings namely the indications dealing with onshore and offshore structural features, and

40. **thanks** the Geological Survey of Iran for its effective and continuous support in the realization of CGMW maps (*International Geological* and *Metallogenic Maps of the Middle East*), and

41. **acknowledges** the following proposals presented by the Subcommission for Middle East acting for all the Geological Surveys of the Middle East area: *Digital Geochronology Map of the Middle East at 1: 5 M, Magmatic Map of the Middle East, Tectonostratigraphic Map of the Middle-East and Distribution Map of Precious & Semi-Precious Stones* and *Minerals of the Middle East* and **proposes** these maps to be implemented as layers of the GIS – IGMME after validation, and

42. **was informed** of the proposition from the CGMW Subcommission for Middle East of the compilation of a *Quaternary Geology Map Atlas of the Middle East at 1:5 M scale*, and **recommends** this proposal to be discussed with INQUA after agreement of each country of the Subcommission for Middle East, and

43. **received** the proposition from the CGMW Subcommission for Middle East of the realization of an *Aeromagnetic map of the Middle East* and, taking into account the great heterogeneity (and /or the lack) of public data in the Middle East area, **recommends** the available new data to be provided to the WDMAM working group to upgrade the latest version of the map, and

44. **was informed** of the proposition from the CGMW Subcommission for Middle East of the realization of an *Earthquake hazard Map of the Middle East* and **recommends** this project be discussed with UNESCO and with the Subcommission for geological hazards maps, after agreement of each country of this Subcommission, and

45. **received** the proposition from the CGMW Subcommission for Middle East of the realization of a *Geotourism Map of the Middle East* (Outstanding Geosites of Middle East), and **proposes** that this mapping project be hosted under the auspices of IUGS & UNESCO Geoparks program, and

46. **was informed** of the proposition from the CGMW Subcommission for Middle East of the realization of a *Map of Water Resources of the Middle East* and **considers** this project for discussion with UNESCO, IAH, and Subcommission for Hydrogeological maps after agreement of each country of the Subcommission for Middle East, and

47. **received** the proposition from the CGMW Subcommission for Middle East of the realization of a *Geological Map Atlas of the Middle East seas* and **considers** this project for discussion with UNESCO and the Subcommission for Seafloor Maps after agreement of each country of the Subcommission for Middle East, and

48. **thanks** and **congratulates** Dr A. Haghipour for his efficiency during his Vice-Presidency of the CGMW Subcommission for the Middle East and **asks** that he would accompany the IGMME project up to its completion, and

SUBCOMMISSION FOR NORTHERN EURASIA

49. **supports** the initiative of the national geological surveys of Russia, Sweden, Finland, Iceland, Denmark, Canada and Norway to collaborate with the Subcommissions for Northern Eurasia and Tectonic Maps for the compilation and publication of the *Tectonic Map of the Circumpolar Arctic at 1:5 M scale* as part of the *Circumpolar Atlas of Geoscience Maps* project at 1:5 M under the aegis of CGMW and UNESCO, and

50. **identifies** the *Circumpolar Atlas of Geoscience Maps* project (scale 1:5 M, under the program leadership of VSEGEI, Russia) as filling a major gap in our understanding of the Earth, the geological processes involved in its evolution, and its endowment of mineral and energy resources; this ambitious project has already successfully produced specific thematic layers for this atlas through the leadership of the Norwegian Geological Survey (NGU) for gravity and magnetic maps (publication in 2010), and from the Geological Survey of Canada for bedrock geology (preliminary map published in 2008), and

51. **appreciates** that a first organizational meeting held in mid-January 2010 launched the Tectonic map of the Circumpolar Arctic in St. Petersburg with VSEGEI, CGMW and French colleagues conducting tests on a draft legend whose results were presented at a second organizational workshop (Feb. 14, 2010) involving Russian, French, Canadian and Danish colleagues along with new ideas for next steps arising from discussions at that time, and

52. **encourages** strongly the participation of all circumpolar nations in this important new initiative; the next meeting to take place in St.-Petersburg, VSEGEI, April, 7-11, 2010, and

53. **acknowledges** the publication by VSEGEI of the *International Atlas of Central Asian Maps* comprising the bedrock geology, tectonic, metallogeny, and energy resources maps and **emphasizes** the importance of the ongoing second phase of the project under the title *3-D geological structures and metallogeny of Northern, Central and Eastern Asia*, and

54. **recognizes** that these two flagship projects represent the combined efforts of all Arctic and Asian geological surveys; which will result in a profound improvement in our understanding of the geological evolution of the Earth, and **acknowledges** the contribution of Dr. O. Petrov, President of CGMW Subcommission for Northern Eurasia, Dr. S. Shokalsky, Secretary General of the Subcommission for Northern Eurasia and Prof. T. Koren in the compilation of the Atlases of Geological, Geophysic, Tectonic and Metallogenic Maps of the Central Asian and Circumpolar region; these projects having fostered an activity of the CGMW thematic subcommissions, and **appreciates** the support of Dr. A. Ledovskikh, the Head of Russian Federal Agency for Mineral Resources, and Dr. A. Morozov, the Vice-Head of the Agency, in the carrying out of the Central Asian and Circumpolar projects, and

SUBCOMMISSION FOR AUSTRALIA-OCEANIA

55. **thanks** Geoscience Australia for its involvement in the organization of the next 34th IGC in Brisbane, Australia, and its offer to give access to the relevant digital data for the completion of the *Structural Map of the Southern Pacific Ocean*, and

SUBCOMMISSION FOR ANTARCTICA

56. **appreciates** the progress achieved by Dr. G. Grikurov and Dr. G. Leitchenkov so far in compilation of the draft of the *Antarctic Structural Map* and the progress achieved in upgrading its underlying legend, and **looks forward** to the soonest completion of the final draft and its approval by an Antarctic expert group, and

57. **expects** its publication for the next 34th IGC in Brisbane, Australia and **acknowledges** Dr. G. Leitchenkov's detailed information on the status of a variety of ongoing international Antarctic earth science projects relevant to geological cartography of the South Polar region, and

58. **awaits** the soonest resolution of the remaining technical issues and the providing of texts and supplementary graphic products to illustrate the Antarctic tectonic structure and geodynamic history, and

59. **encourages** contacts between the CGMW Seafloor Maps Subcommission and the CGMW Antarctic Subcommission to homogenize the polygons and the color codes of the ocean floor with other adjacent maps (Southern Atlantic and Indian oceans), and

60. **asks** to consider the space covered by the ice sheet be filled with remotely sensed data and/or inferred dotted limits of the craton in accordance with the structural sketch map, and

THEMATIC SUBCOMMISSIONS

SUBCOMMISSION FOR TECTONIC MAPS

61. **appreciates** the cooperation between the Subcommissions for Northern Eurasia and Tectonic Maps in the realization of tectonic cartographic projects for the territory of Asia, and

62. **supports** the initiative to produce the first *Tectonic map of ophiolite zones and sutures at scale 1:5 M* within the framework of the International project (Russia, China, Mongolia, Kazakhstan and the Republic of Korea) and *3D Geological structures and Metallogeny of the Central, Northern and Eastern Asia* on the basis of the tectonic map of this project, and

63. **appreciates** the importance of the creation of the *Map of Dolerite Dyke Swarms and Related Units and Related Ore Deposits for Northern Eurasia* and **is ready to help** in the carrying out of this Canadian-Russian joint project, and

64. **acknowledges** the preparation of a *Tectonic Map of the Alps* associated with a GIS and designed in order to fit with the CGMW *Map of the Metamorphic Structure of the Alps* (published for the 32nd IGC in Florence), and

SUBCOMMISSION FOR METALLOGENIC MAPS

65. **congratulates** Acad. D. Rundqvist and his group for the publication in 2008 of the *Largest Mineral Deposits of the World*, and **encourages** the Russian-French Metallogenic Laboratory to proceed with the second edition of the CD, which should include corrections received from reviewers along with new information compiled since its publication, and

66. **acknowledges** the production of the *GIS Metallogenic Map of Europe at the scale of 1:5 M* by Dr. Cherkassov from the Vernadsky Museum and Dr. D. Cassard from BRGM, under the aegis of CGMW, to be presented at the 34th IGC in Brisbane and **expects** the first draft of the map in GIS format to be available for revision by the end of 2010, and

67. **congratulates** Dr. Aghanabati for the completion of the final draft of the *Metallogenic Map of Middle East at 1:5 M* following the CGMW standards and **expresses its satisfaction** for its publication by the Geological Survey of Iran (GSI), and **expects** its presentation during the next General Assembly to be held at the 34th IGC in Brisbane with an explanatory notes booklet, and

68. **approves** the preparation and publication of a Mineral Resources and Environment educational booklet under the coordination of Dr. E. Zappettini (SEGEMAR), and

69. **welcomes** the information on the progress in the preparation of the *World Map of the Mineral Resources of the Oceans* at 1:25 M and **asks** Acad. Pei Rongfu to prepare a draft of this map, and a timing of realization according to CGMW standards, for the next General Assembly in Brisbane 2012, and

70. **appreciates** the preprint of the *World Metallogenic Map of Large and Superlarge Mineral Deposits at 1:25 M*, and **asks** the general coordinator Acad. Pei Rongfu (Chinese Academy of Geological Sciences) to suggest a list of international reviewers to ensure the quality of the map and explanatory notes, prior to its acceptance and inclusion of UNESCO and CGMW logos, and definitive printing (with the name of the reviewers) and diffusion, and

71. **thanks** Acad. Pei Rongfu for the preparation of a very first draft of the *Metallogenic Map of Asia at 1:5 M* and **expects** the preparation of this draft produced in close cooperation with the Subcommission for East and South Asia and the IGMA coordination team, for its presentation during the next General Assembly to be held at the 34th IGC in Brisbane, and

SUBCOMMISSION FOR HYDROGEOLOGICAL MAPS

72. **thanks** Dr. W. Struckmeier and his joint CGMW Subcommission, and the IAH-commission on Hydrogeological maps, and the WHYMAP Group assisted by the Federal German Institute for Geosciences and Natural Resources (BGR) for activities to promote Hydrogeological mapping and dissemination of groundwater related information, and mapping applications of the web site www.whymap.org, respectively, and

73. **encourages** the subcommission and the WHYMAP group to compile additional layers such as karst, lithology of aquifers and deep aquifers, for the WHYMAP GIS and,

74. **commends** the efforts of the subcommission and the WHYMAP steering committee to build in the *Worldwide Hydrogeological Map Information System* (WHYMIS) in the WHYPAM web site, as an online archiving system for hydrogeological map at all scales, and

75. **invites** Geological Surveys and publishers of small-scale hydrogeological maps to provide pertinent maps to complete the information system, and

76. **welcomes** the finalisation of the *International Hydrogeological Map of Europe (IHME 1500)* by the printing of sheet D6 Athens of the IHME maps series, and in SE Europe to complete the last two drafts of sheets D5 Budapest and E5 Bucharest, and

SUBCOMMISSION FOR NATURAL HAZARDS MAPS

77. **expresses** its satisfaction for the new progress made by the Geological Survey of Japan on the web based *Geohazards Map of East Asia* which was open to the public in 2007, and **encourages** the working group of the Japanese Geological survey to contact SEGEMAR and other surveys in order to homogenize the relevant information for these maps, and

SUBCOMMISSION FOR SEAFLOOR MAPS

78. **acknowledges** the completion of a second edition master of the CGMW *Map of the Structural Map of the North Atlantic Ocean* for future publication in a new Atlantic structural map in 2012, and

79. **welcomes** the proposal to generate a CD pdf version of this map, and

80. **welcomes** the compilation of initial elements of the CGMW *Map of the South Atlantic Ocean* and the collaboration of South American Subcommission members and their peers in a map workshop, and

81. **hopes** a single map merging the maps of Northern and Southern Atlantic Ocean be printed in order to provide a global view of this ocean, and

82. **acknowledges** the compilation of the CGMW *Structural Map of the Mediterranean*, and

83. **appreciates** the efforts done in the compilation of CGMW *Caribbean and Pacific structural maps*, and

84. **hopes** the second edition of the CGMW *Structural Map of the Indian Ocean* be updated prior to new publication and **asks** the Geological Survey of India to provide to the coordinator of the map the relevant data, and

85. **welcomes** collaboration with Subcommissions of Antarctica and the Middle East in coordinating maps, and

SUBCOMMISSION FOR METAMORPHIC MAPS

86. **acknowledges** that the *Map of the Metamorphic Structure of the Alps* is being transferred into a GIS system and data are added in order to utilize future releases in depth to retrieve detailed data on mineral distribution, metamorphic P-T paths and metamorphic ages as well as references, this work being realized at the University of Potsdam by Prof. Romain Bousquet and Prof. Roland Oberhänsli, and

87. **was informed** that the *Map of the Metamorphic*

Structure of the Eastern Mediterranean is intended to be released at the 34th International Geological Congress in Brisbane; a first meeting was held in Autumn 2009 in Istanbul and the concept for the map was accepted by the participants; the tasks for a first assessment were distributed and a first compilation shall be made in early summer 2010; so far colleagues from Turkey, Greece, Germany and France take part in this compilation; contacts with colleagues in Armenia, Iraq and NE Iran were established, and a convention with the Turkish Geological Survey MTA has been signed, and

88. **acknowledges** that the *Metamorphic Map of the World* is slowly advancing by using various compilations available and is prepared in Potsdam by Prof. Roland Oberhänsli in collaboration with Dr. Manuel Pubellier, CGMW Paris and co-workers, and

SUBCOMMISSION FOR GEOPHYSICAL MAPS

89. **thanks** Dr. Carmen Gaina from the Geological Survey of Norway (NGU) for leading the international cooperative project for the compilation of the *Magnetic and Gravity Anomaly Maps of the Arctic* (MGAMA), which are in review process and ready for printing in 2010, and

90. **thanks** Drs. Sylvain Bonvalot and Anne Briais from Bureau Gravimétrique International (France) for their continuous efforts in the realisation of the project for the compilation of the *World Gravity Map (WGM)*, the first draft of which is under preparation, and

91. **encourages** the efforts made by Dr. Jérôme Dyment from Institut de Physique du Globe de Paris (France) in coordinating the efforts to release the *Magnetic Anomaly Lineations and Tectonic Elements of the World's Oceans (MATEO)*, and

92. **encourages** the efforts made by Dr. Juha Korhonen from Geological Survey of Finland in coordinating the efforts to release the second edition of the *World Digital Magnetic Anomaly Map*, which will be ready in 2011, and

93. **encourages** the efforts made by Dr. Oliver Heidbach from Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences (Germany) in coordinating the efforts to realise the *World Stress Map*, and

94. **approves** the realisation of the project of *European Declination Map* by Dr. Gerald Duma from the Central Institute for Meteorology and Geodynamics (Austria) and the MAGNETE team, and

95. **recommends** to the authors of the CGMW map *Plate Tectonics from Space* to study the feasibility of a new kinematic map based on a mantle reference by using SKS waves, and

OTHER MAPPING PROJECTS

GEOLOGICAL MAP OF THE WORLD AT 1:25 M SCALE

96. **congratulates** Dr. Philippe Bouysse to have realized a highly upgraded synthesis of the 3rd edition of the *Geological Map the World* at 1:25 M scale and 1:50M scale (the latter being accompanied by a physiographic map), with explanatory notes, displaying updated onshore and offshore areas and printed on time for this General Assembly, and

STANDARDS AND MISCELLANEOUS

97. **encourages** to upgrade the *Geologic Time Scale 2008* in collaboration with the International Commission on Stratigraphy (ICS) in order to prepare a new issue for the 34th IGC in Brisbane, taking into account the possible changes in the colors and the addition of normalized age indices, and

98. **encourages** discussions to establish a subcommission for the domains of soil sciences and **recommends** to examine the feasibility of a *Global Soil and Terrain Map* in conjunction with the related organisations and UNESCO, and

99. **encourages** the feasibility study of a *Lithological Map of the World* by the group Klimacampus from Hamburg (Germany), and

100. **encourages** further contacts between CGMW with the International Medical Geology Association concerning the possibility of cartographic projects on medical geology, following a suggestion from the Subcommission for the Middle East, and

OneGeology

101. **was informed** that in order to strengthen the relations between CGMW and OneGeology, a member of the CGMW executive team in addition to attending the meetings of the Steering Group, should attend the Operational Management Group of OneGeology and that a member of OneGeology should attend the CGMW Bureau biennial meeting, and

102. **acknowledges** the role of OneGeology in the worldwide diffusion of geological knowledge, and

103. **hopes** CGMW maps are widely diffused through the OneGeology portal and **encourages** sharing of resources at international meetings, and

104. **encourages** the work on geoscience vocabulary in cooperation with the CGI Commission of IUGS and the DIMAS working group.

These resolutions were adopted at the last plenary session of the General Assembly on Tuesday 16th February 2010 at UNESCO, Paris, France. The CGMW Executive Bureau thanks all Delegates that attended the General Assembly for their participation and contributions to the discussions and edition of the present resolutions.

CHANGES ON CGMW BUREAU MEMBERS

Submitted to the approval of CGMW Bureau Members and the ratification by the General Assembly

Resignations and nominations			
	Outgoing	Nominations	
		Name	Organisation/Country
CGMW PRESIDENT	J. P. Cadet (P)	Philippe Rossi (P)	BRGM, France
CGMW SECRETARY GENERAL	Philippe Rossi(SG)	Manuel Pubellier (SG)	Ecole Normale Supérieure, Paris, France
CGMW auditor		Bruno Vrielynck	Université Paris 6, France
Subcommissions			
TECTONIC MAPS		Mark Jessell (Deputy SG)	IUGS' Tectask group
MIDDLE EAST Vice-President	A. Haghipour (P)	A. Saidi (P)	National Geosciences Database of Iran
MIDDLE EAST Deputy Vice-President	A. Saidi (SG)	M. Esterabi Ashtiani (SG)	Geological Survey of Iran
MIDDLE EAST Deputy Secretary General		V. K. Sissakian (Deputy Secretary General)	Geological Survey of Iraq
SOUTH AMERICA Secretary General	E. dos Santos (VP-D)	Paula Cornejo (SG)	SERNAGEOMIN, Chile
SOUTH AMERICA Deputy Secretary General	José Macharé (SG)	Jorge Gómez Tapias (SG-D)	INGEOMINAS, Colombia
SOUTH & EAST ASIA Deputy Secretary General	Pen Qiming (SG-D)	Jin Xiaochi (SG-D)	Geological Survey of China

P = President
VP = Vice-President
VP-D = Deputy Vice-President
SG = Secretary General
SG-D = Deputy Secretary General

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CGMW Plenary Assembly / *Assemblée Plénière de la CCGM*
Paris, UNESCO – February 16, 2010

List of maps displayed during sessions
(published or drafts)

Liste des cartes exposées pendant les séances
(publiées ou maquettes)

ASIA

CHINA
Institute of Geology, Chinese Academy of Geological Sciences

- *Geological Map of Asia*
  1:5 M, draft. Compiler: IGMA team

SOUTH AMERICA

ARGENTINA
SEGEMAR (Geological Survey of Argentina)
SERNAGEOMIN (Geological Survey of Chile)

- *Mapa metalogénico de la region fronteriza entre 28° y 34°5*
  1:500 000 M, draft. Compiler: E. Zappettini *et al.*

COLOMBIA
INGEOMINAS (Geological Survey of Colombia)

- *Mapa geológico de Colombia*
  1:1 6000 000 M, published. J. Gómez Tapias *et al.*

CGMW maps

- *International Metallogenic Map of the Middle East*
  1:5 000 000, draft. Compiler: Dr. A. Aghanabati – CGMW S/C for Metallogenic Maps
- *International Geological Map of the Middle East*
  1:5 000 000, draft. Compiler: CGMW S/C for the Middle East
- *Tectonic Map of Africa*
  1:5 000 000, CGMW S/C for Africa. Final draft.
  J. P. Milesi, D. Frizon de Lamotte, G. de Kock, F. Toteu
- *Tectonic Map of South America*
  1:5 000 000. Draft. CPRM/U. Cordani, V. Ramos
- *GIS South America at 1:1 000 000 – Sheet NA 21 Macapá*
  Published map. CPRM/Brazil. C. Schobbenhaus
- *Geological Map of the World, 3rd edition*
  1:25 000 000 Compiler: Dr. Ph. Bouysse
- *Geological Map of the World, 3rd edition*
  1:50 000 000 Compiler: Dr. Ph. Bouysse
- *Physiographic Map of the World, 3rd edition*
  1:50 000 000 Compiler: Dr. J. Ségoufin

CGMW PROGRAMS

I. MAPS COMPLETED AND PUBLISHED SINCE THE OSLO GENERAL ASSEMBLY (AUGUST 2008)

- Geological Map of the World (3rd edition) at 1:25 M and 1:50 M; sheet 1: Physiography, sheet 2: Geology, with explanatory notes

MAPS CO-PUBLISHED UNDER CGMW AEGIS

- 2nd edition of the World Stress Map at 1:50 M (GFZ-Germany)
- Geological Map of the Arctic at 1:5 M (Geological Survey of Canada)
- Largest Mineral Deposits of the World, first edition 2008 (Russian-French Metallogenic Laboratory) – CD-ROM
- International Atlas of Central Asian Maps (bedrock geology, tectonic, metallogeny and energy resources maps by VSEGEI-Russia)

BOOKLETS

- "Visages du continent africain. Éléments de géologie africaine". Original version in French, 48 p.
- "The changing faces of Africa. Elements of African geology", 48 p.

II. CURRENT MAPPING PROGRAMS TO BE COMPLETED IN 2010-2011

GEOLOGICAL MAPS

- Geological Map of the Middle East at 1:5 M (2nd edition)

TECTONIC / STRUCTURAL MAPS

- Tectonic Map of Africa at 1:5 M (published in November 2010)

GEOPHYSICAL MAPS

- Magnetic and Gravity Anomaly Maps of the Circumpolar Arctic (MGAMA) (published in November 2010)
- 2nd edition of the World Digital Magnetic Anomaly Map at 1:50 M
- World Gravity Map at 1:5 M (WGM)
- Magnetic Anomaly Lineation and Tectonic Elements of the World at 1:50 M (MATEO)

METALLOGENIC MAPS

- Metallogenic Map of the Middle East at 1:5 M (to be published in 2012)

III. MAPPING PROGRAMS TO BE COMPLETED FOR THE 34TH IGC-BRISBANE 2012

(This list is not exhaustive)

GEOLOGICAL MAPS

- International Geological Map of Asia at 1:5 M (IGMA)
- Geological Map of Patagonia at 1:1 M

GEODYNAMIC/TECTONIC MAPS

- Tectonic Map of the Circumpolar Arctic at 1:5 M
- Tectonic Map of the Alps and related GIS at 1:1 M
- Tectonic Map of Asia at 1:5 M (ITMA 5000)
- Tectonic Map of South America at 1:5 M
- Structural Map of the Antarctica at 1:10 M
- Tectonic Maps of the Central, Northern and Eastern Asia at 1:5 M
- Tectonic Map of ophiolite zones and sutures of the Central, Northern and Eastern Asia at 1:5 M
- Seismotectonic Map of Africa at 1:5 M (SeTMA)

STRUCTURAL MAPS OF THE OCEANS

- Structural Map of the Southern Atlantic at 1:20 M & 2nd edition of the Structural Map of the North Atlantic to be published as a single Map.
- Structural Map of the Southern Pacific at 1:20 M
- Structural Map of the Mediterranean at 1:2 M
- Structural Map of the Caribbean at 1:20 M
- Structural Map of the Indian Ocean at 1:20 M (2nd edition)
- Structural synthesis at the scale of 1:10 M of theWorld's oceans to be carried out in digital format based on the published maps and current seafloor mapping projects. This data will be available for consultation in the OneGeology portal.

METAMORPHIC MAPS

- Map of the Metamorphic Structure of the Eastern Mediterranean

METALLOGENIC AND RESOURCES MAPS

- GIS of the Metallogenic Map of Europe at 1:5 M
- World Metallogenic Map of Large and Superlarge Mineral Deposits at 1:25 M

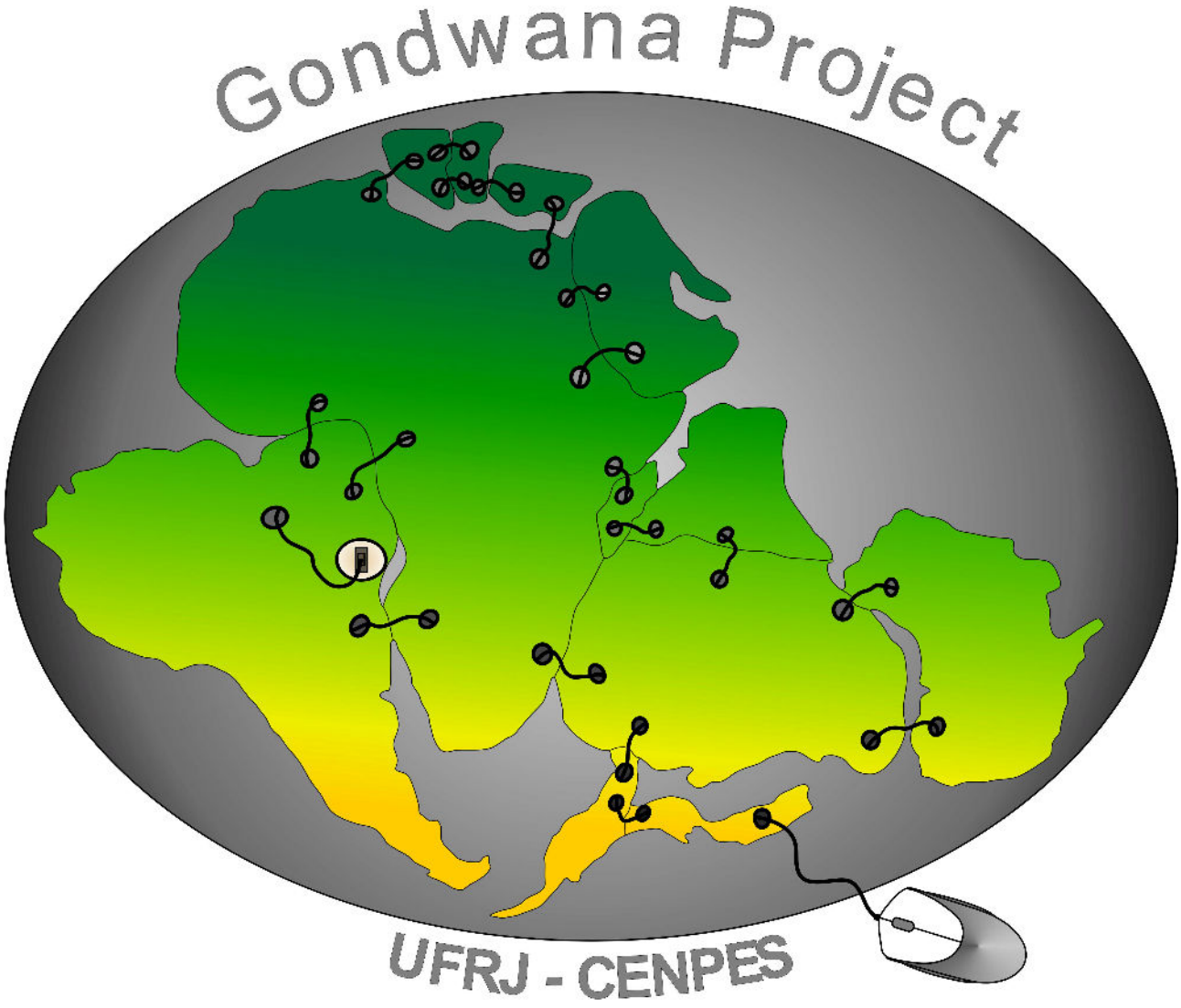
IV. OTHER PROGRAMS PROPOSED FOR THE PERIOD 2010-2014

- Geological and Mineral Resources Map of South America at 1:1 M scale and related databases (GIS South America 1:1 M)
- Geological Map of Central America at 1:5 M
- GIS of the International Quaternary Map of Europe
- Metamorphic Map of the World at 1:25 M
- European Declination Map at 1:5 M
- 2nd edition of the Plate Tectonics from Space Map based on SKS wave measures.
- World Map of the Mineral Resources of the Oceans at 1:25 M
- Metallogenic Map of Asia at 1:5 M
- Global Soil and Terrain Map of the World at 1:25 M
- Lithological Map of the World at 1:25 M

BOOKLETS

- The changing face of Asia. Elements of Asian geology
- Mineral and environmental resources of the World

MAPPING PROGRAM FOR SUBMISSION TO THE NEXT GENERAL ASSEMBLY



THE GONDWANA MAP PROJECT
THE GEOLOGICAL MAP AND THE TECTONIC EVOLUTION OF GONDWANA

Aims and background

The "Gondwana Map Project" aims to update the Gondwana Map of de Wit´s 1988 with an approach of the 21st century. In order to do so, the Gondwana concept will be revised with new interpretations and research approaches using the vast new geological data produced in the last 30 years and also the new computer technologies. The goal is also to create a reference center in South America to locate all data base from Gondwana Paleocontinent and generate the new Gondwana map integrating data from the five actual continents. This data and the results of the project will be exposed at a **Gondwana Memory Center** (GMC).

This Project was first discussed four years ago. Dr. Renata da Silva Schmitt (UFRJ) and Dr. Edison Milani (PETROBRAS) are members of the International Gondwana Committee, since 2005, coordinated at that time by Dr. Bryan Storey (University of Canterbury – New Zealand). This committee is responsible for the organization of the international Gondwana Conferences. In 2008, Milani and Schmitt proposed Brazil as the venue for the next Gondwana Conference, during the Gondwana 13 Conference in Dali (Yunnan Province – China). During this meeting the International Gondwana Committee discussed and approved Brazil as the next venue. In addition, the committee suggested that a project to build a new Gondwana Map should be proposed by a group of scientists. At that time, the main argument was that this ambitious enterprise was essential for the world scientific community and for the knowledge of the continents and their margins. Back in Brazil, Schmitt and Milani discussed the possibility to propose this Project with the financial support of PETROBRAS, the Brazilian Petroleum Company. Milani coordinated for more than a decade a group of scientists of South America and Africa that discuss regularly the correlation between these two continents, with emphasis on the Paleozoic and Mesozoic sedimentary basins. Schmitt coordinates two international projects of correlation between Africa and South America, with emphasis on the mobile belts of Brazil, Uruguay, Namibia and Angola.

In the end of 2010, the Gondwana Map Project was proposed by the UFRJ team and approved by PETROBRAS, which gave five years to the UFRJ group to deliver the map and its additional products. A new geoprocessing digital laboratory was conceived located at the Universidade Federal do Rio de Janeiro (UFRJ) and a group of four specialized professionals on cartography and geology are working at the lab since the beginning of 2011.

Parallel to this, the UFRJ group organized the Gondwana 14 Conference (www.gondwana14.org), which was held in Búzios, a cozy resort located at Rio de Janeiro State, southeast Brazil. The meeting occurred last month (25th September to 30th September, 2011) and was a great success with scientists from more than 35 countries. During the Conference, Schmitt and Milani presented officially the Gondwana Map Project to the Gondwana Community. A one day workshop addressing the challenges of building up a new Gondwana took place on the 25th of September. In the morning program, Schmitt presented the Gondwana Map Project. In the sequence, Prof. Maarten de Wit (South Africa) gave a talk about the making of the 1988 Gondwana Map. To finish the first part of this workshop, Prof. Sergei Pisarevsky (Australia) presented a talk about the Rodinia Map experience, which he coordinated and concluded on 1998. The second part of the workshop, after lunch, was dedicated to a two hours discussion about the challenges and aims of building a new Gondwana map. More than 50 scientists worldwide attended to the workshop and expressed opinions about several issues concerning this enterprise.

The challenges to conceive this new map were brought up by the participants of the workshop:

- **The theme of the map: geological or tectonic.** The original de Wit´s map is geological, whilst the one organized by Raphael Unrug (1994) is a geodynamical map. With the facilities today of the GIS data set, it is possible to generate in less time several thematic maps. Most of scientists agreed that a geological map is less interpretative, therefore more realistic to the data. The generation of a tectonic map is possible, but only after the building of a good geological data set.
- **Legend of the map**. This is one of the crucial points of the project, and everybody agreed. The scientists must have workshops and discussions about the best legend, which will make the map clear

and useful. De Wit emphasized the need to expand the Neoproterozoic legend, since the detailed geological data from this period of time increased vertiginously in the last three decades.

- **The fit of the continents and the paleogeography.** This challenge is one of the most interesting. The last two decades are characterized by a huge amount of new data and interpretation obtained from the ocean floors and the continental margins. These sets will facilitate a better fit of the actual continents in order to restore the Gondwana. The stretched present continental margins are better known and distinct stretch factor for margin sectors would be applied.
- **Restoring the original shape of Gondwana, the Gondwana margins.** The original de Wit´s map show a Gondwana made up by a collage of the five big actual continents. The best challenge of this project is to rebuild the Gondwana margins during its development. This restoration implies on attaching the exogenous terranes of Gondwana back to their original positions and studying the connections between the intracontinental Paleozoic and Mesozoic basins with the oceans that surrounded Gondwana.
- **Detail of Pre-Gondwana continents.** Certainly the new advance that made a great impact on geology in the last decades is the improvement of geochronological labs and metodologies. The pre-Gondwana continents (commonly referred as cratons) are now better known and their nature influenced on the Gondwana formation. Incorporating this knowledge to the Gondwana map and tectonic evolution is another challenge.

Expected results

The results of the project are listed below in each item.

a) Basic sciences
- The first edition of the new Gondwana Map;
- Sets of thematic maps of Gondwana, at different time slices;
- Publication of three complete volumes about Gondwana: (1) The formation, (2) the history, (3) The fragmentation;
- Present detailed geology at key areas for correlating South America and Africa with new maps, structural, petrological, geochrmical, geochronological data, obtained with field work in both continents.

b) Applied sciences and technology
- Digital data base with the geology of Gondwana to be available online worldwide;
- Creation of a website providing all the geological data base of Gondwana – world reference, also including map and publications, no **Gondwana Digital Center of Geoprocessing (GDCG)**

c) Educational outreach
- Creation of the **Gondwana Memory Center (GMC)**, at the Federal University of Rio de Janeiro (UFRJ), with a permanent exhibition of specimens from all Gondwana parts, fossils, rocks, minerals, and literature;
- Make an itinerary exhibition of Gondwana Memory Center to visit all Gondwana fragments, specially the developing countries;
- Publish educational books about Gondwana for first grade schools around the Gondwana fragments, in the mode of the CGMW CGMW "Faces" collection (Africa, Alps, Pangaea, Messinian Salinity Crisis, marine geology).

Location, logistics and scope

The headquarters of the project will be located in South America at the Federal University of Rio de Janeiro (UFRJ). The university is set in an island (Ilha do Fundão) in Rio de Janeiro city, one kilometre from the International Airport Galeão. The island has most of the university buildings and also the Research Center of Petrobras (the main Brazilian Oil Company), which is the major financial support of this project).

The formation and processing of the digital data base of Gondwana Map Project will be done at the recently inaugurated **Gondwana Digital Center of Geoprocessing Laboratory (GDCG)**

The **Gondwana Memory Center (GMC**) will be built in three years also at the UFRJ. The location of this memory center will be on the Geodiversity Musuem of the Geoscience Institute.

The geochronological data generated by this project will come from laboratories from all over the world most of them ran by the participants of the project.

The geophysical data will be gathered on public sphere and processed at the universities involved and also the Petrobras Research Center (CENPES).

Local and international scope

This scope encompasses the day by day work inside the UFRJ in partnership with Petrobras. The actions will be devoted to the implementation of the Digital Center Gondwana de Geoprocessamento (CDGG) and the Gondwana Memory Center (GMC). Researchers not taking part in the project (from other Brazilian universities) will be invited in order to be acquainted with the space at the UFRJ and to participate in workshops.

The project outside Brazil will be implemented via the international network of research associations or cooperation agreements, using the internet facilities to follow-up the advances and the integration of the databanks spread around the world.

The execution of the project in this scope will result from the combined work of four work groups set up by geographic areas:

- Gondwana West: South America and Africa
- Gondwana East: Australia, Antarctica and India
- Central Gondwana and lesser lands: concerns mainly the east-west junction belts (African orogen and Antarctic, including Madagascar and the Arabian peninsula)
- Peripherical Gondwana: deals mainly with the margins of this vast continent, including mobile bands such as Saldania and Sierra de La Ventana.

With exception of the Gondwana West group, the rest of the groups are formed by foreign researchers who will supply data and scientific support to carry out the map and the three volumes on Gondwana. The list of the contacted researchers is enclosed in annex. For each group one or two coordinators will be appointed to centralize the information.

Occasionally, it will be necessary to invite a researcher to participate in the activities of the local scope for a period of one to six months. For the first year, it is envisaged to invite Dr.Maarten De Wit (University of Cape Town, South Africa), author of the first Gondwana Map in 1988. He already agreed to join the project and his knowledge will be of great importance for the launching, besides the data base of the1988 map. It is planned to invite a researcher every year.

The follow-up and the assessment of the activities achieved in this scope of the project every six months will take place video conferences, and meetings of small groups will be convened in the frame of international symposia and geology congresses.

Executive team

The headquarters of the Executive Team is located in the Department of Geology of the UFRJ. This well known center for the teaching, research and diffusion of geology has appointed several researchers to work in this project. A group of eight professors compose the team. The Coordinator, Renata S. Schmitt, is member of the International Committee of Gondwana since 2005. Its main subject of research is the correlation between the Cambrian-Ordovician blocks of the Atlantic margins of South America and Africa, and its reactivation in the formation of the South Atlantic. This work is developed jointly with Rudolph Trouw and Andres Ribeiro. The first has won recognition internationally with his works on the micro-tectonics field, and locally with his three decades research on the tectonic and paleoenvironemtal evolution of the Brasilia and Ribeira belts. Professor Ribeiro has specialized in these belts and also in the stratigraphy of the neoproterozoic craton basins. The three researchers have been working for several years in Namibia (western Africa) and in Uruguay on the continental correlation. This experience will be essential for our correlation and advanced field work.

Prof. Jose Carlos Seoane is an specialist on geoprocessing and worked in the 1988 Gondwana map with Maarten De Wit, and is a lynchpin of the CDGG. Prof. Leonardo Borghi will contribute with the correlations

of the paleozoic basins. Prof. João Graciano will also contribute with the stratigraphy of the paleo-mesozoic basins, and in particular with studies of organic substance and dating of stratigraphy levels of relevance for the correlations. Prof. Ismar Carvalho will collaborate in organizing the data on Gondwana paleontology of importance for the correlation and the compilation of the map. Moreover, his **vast experience in the** museology area and basic sciences outreach will be of great value in the setting up of CMG. Professors Claude Porto and Everton Bongiolo will be responsible for the organization of the data on economic geology, that is, the concentrations of mineral resources and energy associated to the configuration of Gondwana.

The project foresees that one of the researchers appointed be awarded a grant to receive a one year training abroad in the area of regional geology and mapping techniques.

Associated teams

One of the most important counterparts of the project is the fostering of discussions on Gondwana between the international team of researchers and the researchers of Brazilian universities. The four groups of geologic integration with the project had been divided in accordance with the continental blocks that formed Gondwana and are nowadays continents. Besides the four groups, groups of specific subjects had been set up such as geochronology, paleogeography and geophysics.

(a) Gondwana East (to complete by the coordinator) (India, Australia, Antarctica and small Eurasian blocks)
(b) Central Gondwana and lesser lands (to complete by the coordinator) (Africa)
(c) Peripherical Gondwana (to complete by the coordinator) (Africa and South America)
(d) Gondwana West
Group of specialists in Geocronolgy
Group of specialists in Geophysics
Group of specialists in Paleogeografy

Among the above, some will come to Brazil for short visits, three of them for up to six months. These visits will be basic to prepare the meetings of international scope and to advance the map. The three visits of foreign researchers (duration six months each) will be covered by grants of EV-A type.

The project also foresees regional field trips of Brazilian researchers for meetings on correlation between the areas studied by different groups of researchers.

In additional to the above-mentioned collaborators, the project foresees the remunerated participation of staff serving at the UFRJ. To follow and to carry through works of compilation of regional geology and mapping, two PhD geologists will be hired at different periods on a two-year basis contract. A doctor in geophysics with specialization in potential methods will participate in the project for one year. This professional will correlate the Gondwana terranes using the available geophysical data in magnetometry, gravimetry and cintilometry. A computer science professional specialist in the creation and maintenance of web sites will be awarded a two-year contract to create the CDGG and CMG web sites.

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E-mails: renatagondwana@uol.com.br, renata.schmitt@pesquisador.cnpq.br
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CONTINENTAL SUBCOMMISSIONS
SOUS-COMMISSIONS CONTINENTALES

Sub-commission for South East Asia	Sub-commission for Northern Eurasia	Sub-commission for Middle East
Vice-President: Ren Jishun Secretary General. H. K. Gupta Deputy Secretary General: Peng Qiming.	Vice-President: O. V. Petrov, Secretary General: S. P. Shokal'sky.	Vice-President : A. Haghipour Secretary General: A. Saidi.

THE INTERNATIONAL GEOLOGICAL MAP OF ASIA

Ren Jishun, main Coordinator

Minutes of the 5th Workhop – 25-29 April 2011

The fifth workshop on the 1:5M International Geological Map of Asia (IGMA5000) was held in Beijing, China, from 25 to 29 April 2011. About 80 scientists from 14 countries participated in the workshop.

The main aims of the 5th workshop were: i) to display and review the new daft of IGMA; ii) to exchange scientific understandings on geological evolution of Asia and adjacent regions; iii) to discuss issues on future cooperation; iv) to display new maps of Asian countries and other continents; v) to carry out an excursion to the West Hills of Beijing examining the Mesozoic geology of this area. The meeting has been successful. The participants:

1. **expressed** their sympathy to the Japanese people regarding the heavy damages caused by the earthquake in northeast Japan, and conveyed their condolences and good wishes to the Japanese people via Japanese delegates;
2. **renewed** their agreement with the general framework and feasibility of the IGMA5000 project, which is carried out under the aegis of CGMW and with the support of UNESCO and in line with the resolutions adopted during the 1st, 2nd , 3rd and 4th workshops;
3. **underlined** the high quality of the preparation of the 5th Workshop;
4 **expressed** their congratulations to Prof. Ren Jishun and his team for the achievements in the 5th workshop on the IGMA5000, and extended their sincere thanks to China Geological Survey (CGS) and CGMW Subcommission for South and East Asia for their organization of this meeting and to the Institute of Geology, Chinese Academy of Geological Sciences (CAGS) for its warm welcome to Beijing and hospitality during the workshop; 2
5 **appreciated** the lectures on geological evolution of Asia and adjacent regions given on 26-28 April 2011;
6. **expressed** their entire satisfaction with the compilation of the updated draft of IGMA 5000, which was displayed during the meeting and subjected to comments,
7. **noted** that important progress has been done for Kazakhstan, Turkmenistan, Tajikistan, Uzbekistan and Kyrgyzstan;
8. **thanked** Academician Ren Jishun and the IGMA team for excellent organization of the 5th Workshop, and also the Chinese-Russian-Mongolian edition meeting in August 2010 and the Chinese-Vietnamese edition meeting in November 2010;
9. **required** that the countries that have not yet provided the stratigraphic columns and tectono-magmatic columns of related tectonic units to forward the columns to the compiling group as soon as possible;
10. **were informed** that in the series of pedagogic booklets that CGMW is preparing, a booklet dealing with the geology of Asia is coordinated by Dr. Manuel Pubellier and Dr. Jin Xiaochi;

11. **were informed** that in addition to the book "Geology of Asia", a booklet of explanatory notes on the compilation of the IGMA5000 will be prepared by the compilation group and will be published together with the IGMA 5000 map. Reports similar to the one presented by the participants of the Philippines or the report produced on the Geological evolution of the Middle East are expected by the Compilation group.
12. **proposed** that a test of a reduced scale IGMA would be realized to ensure a large educational distribution of the map;
13. **encouraged** that the logo of the IUGS be integrated as encouraged by IUGS for each CGMW map endorsed by UNESCO. Logos of each Geological Survey and other institutions that have contributed to the map will be displayed, but separated from the logos of the main sponsors;
14. **appreciated** gratefully the corrections done on printed draft map by regional specialists;
15. **confirmed** that the authorship should be updated according to the latest corrections;
16. **noted** that Group Leaders shall perform the final corrections on the draft map and submit those to the Compilation Group if possible before July 1st 2011. Typically, efforts should continue on the edition of structural elements of IGMA such as thrusts, overthrusts, and stratigraphic symbols, etc.;
17. **asked** CGMW to provide a digital version to the Group Leader of the Working Group IV for corrections in order to confirm their participation to the final version of the map;
18. **proposed** that the Compilation Group will be in charge of the corrections and harmonisation of the draft of all the working groups after this date. An example of the map will be provided to each participating country for ultimate checking of minor points, including geographic and physiographic names, in accordance with UNESCO standards, or "Oxford Glossary of Geographical Names". Any name which is not agreed by all participants will be omitted from the map.
19. **suggested** that the offshore area shall be revised following the agreement that:
    - the pattern shall be removed on the oceanic crust,
    - active subduction traces shall be referred to as "subduction thrusts" and be displayed with a thicker font and in black,
    - the bathymetry of the offshore area shall be underlain by a shaded bathymetry in order to show better the morphostructures, - the pattern for the accretionary wedge shall be displayed by short linear lines running parallel to the subduction thrusts.
20. **ensured** that offshore data have been reviewed and will be revised immediately after the workshop including the offshore area of North Korea;
21. **acknowledged** that for Middle East, a latest version of the digital format of the International Geological Map of the Middle East is supplied to CGMW and IGMA 5000 compilation group for homogenisation with the neighbouring maps and integration into IGMA 5000, particularly at the junction with the West Asian region;
22. **recalled** that Group leaders review the database of land and offshore areas and submit the appropriate data links to Dr. Wang Jun before July 1st 2011;
23. **were informed** that the published IGMA5000 will be presented at the next International Geological Congress (Brisbane, 2012) and a thematic symposium with the title "Geological processes of the construction of Asia" will be organized, for which active participation and contribution are called for;
24. **proposed** the following timelines to ensure proper finalisation of the corrections and respect review and printing delays:
    - July 1st 2011 – corrections and modifications on the draft map of IGMA 5000 by regional participants to be sent to the Compilation Group in Beijing. The Compilation Group should

provide without delay a copy of the present draft for the participants who could not attend the 5th Workshop,

- July 1st 2011 to October 1st 2011– Corrections to be performed by the IGMA Compilation Group,
- October 1st 2011 – the Compilation Group send to all participants the final version of the map for final review and minor corrections,
- November 1st 2011 – all participants to return their agreement or corrections to the IGMA Compilation Group, - November 1st to December 15th 2011– Finalisation and editorial correction by IGMA Compilation Group and beginning of review process, - January 2012 – Beginning of printing stage - August 2012 – Official launch and distribution of the Map at the 34th IGC in Brisbane

25. **noted** that a series of new propositions to update the IGMA map and IGMA database, as well as new overlays of the same scale (*e.g.* metamorphic map, tectonic map, metallogenic map, etc.) have been expressed. This can best be achieved by exerting more effort in improving the database. For starters, it is suggested, for instance, that cooperation between the IGMA5000 Group and ITMA (International Tectonic Map of Asia) be established, and to carry out multi-lateral researches, and to organize international workshops and field excursions.

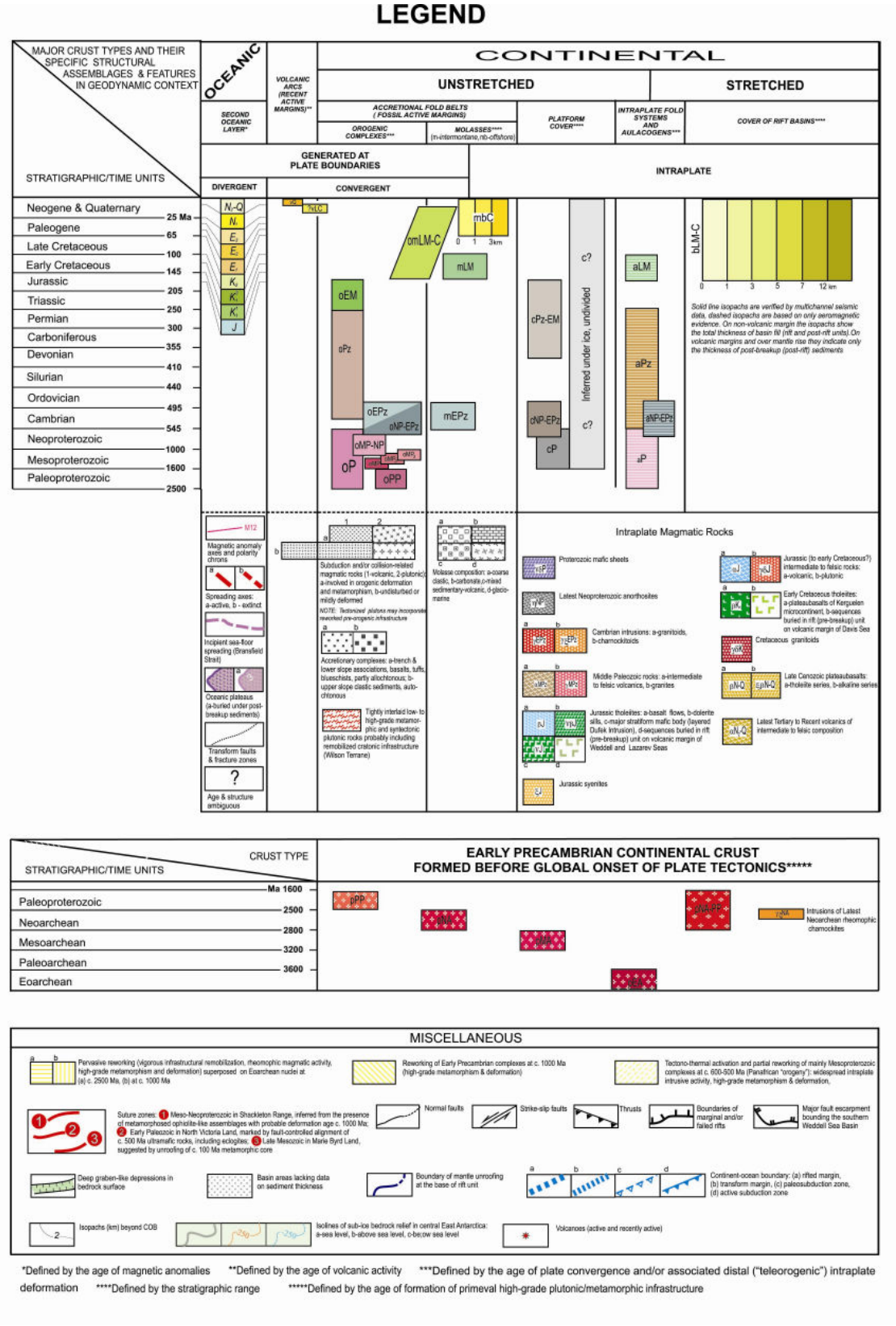
26. **encouraged** the CGMW and the IGMA to assist the new initiatives for scientific projects on the area covered by IGMA 5000.

SUBCOMMISSION FOR ANTARCTICA

TECTONIC MAP OF ANTARCTICA

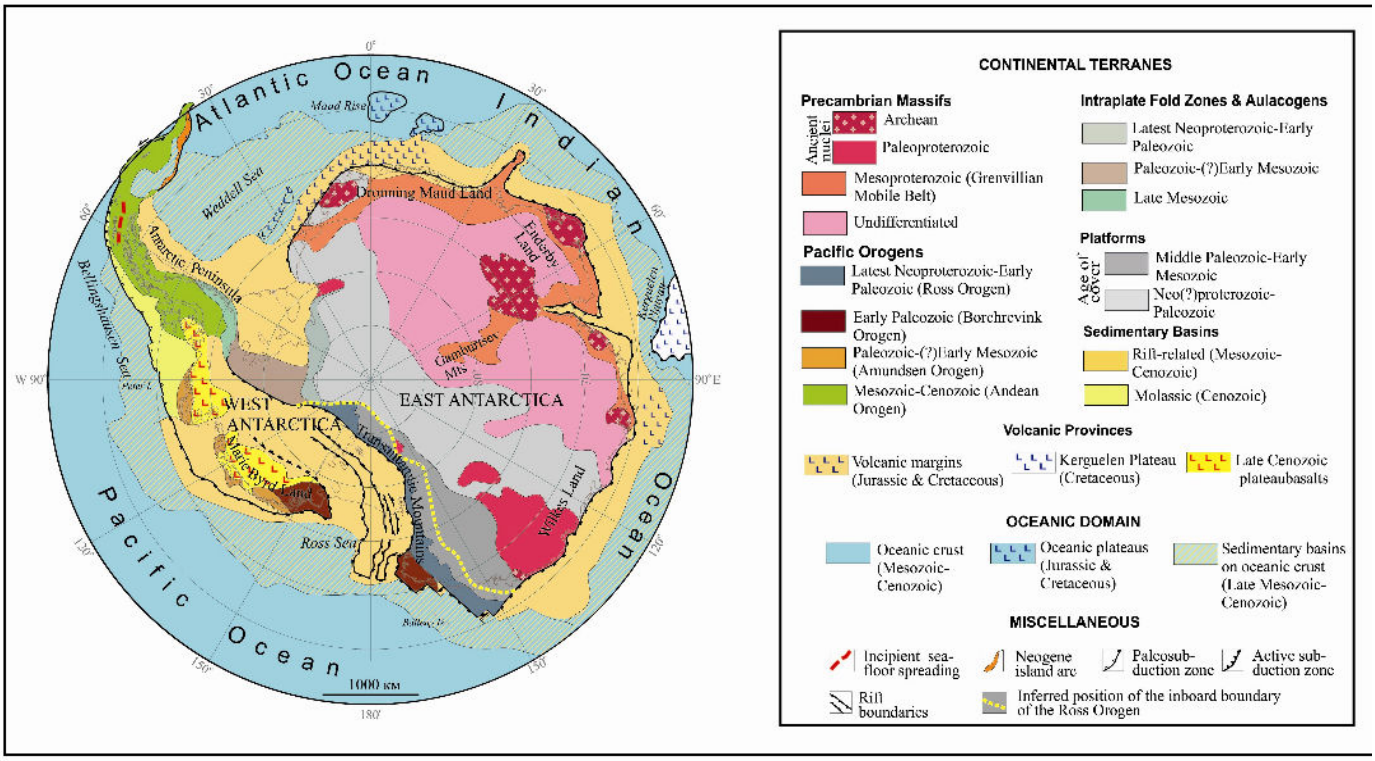
Authors: G. Grikurov and G. Leitchenkov (VNIIOkeangeologia, Russia)

Preview of the legend and insets of the final draft

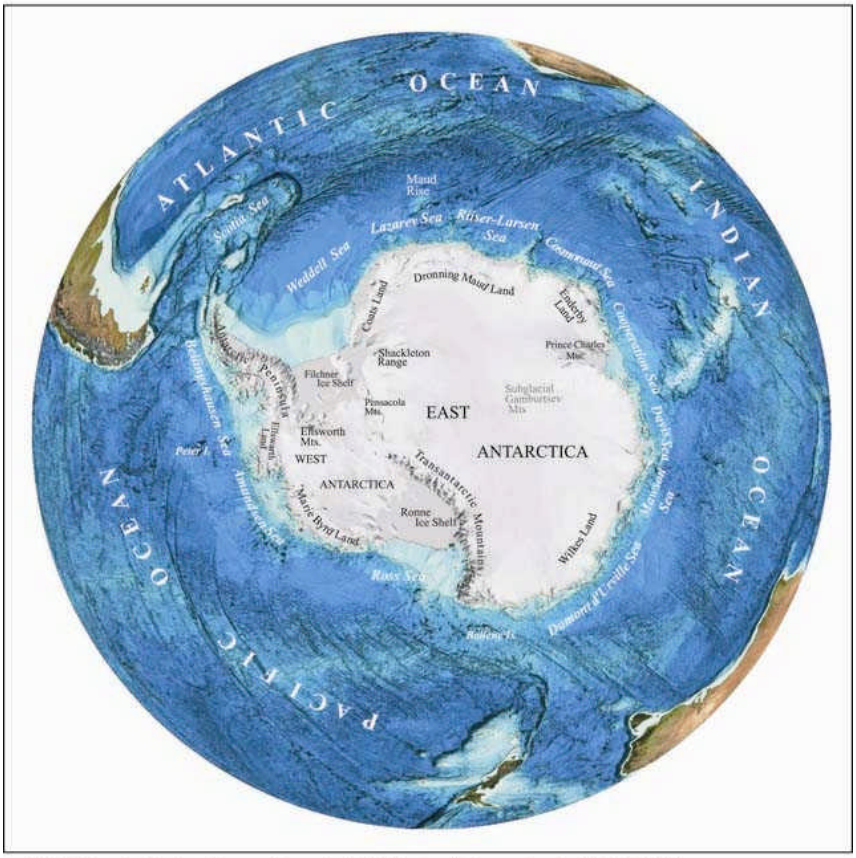


*Defined by the age of magnetic anomalies **Defined by the age of volcanic activity ***Defined by the age of plate convergence and/or associated distal ("teleorogenic") intraplate deformation ****Defined by the stratigraphic range *****Defined by the age of formation of primeval high-grade plutonic/metamorphic infrastructure

Antarctic Tectonic Provinces & Zones



BATHYMETRY OF THE SOUTHERN OCEAN AND ANTARCTIC PLACE NAMES



Modified from the **"Southern Ocean and Antarctica" GEBCO chart** (bathymetry from the GEBCO_08 Grid, www.gebco.net, Antarctic land imagery from the Antarctic Digital Database (ADD, www.add.scar.org)

THEMATIC SUBCOMMISSIONS
SOUS-COMMISSIONS THEMATIQUES

MINUTES OF THE IV WORKING MEETING OF REPRESENTATIVES OF RUSSIAN, DANISH, CANADIAN, NORWEGIAN, SWEDISH, GERMAN AND US SURVEYS FOR THE TECTONIC MAP OF THE ARCTIC (TEMAR) PROJECT

Paris, France, 14-16 April, 2011

The International Workshop on the TeMar Map at scale 1:5 M was held in Paris at the CGMW, from14 to 16 April, 2011. 25 scientists from 8 countries participated in the workshop.

List of participants*:*

Jan **Faleide** (*University of Oslo, Norway*); Christophe **Gaedicke** (*BGR; Germany*); Carmen **Gaina** (*Geological Survey of Norway –NGU*); Laurent **Gernigon** (*Geological Survey of Norway –NGU*); Garik **Grikurov** (*VNIIOkeangeologia ; Russia*); Pierpaolo **Guarnieri** (*Geological Survey of Denmark and Greenland – GEUS*); Christopher **Harrison** (*Geological Survey of Canada*); Mikhail **Kosko** (*VNIIOkeangeologia, Russia*); Loic **Labrousse** (*CGMW-University Paris VI*); German **Leitchenkov** (*VNIIOkeangeologia*, *Russia*); Nikolay **Malyshev** (*Rosneft; Russia*); Tom **Moore** (*USGS; U.S.A.*); Andrey **Morozov** (*Federal Agency on Mineral Resources of the Russian Federation-Rosnedra, Russia*); Oleg **Petrov** (*VSEGEI; Russia*); Karsten **Piepjohn** (*BGR, Germany*); Viktor **Poselov** (*VNIIOKeangeologia, Russia*); Igor **Pospelov** (*CGMW-Geological Institute-RAS, Russia*); Manuel **Pubellier** (*CGMW*); Tatyana **Reus** (*VSEGEI; Russia*); Philippe **Rossi** (*CGMW*); Dr. Sergey **Shokalsky** (*VSEGEI, Russia*); Marc **St-Onge** (*Geological Survey of Canada*); Michael **Stephens** (*Geological Survey of Sweden*); Valery **Vernikovsky** (Siberian *Institute of Oil & Gas Geology, Russia*); Bruno **Vrielynck** (*CCGM*).

The main aims of the workshop were:

To examine collective tectonic data sets of circum-arctic countries and to better understand the gaps in knowledge and data between national contributions in order to prepare the final version of the legend and consider the classification of crust types, basin types, lithological units, heat flow, transects, correlation charts, inset maps, references, database structure, and terminology.

The discussion was very fruitful.

General considerations

The participants:

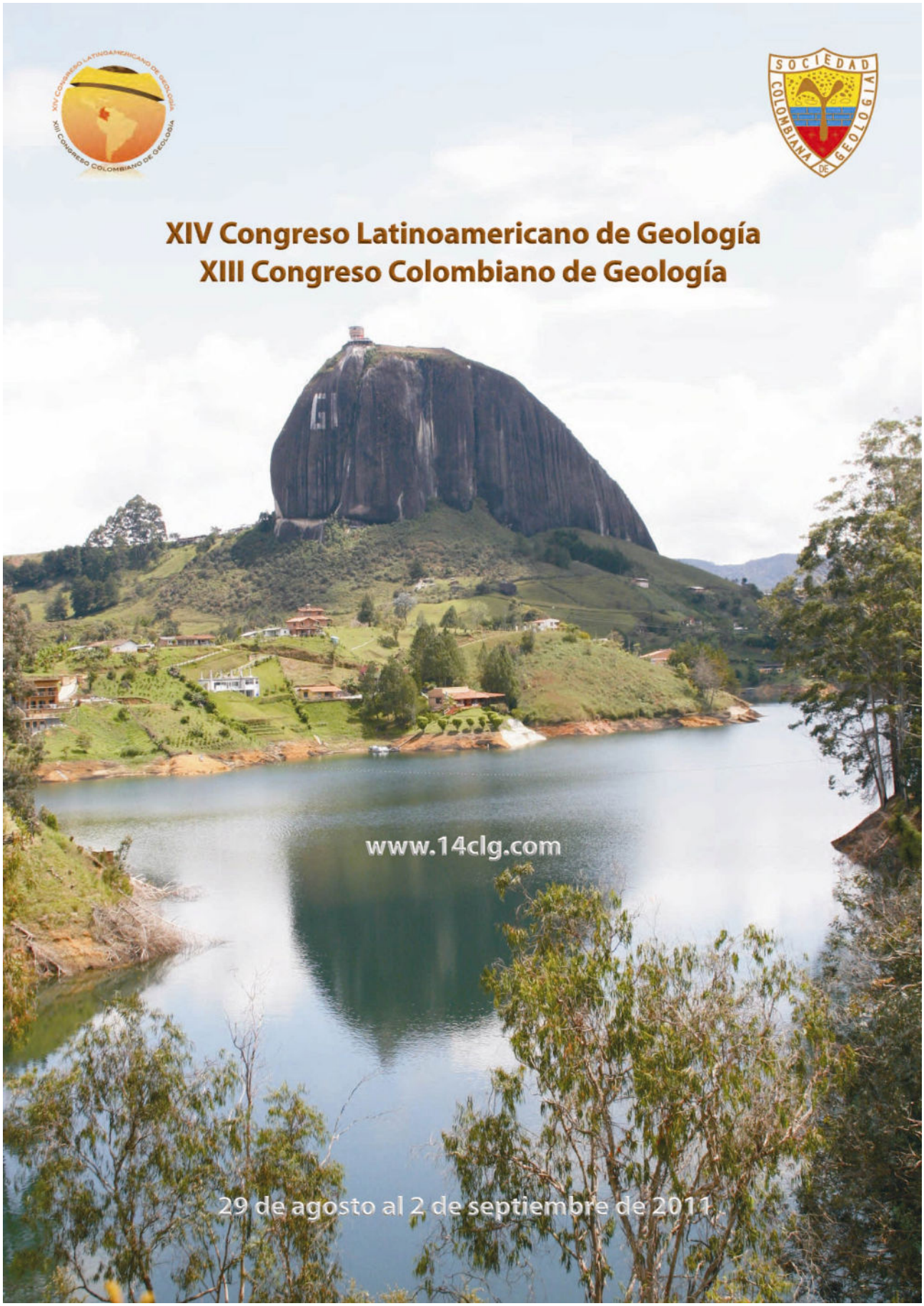
1. **Are grateful** to CGMW for the organisation of the meeting at the "Maison de la Géologie" in Paris, supported by funding from INSU-CNRS and Total Company and,
2. **underlined** the high quality of the preparation of the Workshop and especially thank Clara Cardenas for the arrangements related to the workshop,
3. **acknowledge** the remarkable effort of the VSEGEI, VNIIOkeangeologia and the Geological Institute of the Russian Academy of Sciences, and particularly Oleg Petrov and Sergei Shokalsky and their colleagues for the first draft of the TeMAr Map and for taking into account many of the remarks done by the international TeMAr group.
4. **would appreciate** promptly receiving a printable copy of the latest draft and updated database model for further comments by June 30th, 2011. The CGMW ftp site (//ccgm.serveftp.com) will be used for data transfers.

Reviewing and editing procedures

The participants agree on the following items:

5. Selection of basemap elements including coastline, toponomy, bathymetry and topography will follow the resolutions agreed to during the St Petersburg meeting in 2010: one modification is considering onshore topography and bathymetry as shaded relief.
6. Seismicity being a specific project, will be presented on a separate inset figure on the map. However, only selected earthquakes indicative of diagnostic faults or crustal blocks motions will be documented in the database. Selection and display protocols will be confirmed by the project leaders on the basis of the Norwegian expertise and sent to project participants.
7. Crustal thickness will be considered for display on separate inset.
8. Active margins are defined as those being seismically active. Fossil "active" margins will be referred to as "fossil convergent margins".
9. The boundary between continental and oceanic crust will be shown as line segments where it is well constrained, a dashed line where less well constrained or diffuse, and not represented when not known. The supporting information should be part of the metadata.
10. Epicontinental basins (sediment accumulation greater than 1 km thick?) will document the thicknesses of sedimentary sequences and be colour-coded according to the principal subsidence event. The total thickness of sediments may be represented on a separate inset. It is proposed that the compilers will be invited to CGMW for several days in order to meet the compilers of the Tectonic Map of Africa and conduct tests using various legend protocols at CGMW.
11. Blind faults are featured as a distinct vector line type.
12. Documentation of different deformation and metamorphic events will be documented in the database. Accordingly, participants will provide up-to-date ages constraints for major events. The DB will also document the affiliation of tectonic unit polygons to orogenic events. The published map will emphasize the main deformation/metamorphic events and will also document areas reworked by younger events.
13. Within orogenic belts, vector line data showing the orientation of the principal penetrative fabric will be provided.
14. Ophiolite and mantle ultramafic rocks will be provided as points or map polygons. Suture lines should be provided as vector data where constrained.
15. Tectonically relevant lithologies are grouped into 15 agreed-to terms.
16. Magmatic rocks will be grouped as arc related and collision related (syn-orogenic), and intra-plate rift-related associations (bimodal and flood basalts/traps). Anorogenic intraplate plutons (e.g. rapakivi-granite; anorthosite) and alkaline granite will be distinguished.
17. Kimberlite, carbonatites, syenites, lamproites will be captured within a single category.
18. Layered ultramafic complexes will be featured.
19. TeMAr will let the group in charge of the dike swarms and LIPs provide the data suitable to the 1:5 M scale map.
20. Syn-orogenic strata will be distinguished.
21. Metamorphic grades will include: granulite facies, amphibolite facies, greenschist facies, sub-greenschist and blueschist/eclogite/UHP.
22. Faults will be provided by the Geological Map of the Arctic as a starting point.

23. Normal and listric faults will be a single vector type. Similarly, reverse faults and thrusts will be grouped. These features will be distinguished by their map geometry.
24. There will be no differentiation between major and minor faults. Other tectonic features will include fractures, lineaments.
25. High-strain zones wider than 5 km will be captured as numeric polygons.
26. Anticlines and antiforms will be collectively shown for folded structure.
27. These resolutions will be provided to the Geological Survey of Finland for consideration and action as required.
28. The deadline for submission of TeMAr material by project participants to VSEGEI will take place prior to **October 31th, 2011**.
29. The fully populated database and updated draft map will be presented and celebrated at the next meeting of the TeMAr working group in **Hannover in early April 2012**.


XIV Congreso Latinoamericano de Geología
XIII Congreso Colombiano de Geología
www.14clg.com
29 de agosto al 2 de septiembre de 2011

14TH LATIN AMERICAN GEOLOGICAL CONGRESS

The Congress was held in Colombia at the Plaza Mayor Convention Center of Medellin from 29 August to 2 September 2011. 1249 participants from 33 countries attended 20 symposia dealing with 26 themes. The scientific program included 446 oral presentations and 307 posters. 15 keynote lecturers were invited by the organisation of the congress, among them, Dr. Philippe BOUYSSE, Scientific Advisor and ex-Secretary General of the CGMW. At the invitation of the Technical Coordinator, Mr. Jorge Gómez Tapias, the Commission displayed in the space provided by the Congress, 18 maps published by the Commission, in particular: facsimile of the first two geological maps of the World published in 1846 and 1861, and the three editions of the CGMW Geological Map of the World at the scale of 1:25,000,000. A total of 670 maps, booklets, stratigraphic charts and mouse pads were distributed in the stand.

The CGMW Symposium "Mapa Geológico de Suramérica – CGMW" took place on Thursday 1st September and presented the advance of CGMW projects in South America. The presentations were as follows:

ORAL PRESENTATIONS

Philippe BOUYSSE – Keynote lecture. ***Mapping the geology of the Earth.*** A free copy of Geological Map of the World was distributed to each attendee of the talk.

ROSSI, P. El mapeo de la segunda edición del Mapa Tectónico de África.

SCHOBBENHAUS, C. & GÓMEZ TAPIAS, J. *La cartografía geológica de América del Sur a escala continental*.

FARACO, M.T., SCHOBBENHAUS, C., GONÇALVES, J.H., LOPES, R., KROONENBERG, S., DE ROEVER, E., POETISI, E., VERWEY, R., WONG, T., NADEAU, S., ROSSI, P. & SOUZA, S. *Geological and mineral resources map of South America, 1:1 M – Sheet NA.21: Brazil – Guyana – Suriname – French Guiana geological integration on the Guyana Shield*.

WONG, T. E., VERWEY, R. POETISI, E., KROONENBERG, S.A. & DE ROEVER, E. *Integration of the geological maps of Suriname and Brazil.*

GONÇALVES, J.H., CRUZ DO NASCIMENTO, F.G., GRISSOLIA, E., SCHOBBENHAUS, C. & DA CUNHA LOPES, R. *Metodologia SIG utilizada no Projeto Mapa Geológico ao milionésimo da América do Sul.*

GÓMEZ TAPIAS, J. & MONTES, N.E. *Geological Map of Colombia, Second Edition.*

FRAGA, L.M., DALL´ AGNOL, R. & REIS, N.J. *The Cauarane – Coeroene belt and the tectonic evolution of the northern part of the Amazonian Craton.*

GÓMEZ TAPIAS, J. & MONTAÑA, Y. *Estándar cartográfico de INGEOMINAS para mapas geológicos en ArcGIS a escalas 1000K, 500K, 100K, 25K y 10K.*

MENDÍA, J.E., GONÇALVES, J.H., DA CUNHA LOPES, R., SPOTURNO, J.J., ZAPPETTINI, E., TECHERA, J., CHÁVEZ, S., MARÍN, G., ARDOLINO, A. & SCHOBBENHAUS, C. *Hoja SH.21 – Concordia/Uruguaiana/Arapey. Prototipo para el proyecto Mapa geológico y de recursos minerales de América del Sur a escala 1:1 000 000 (SIG – América del Sur, 1:1M).*

CORDANI, U. & RAMOS, V. *Mapa Tectónico de Suramérica.*

SCHMITT, R. *Godwana project*.

POSTERS

CRUZ DO NASCIMENTO, F.G., GRISSOLIA, E., GONÇALVES, J.H. & DA CUNHA LOPES, R. *Códigos das unidades litoestratigráficas, uma proposta para América do Sul.*

TERRAZA MELO, R., MORENO, G., BUITRAGO, J.A., PÉREZ ÁVILA, A. & MONTOYA, D. *Geología de la Plancha 210 Guateque.*

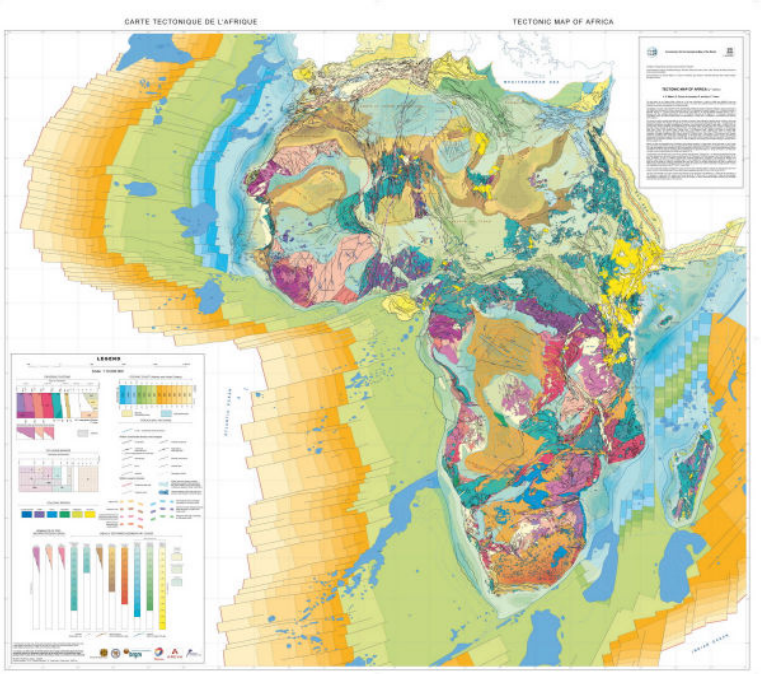
GRISSOLIA, E., CRUZ DO NASCIMENTO, F.G., GONÇALVES, J.H. & DA CUNHA LOPES, R. *Exemplo de integração geológica na América do Sul – Folhas SG.21 e SG.22.*

TERRAZA MELO, R., MORENO, G. & MONTOYA, D. *Geología de las Planchas 189 La Palma y 169 Puerto Boyacá.*

Finally, the symposium provided the geoscientists with a forum where to display the progress of the geological mapping in the South American continent at different scales and to discuss the methodologies and advances in GIS mapping.

INTRODUCTORY NOTES OF
CGMW PUBLICATIONS RELEASED IN 2010-2011

TECTONIC MAP OF AFRICA



The first edition of the Tectonic Map of Africa dates back to 1968, i.e. before the full elaboration, then acceptance, of the paradigm of plate tectonics. The second edition at the scale of 1:10 million of the Tectonic Map of Africa is the result of a quarter of a century of collaboration involving an important number of scientists from European and African geological surveys and universities, supported in their efforts by two French companies, Total and Areva.

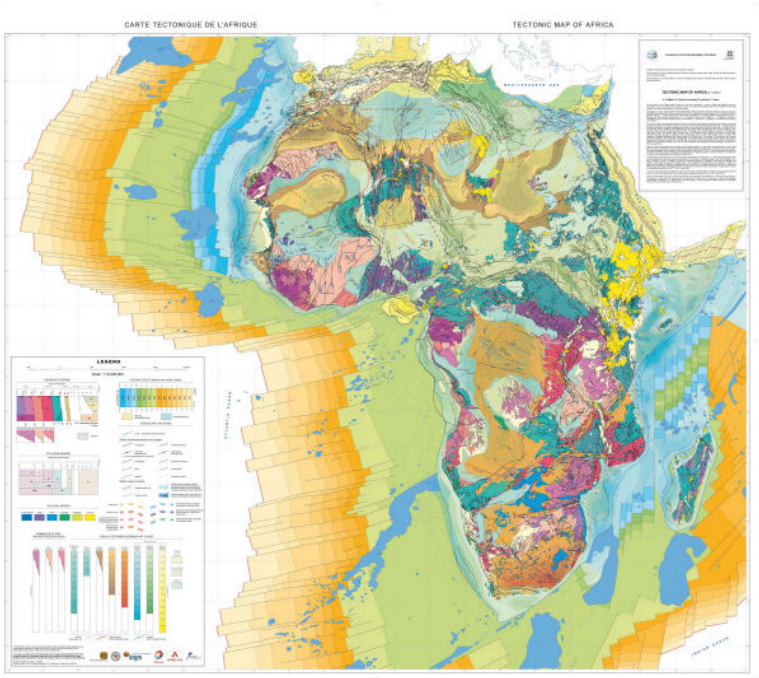
This new edition takes into account the most recent developments in Earth sciences with ever more precise and profuse radiometric dating of Archean and Proterozoic formations, on the one hand, and a deeper knowledge of the structure of the great African sedimentary basins coming from the oil exploration, on the other.

Among the main cartographic themes, it is worth to mention the following:

1. The representation of the successive orogenic systems: Archean, Eburnean-Paleoprotorozoic, Kibarian-Mesoproterozoic, Panafrican-Neoproterozoic, Variscan- Cap Fold Belt, Atlas-Alpine Orogen. An original mode of representation allows indicating the age of the reworkings endured by the formations during subsequent orogenic phases. Conversely, this mode of representation can also indicate remnants of a former orogenic phase.
2. The great magmatic outpourings during post-paleozoic times corresponding to hotspots activity: CAMP (Central Atlantic Magmatic Province), Karoo, Etendeka (related to the Parana traps in South America), Madagascar volcanism, Ethiopia traps and the volcanism linked to the Great East-African rift, as well as other Cenozoic volcanics disseminated in Africa. Younger granites are also figured.
3. Special attention was paid to representing the large sedimentary basins that have been shaped from the Archean to the Cenozoic. A specific color was attributed to the age of the initiation of the basin: Archean, Paleoproterozoic, Mesoproterozoic, Neoproterozoic + Paleozoic (south), Proterozoic (north), Cambrian-Ordovician, Silurian-Carboniferous, Carboniferous-Jurassic (Karoo), Meso-Cenozoic in which are distinguished the basins with a maximum subsidence during the Jurassic, Cretaceous, and Cenozoic. In addition, with the exception of Archean to Mesoproterozoic and Cambrian-Ordovican basins, the other chronological units are represented with their isopachs. Moreover, when the Cenozoic cover thickness (or Cretaceous to Cenozoic) of an older basin is less than 1 000 m, it is shown by a scattering of superimposed dots.
4. As concerns the African continental margins whose importance is well known for oil and gas deposits exploration, the approximate limit between continental and ocean crust, and the isopachs (every 1 000 m) of the sedimentary filling are also figured. The Niger delta represents a special case with a part of its onshore built on a Cretaceous oceanic crust and a sedimentary accumulation over 10 km thick.

In conclusion, this map constitutes a major improvement in the representation of the tectonic and structural knowledge of the African continent, both for the extent of innovative data compiled, and the original way of representation that it required. This map should be of utmost interest for professional geologists (oil research, basement studies, geodynamics, …) and for academics and their students.

CARTE TECTONIQUE DE L'AFRIQUE



La première édition de la Carte tectonique de l'Afrique date de 1968, avant que ne soit pleinement élaboré, puis accepté, le paradigme de la tectonique des plaques. La deuxième édition à l'échelle de 1/10 million de la Carte Tectonique de l'Afrique est le résultat d'un quart de siècle de collaboration d'un nombre important de scientifiques venant des services géologiques et des universités européennes et africaines, soutenus dans leurs efforts par deux entreprises françaises, Total et Areva.

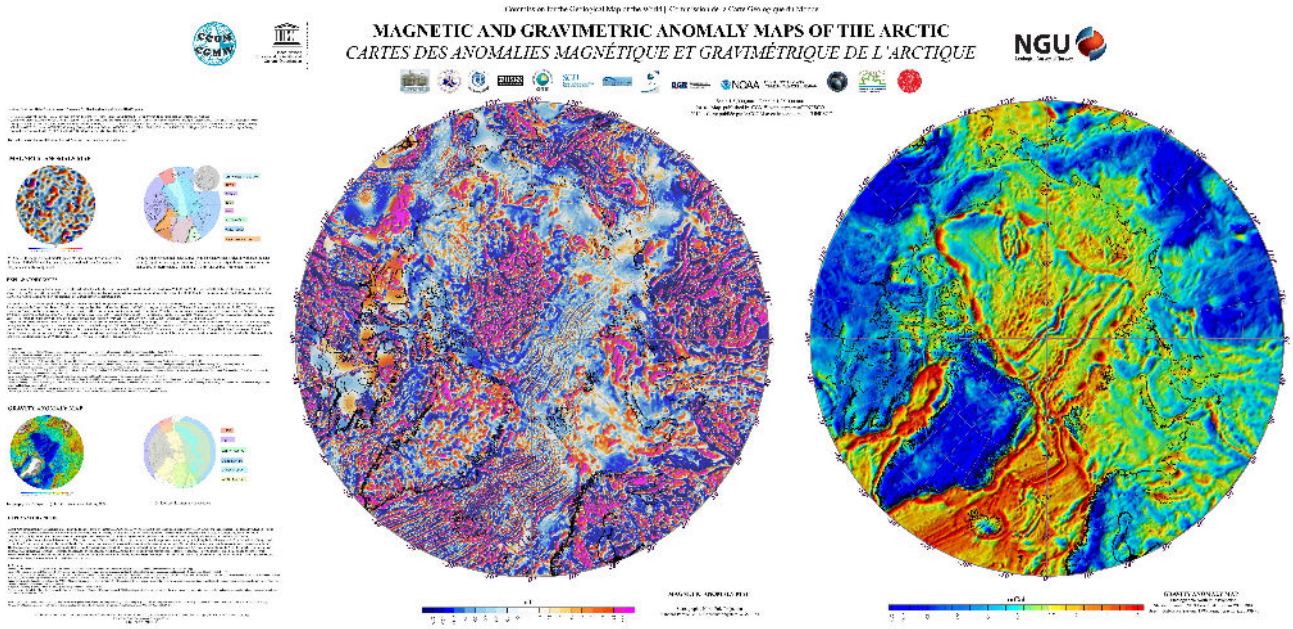
Cette nouvelle édition prend donc en compte les développements les plus récents des sciences de la Terre avec la mise à disposition de datations radiométriques toujours plus abondantes et plus précises des formations archéennes et protérozoïques, d'une part, et une connaissance approfondie de la structure des grands bassins sédimentaires africains issue de l'exploration pétrolière, d'autre part.

Parmi les grands thèmes cartographiques, on citera :

1. *La représentation des systèmes orogéniques qui se sont succédé : Archéen, Eburnéen-Paléoprotérozoïque, Kibarien-Mésoprotérozoïque, Panafricain-Néoprotérozoïque, Varisque-Ceinture Plissée du Cap, Orogène Alpin de l'Atlas. Un mode original de représentation permet en outre de figurer l'âge de remaniements qu'ont subi les formations lors de phases orogéniques ultérieures.*
2. *Les grands épanchements volcaniques des temps post-paléozoïques correspondant à des points chauds: CAMP (Central Atlantic Magmatic Province), Karoo, Etendeka (lié au trapps du Parana en Amérique du Sud), volcanisme de Madagascar, trapps d'Ethiopie et volcanisme lié au grand Rift Est-Africain, ainsi que les autres épanchements cénozoïques disséminés en Afrique. On a figuré également le "Younger granites".*
3. *Un soin particulier a été porté à la représentation des grands bassins sédimentaires qui se sont structurés depuis l'Archéen jusqu'au Cénozoïque. Une couleur particulière est attribuée à l'âge de l'initiation du bassin : Archéen, Paléoprotérozoïque, Mésoprotérozoïque, Néoprotérozoïque + Palézoïque (au sud), Protérozoïque (au nord), Cambrien-Ordovicien, Silurien-Carbonifère, Carbonifère-Jurassique (Karoo), Méso-Cénozoïque dans lequel on distingue les bassins avec un maximum de subsidence au Jurassique, au Crétacé, et au Cénozoïque. De plus, à l'exception des bassins archéens à mésoprotérozoïques et cambro-ordoviciens, les autres unités chronologiques sont représentées avec leurs isopaques. Par ailleurs, lorsque l'épaisseur de la couverture cénozoïque (ou crétacée à cénozoïque) d'un bassin plus ancien est inférieure à 1 000 m, cette dernière est représentée par un semis de points en surimpression.*
4. *En ce qui concerne les marges continentales de l'Afrique dont on connaît l'importance pour les gisements d'hydrocarbures, on a représenté la limite approximative entre la croûte continentale et la croûte océanique et les isopaques (tous les 1 000 m) du remplissage sédimentaire. Le delta du Niger constitue un cas particulier avec une partie de l'onshore édifiée sur la croûte océanique crétacée et une accumulation sédimentaire de plus de 10 km.*

En conclusion, cette carte constitue une avancée majeure dans la représentation de la connaissance tectonique et structurale du continent africain, à la fois par la masse de données innovantes qu'elle synthétise, et par le mode de représentation très original qu'elle a requis. Elle intéressera donc au plus haut point aussi bien les géologues professionnels (recherche pétrolière, études des socles, géodynamique) que les enseignants universitaires et leurs étudiants.

MAGNETIC AND GRAVIMETRY ANOMALY MAPS OF THE ARCTIC



An international effort to compile Circum-Arctic geophysical and bedrock data has been conducted by several national agencies (Russia-VSEGEI and VNIIO, Sweden-SGU, Finland-GTK, Denmark-GEUS, USA-USGS, Canada-GSC and Norway-NGU) since 2005.

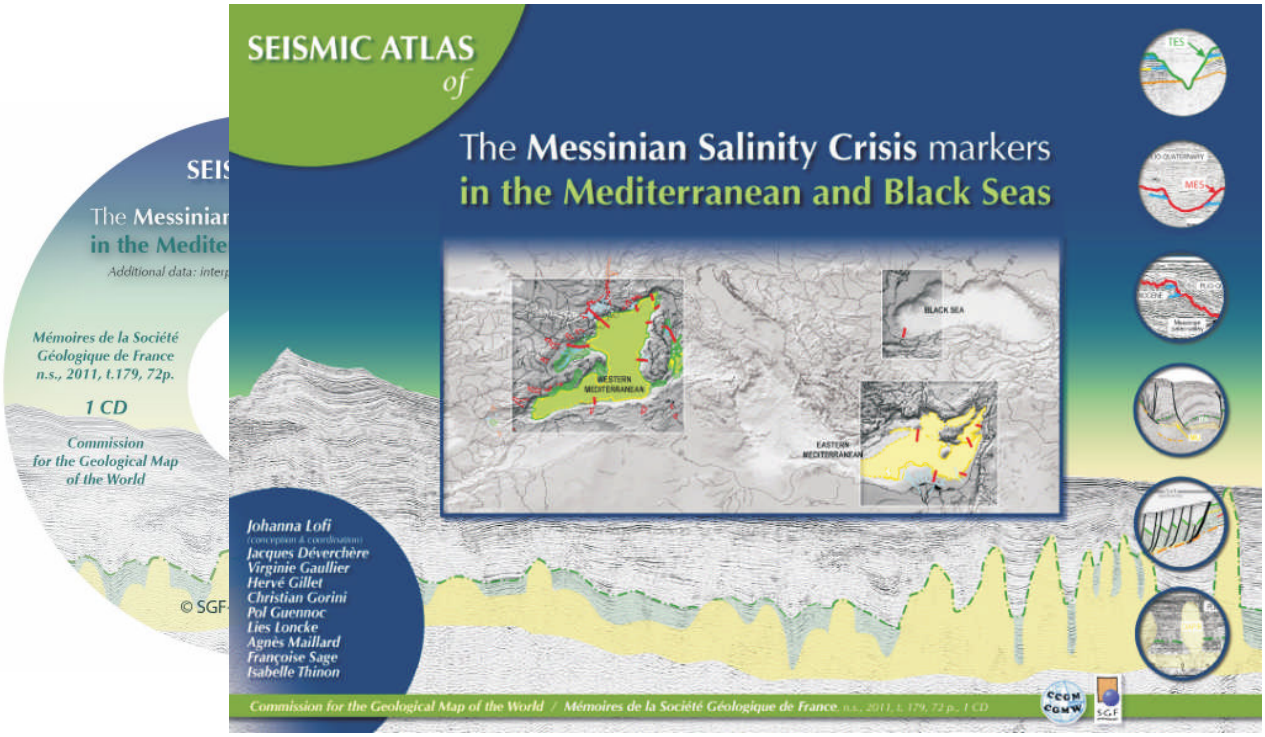
This project aims to produce an atlas with geological and geophysical digital maps at a scale of 1: 5,000,000 for the Arctic region bounded by the 60 degrees northern latitude. The Circum Arctic Magnetic Anomaly has a resolution of 2 km and is upward continued 1 km. New published and classified magnetic anomaly gridded data from each participant group were gathered and converted to a common datum (WGS84) and format. The magnetic anomaly compilation relies on 1 km gridded data for Canada (based on the Canadian Aeromagnetic Data Base), Alaska (based on Alaska USGS aeromagnetic database) and NW Europe (Fennoscandia compilation and the NGU NE Atlantic compilation) regions, and 5 km gridded data for oceanic and Russian regions. The Greenland region magnetic anomaly grid (Verhoef et al., 1996) has been updated with new aeromagnetic surveys performed in West Greenland between 1992-2001 (Rasmussen, 2002), and in the Nares Strait area (Damaske & Oakey, 2006; Oakey & Damaske, 2006). The oceanic area east of Greenland (NE Atlantic) contains most of the aeromagnetic data used in the Verhoef et al., (1996) compilation (pre-1990) and new aeromagnetic surveys over offshore Norway collected until 2007 (Olesen et al., 1997; Olesen et al., 2007; Gernigon et al., 2008).

The gridded data has been upward continued to 1 km above ground or sea-level and trimmed around areas of major overlaps. The Alaska USGS aeromagnetic compilation has been used as the "master grid" for mergingthe major gridded data sets together and the downward continued lithospheric magnetic field model MF6 derived from satellite data (Maus et al., 2008) has been used as a regional reference surface. A blending function over the area of overlap has been used in order to smooth the transition from one grid to the other (GridKnit, GEOSOFT). The resulting grid has been re-sampled to a 2 km grid cell. In order to construct the final Circum-Arctic magnetic anomaly grid (CAMP-M) the near-surface magnetic data has been used for the short wavelength component of the compilation and the satellite derived magnetic anomalies have been used for the long wavelength (Hamoudi et al., 2007; Hemant et al., 2007). For more information see Gaina et al. (in press).

Authors: Gaina Carmen[1] , Werner Stephanie C[2]. , Mandea Mioara[3] and the CAMP-GM group[4]

1 Geological Survey of Norway (NGU), Norway
2 University of Oslo, Norway
3 European Center for the Arctic, Université de Versailles Saint-Quentin-en-Yvelines
4 CAMP-GM Group: S. Aaro (Swedish Geological Survey - SGU), D. Damaske (The Federal Institute for Geosciences and Natural Resources - BGR), V. Glebovsky (All-Russian Research Institute of Ocean Geology -VNIIO), K. Johnson (United States of America Geological Survey - USGS), J. Jonberger (SGU), T. Koren (All-Russian Geological Research Institute -VSEGEI), J. Korhonen (Geological Survey of Finland - GTK), T. Litvinova (VSEGEI), G. Oakey (Geological Survey of Canada - GSC/NRCan), O. Olesen (NGU), O. Petrov (VSEGEI), M. Pilkington (NRCan), T. Rasmussen (Geological Survey of Denmark and Greenland - GEUS), R. Saltus (USGS), B. Schreckenberger (BGR) and M. Smelror (NGU).

External reviewers: Mohamed Hamoudi, Michael Purucker, Sylvain Bonvalot and René Forsberg



Messinian Salinity Crisis is a huge outstanding succession of events that has deeply modified the Mediterranean area within a short time span at the geological scale. The seismic atlas of the Messinian markers in the Mediterranean and Black seas is a collective work summarizing, in one publication with a common format, the most relevant seismic features related to this exceptionnal event. Seismic information has been collected over many years from the offshore domain. Throughout 13 study areas, the seismic facies, geometry and extent of the Messinian markers (surfaces and depositional units) are described. The absolute time succession of the Messinian events or the processes responsible for their occurrence in space and time are not discussed.

The objectives of this atlas are: (1) to image the Messinian seismic markers from the main margins and basins; (2) to propose a new global and consistent terminology for these markers in the entire offshore Mediterranean area and (3) to make this information accessible to the non-geophysicist community. Interpreted seismic data were carefully selected according to their quality, position and significance in order to reach these objectives, and are presented here.

ATLAS DESIGN

- 1 Explanatory note
- 1 Synthesis sheet of the organisation of the markers allowing an inter-site comparison
- 43 sheets organized in 13 study areas. Each area contains the following themes: Regional setting, MSC surfaces, MSC Basinal Units, and for specific study areas, detritism and/or salt tectonics
- 1 CD with raw and interpreted seismic data

13 SITES

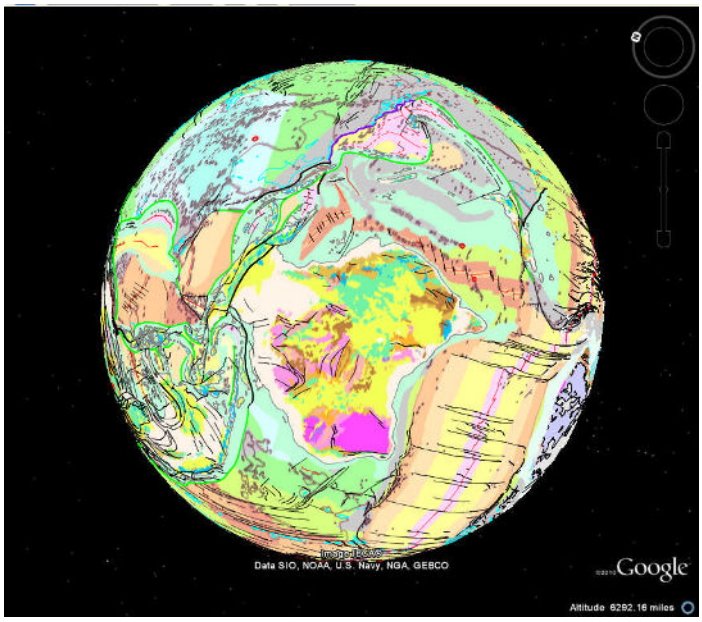
The Atlas illustrates 13 study areas on margin segments and basis that have various structural, geodynamical and geological backgrounds (eg. intermediate/deep basin; with/without sill; active/passive margin; thin/thick sedimentary cover, etc...). The Atlas thus allows an integrated study at the scale of the Mediterranean basin. This new approach, based on multi-site comparative studies, will allow in the future to discuss the impact of the MSC and to document the way the MSC left its imprints in the offshore domain.

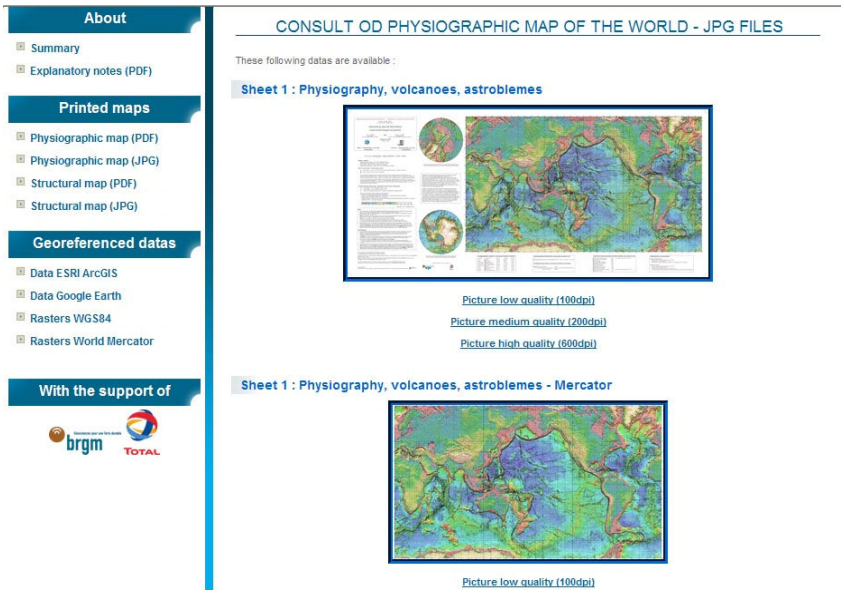
NOMENCLATURE AND COLOR CODE

A new global and consistent terminology is proposed for MSC markers (erosion surfaces and depositional units). The terminology of the depositional units is based on their seismic facies and the geometrical relationship of the units with respect to the Mobile Unit (transparent facies and associated plastic deformation). The erosion surfaces have been defined based on their relationship with the Pre-MSC and MSC units, and the Plio-Quaternary cover.

GEOLOGICAL MAP OF THE WORLD – DIGITAL VERSION

ESRI (ArcView)/Google/PDF/JPG




About
Summary
Explanatory notes (PDF)
Printed maps
Physiographic map (PDF)
Physiographic map (JPG)
Structural map (PDF)
Structural map (JPG)
Georeferenced datas
Data ESRI ArcGIS
Data Google Earth
Rasters WGS84
Rasters World Mercator
With the support of
brgm
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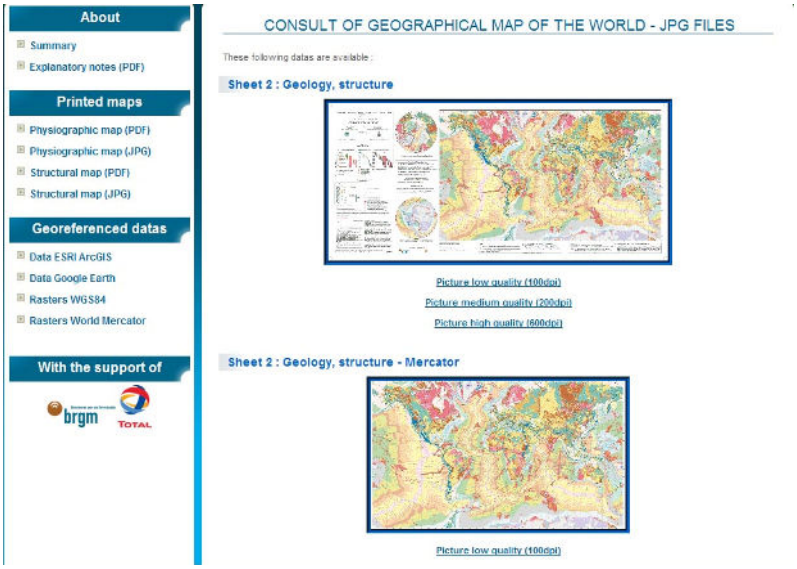
These following datas are available :
Sheet 1 : Physiography, volcanoes, astroblemes
Picture low quality (100dpi)
Picture medium quality (200dpi)
Picture high quality (600dpi)
Sheet 1 : Physiography, volcanoes, astroblemes - Mercator
Picture low quality (100dpi)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Sheet 2 : Geology, structure - Mercator
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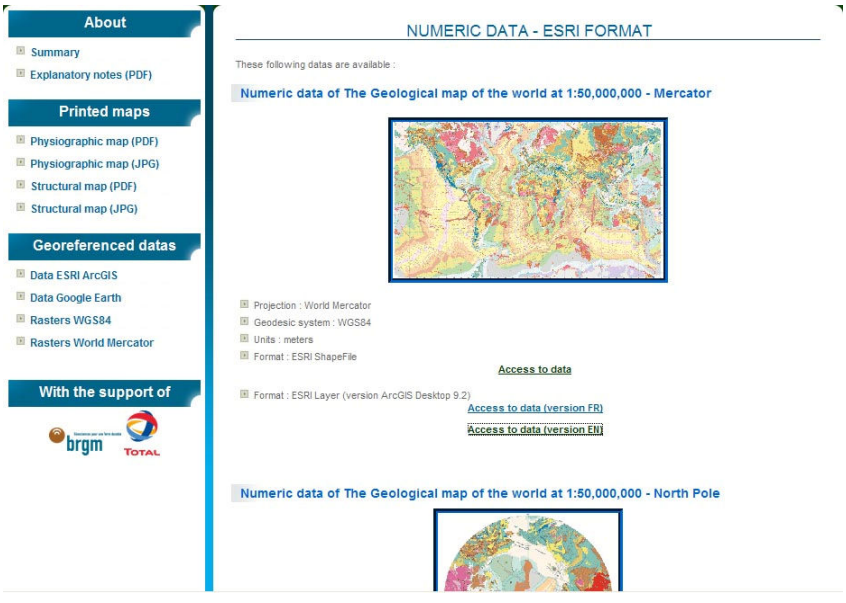
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Explanatory notes (PDF)
Printed maps
Physiographic map (PDF)
Physiographic map (JPG)
Structural map (PDF)
Structural map (JPG)
Georeferenced datas
Data ESRI ArcGIS
Data Google Earth
Rasters WGS84
Rasters World Mercator
With the support of
brgm
TOTAL
NUMERIC DATA - ESRI FORMAT
These following datas are available :
Numeric data of The Geological map of the world at 1:50,000,000 - Mercator
Projection : World Mercator
Geodesic system : WGS84
Units : meters
Format : ESRI ShapeFile
Access to data
Format : ESRI Layer (version ArcGIS Desktop 9.2)
Access to data (version FR)
Access to data (version EN)
Numeric data of The Geological map of the world at 1:50,000,000 - North Pole

COMPTES CCGM

2009 & 2010

COMMISSION DE LA CARTE GEOLOGIQUE DU MONDE
COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD

YEAR 2009 FINANCIAL STATEMENT

ACCUMULATED RESERVES (01/01/09)			**393 639,18 €**
INCOME 2009			
Membership fees	52 825,00 €		
Subsidies (UNESCO, BRGM, IUGS, TOTAL)	32 509,99 €		
Mapping sponsoring	17 000,00 €		
Publication sales	36 443,42 €		
TOTAL I		138 778,41 €	
Financial income and account interest	13 008,70 €		
TOTAL II		13 008,70 €	
TOTAL I + II		**151 787,11 €**	
EXPENSES 2009			
Map production	48 606,27 €		
Purchase of Maps and Documents	1 002,32 €		
Sales costs - Marketing	13 873,92 €		
Participation to international and national exhibitions & events	5 432,93 €		
Meetings, missions	7 533,66 €		
Postage, phone, fax, internet	8 522,31 €		
Bureautics	766,13 €		
Office supplies & maintenance	21 607,92 €		
Financial taxes	690,00 €		
Banking fees	1 248,70 €		
Salaries and social contributions	50 625,24 €		
Stock variation	-19 800,18 €		
TOTAL III		140 109,22 €	
Change loss	589,76 €		
TOTAL IV		589,76 €	
TOTAL III + IV		**140 698,98 €**	
BALANCE 2009 (TOTAL I + III - TOTAL III + IV)			**11 088,13 €**
Deferred expenses/income			**9 261,98 €**
CLOSING BALANCE (31/12/09)			**413 989,29 €**

COMMISSION DE LA CARTE GEOLOGIQUE DU MONDE
COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD

YEAR 2010 FINANCIAL STATEMENT

ACCUMULATED RESERVES (01/01/10)			**409 418,65 €**
INCOME 2010			
Membership fees	63 404,59 €		
Subsidies (UNESCO, BRGM, IUGS, TOTAL)	5 675,27 €		
Mapping sponsoring	27 343,27 €		
Publication sales	58 538,72 €		
TOTAL I		154 961,85 €	
Financial income and account interest	12 533,06 €		
TOTAL II		12 533,06 €	
TOTAL I + II		**167 494,91 €**	
EXPENSES 2010			
Map production	48 763,30 €		
Purchase of Maps and Documents	1 297,15 €		
Sales costs - Marketing	4 492,65 €		
Participation to international and national exhibitions & events	22 866,88 €		
Meetings, missions	6 235,94 €		
Postage, phone, fax, internet	9 168,45 €		
Bureautics	4 182,47 €		
Office supplies & maintenance	27 235,97 €		
Financial taxes	800,00 €		
Banking fees	1 604,07 €		
Salaries and social contributions	55 711,20 €		
Stock variation	15 058,71 €		
	TOTAL III	197 416,79 €	
Change loss	3 417,84 €		
	TOTAL IV	3 417,84 €	
	TOTAL III + IV	**200 834,63 €**	
BALANCE 2010 (TOTAL I + III - TOTAL III + IV)			**-33 339,72 €**
Deferred expenses/income			**59 883,77 €**
CLOSING BALANCE (31/12/10)			**435 962,70 €**

ANNEX

Resumes of new CGMW Bureau Members

Curricula vitae des nouveaux Membres du Bureau

Bruno VRIELYNCK

Born on August 15, 1951
French national

Institut des Sciences de la Terre de Paris (ISTEP)
Université Pierre et Marie Curie, case 129, 4 place Jussieu, 75252 Paris cedex 05
Tel: 33 144 27 50 42
E-mail: bruno.vrielynck@upmc.fr

Current position : Researcher at the Centre National de la Recherche Scientifique (CNRS, France)

Qualifications

PhD on Structural Geology, University of Lille, France (1978)
HdR on Conodonts biostratigraphy, University of Lyon, France (1984)

Research and editorial work

At the end of my academic formation at the University of Lille, I defended a thesis under Pr. J. Dercourt's direction on the stratigraphy and *structural setting of Argolis* (Greece). Then I spend two years at Athens University as lecturer that gave me the opportunity to continue the *Hellenids geological study*. In October 1980, I entered the CNRS to work at a Lyons laboratory on *Triassic Conodonts biostratigraphy* and, in 1984, I defended an HdR on this subject before joining the laboratory directed by Pr. J. Dercourt at the P. & M. Curie University in Paris. My works on conodonts led me to use computers and to learn programming. At that time, a part of the laboratory team was working on the **Tethys palaeogeography** and a database system was set up to gather geological data. My experience in stratigraphy, biostratigraphy and tectonics and my knowledge on computing were often required. This is the reason why since 1989 my main activity is devoted to palaeogeography.

I took part in the **Tethys programme** with J. Dercourt and L.E. Ricou. In 1993, the results of this programme were illustrated by an *atlas of 14 palaeoenvironmental maps* covering the Tethyan realm from the Caribbean domain to Indonesia and Australia. This first comprehensive palaeographic work was followed by the **Peri-Tethys programme** that studied the reaction of the Laurasia and Gondwana megacontinents to the evolution of the Tethys Ocean. In 2000, with J. Dercourt and M. Gaetani, we produced a *24 maps atlas* displaying the paleogeographical evolution of the Peri-Tethys realm from the Atlantic Ocean to the Urals range, since the Moscovian age up to the Last Glacial Maximum.

The last completed programme focused on the **Middle East Basin Evolution (MEBE)**. In 2008, with E. Barrier, we published the results in the form of a *14 maps atlas* showing the palaeotectonic evolution of the Tethys between the Africa-Arabian and Eurasian blocs. Currently,

Besides these mapping syntheses, I have also worked with *biogeographers* on *ammonites*, *dynoflagellates* and *mammal fauna* to study the latitudinal distribution of characteristic species associations or the continental bridges influences on fauna migrating. This work is aim at understanding the climatic belts repartition and eustatism in geologic times. I have applied the same method with teams studying the Actual climate. As mentioned above, these cartographic syntheses reflect the works of more than 250 scientists involved in each programme. To manage such amount of observations, I develop geodatabases using the Geographic Information System (GIS). Thanks to Euler, the famous mathematician who also revealed the spherical geometry, we have the graph theory and thanks to Cantor we have the set theory which give rules to implement the functions to classify, to link and to manage these datasets.

This Palaeogeographical research work is of interest to the geologists and also to the public in general, mainly the secondary-school and undergraduate students. In 2003, in order to make accessible our work to a broader audience, I wrote with P. Bouysse a booklet entitled **The changing face of the Earth** based on the results of the Tethys and Peri-Tethys Atlases. Co-published by CGMW/UNESCO in French, English and Spanish, this work inaugurated the CGMW "*Faces" collection* (6 volumes published) following the principle of 40-50 pages volume in "landscape" format (accompanied by a CD-ROM with digital files of the illustrations), with a large illustration on the right-hand page with the comments on the facing left-hand page.

Besides my activities in geosciences, I have been involved in community work, in particular as Treasurer of the Société Géologique de France (SGF) for the last six years, and currently as member of the Board of the French National Committee of Geology (CNFG).

Jorge Gómez Tapias

Born in 1972 in Tolima, Colombia.

Professional address:
INGEOMINAS–Institute of Geology and Mining (Colombian Geological Survey).
Diagonal 53 No. 34-53, Bogotá, Colombia
Telephone: 57 1 2200204 Office
Cell phone: 311 4403414
mapageo@ingeominas.gov.co and jogomez@ingeominas.gov.co

Qualifications and Experience

Jorge Gómez Tapias is a geologist and, since 2004, Director of the ongoing Geological Map of Colombia project at INGEOMINAS (http://www.ingeominas.gov.co/content/view/659/85/). As a cartographer, his main research interest is the Cretaceous evolution in Colombia. He has conducted with other colleagues researches on the Western Oceanic Cretaceous in Colombia and is currently working with Dr. Etayo–Serna on the evolution of the Cretaceous seas in Colombia.

He has a solid knowledge of ArcInfo/ArcGIS softwares and a good experience on Geographic Information System–GIS development and mapping design (styles, templates, data model, pattern chart). From 2008 to 2009, he was assigned by INGEOMINAS to devise and implement the digital cartographic standards for the geological maps of Colombia at the scales of 1:1M, 1:500K, 1:100K and 1:25K.

Academic Training

2000 Caldas University, Manizales–Colombia. Geologist.

Professional Activities and Experience

1995, 1997–1998	INGEOMINAS–Institute of Geology and Mining, Colombian Geological Survey.
1996–2001	Consultant geologist.
June 2001–date:	INGEOMINAS–Institute of Geology and Mining, Colombian Geological Survey.
2005–2007	Co–director of the project Geochemistry, petrogenesis and age of Arquía and Quebradagrande complexes, and rocks of the Cretaceous Caribbean Province. Universidad Nacional de Colombia and INGEOMINAS.
2005–2007	Co–director of the project Geochemistry, petrogenesis and age of Combia Formation. Universidad Nacional de Colombia and INGEOMINAS.
2005–2007	Co–director of the project Petrogenesis and age plutonic rocks of Western Colombia. Universidad Nacional de Colombia–INGEOMINAS.
2007	INGEOMINAS delegate to the OneGeology project.
2008–2009	Director of the Project Geological mapping and cross–section of La Línea Tunnel, Central Cordillera, Colombia. INGEOMINAS.
2009	National coordinator of Colombia to the Geological Map of South America 1:5M and 1:1M, CGMW.
2009	Board of trustees of the Geological Society of Colombia.
2009–date	Co–director of the project Sedimentary facies distribution and contours of the Cretaceous seas in Colombia. INGEOMINAS.

Congresses, Workshops and Courses (selection)

1996	VII Congreso Colombiano de Geología. Bogotá, 27–29th September.
2002	Short course on Deformation, petrology, geochemistry and fluid flow in metamorphic regions. By Uwe Altenberger. Bogotá, 1–19th April. Universidad Nacional de Colombia and Potsdam University.
2002	Workshop on Geochemical sampling of ultra-low density. State of the art and perspectives by Dr. Wang Xuequi. Bogotá, 29–31th January. INGEOMINAS.
2003	IX Congreso Colombiano de Geología. Medellín–Colombia, 30th July–1th August.
2005	X Congreso Colombiano de Geología. Bogotá–Colombia, 26–29th July.
2006	IX Simposio Bolivariano Exploración Petrolera en las Cuencas SubAndinas. Cartagena de Indias, 24–27th September.
2007	OneGeology Workshop in Brighton, UK–12th to 16th March. British Geological Survey.
2007	IX Congreso Geológico Venezolano. Caracas–Venezuela, 21–25th October. Universidad Central de Venezuela.

2008 33rd International Geological Congress. Oslo–Norway, 6–14th August.

2009 Applied biostratigraphy. Universidad de Salamanca–ESCOPETROL. By. Dr. José Abel Flores, Dr. Herman Duque Caro and Dr. Vladimir Torres T. Bucaramanga, 13–18th April.

2009 X Simposio Bolivariano Exploración Petrolera en las Cuencas SubAndinas. Cartagena de Indias, 27 –29th July.de Geología. Paipa–Boyacá, 7–8th September.

Publications (Selection)

Núñez, A., Bocanegra, A. & **Gómez, J.** 1996. Los plutones jurásicos del Valle Superior del Magdalena. VII Congreso Colombiano de Geología, 2: 226–239. Bogotá.

Nivia, A. & **Gómez, J.** 2005. Consideraciones acerca del modelo geológico evolutivo del Occidente Colombiano (Colombia). **Charla Magistral**. X Congreso Colombiano de Geología. Memories CD ROM, 2 p. Bogotá.

Muñoz, C.M., Weber, M., Cardona, A., Nivia, A., **Gómez, J.**, Jiménez, D. & Wilson, R. 2005. Petrografía del Stock de Parashi y diques asociados, Serranía de Jarara, La Guajira–Colombia. X Congreso Colombiano de Geología. Memories CD ROM, 6 p. Bogotá.

Gómez, J., Nivia, A., Jiménez, D.M., Montes, N.E., Sepúlveda, M., Osorio, J.A., Tejada, M.L., Penagos, M., Gaona, T., Diederix, H., & Uribe, H., compilers. 2006. Mapa Geológico de Colombia. 1st edition. Scale 1:2'800.000. INGEOMINAS. Bogotá.

Tejada, M. Nivia, A. Weber, M & **Gómez J.** 2007. Cartografía geológica y caracterización geoquímica preliminar de la Formación Combia en los alrededores de Jericó y Pueblorrico, Departamento de Antioquia–Colombia. XI Congreso Colombiano de Geología. Memories CD ROM, 23 p. Bucaramanga.

Gómez, J., Nivia, A., Montes, N.E., Jiménez, D.M., Tejada, M.L., Sepúlveda, M.J., Osorio, J.A., Gaona, T., Diederix, H., Uribe, H. & Mora, M., compilers. 2007. Mapa Geológico de Colombia. 1st edition. Scale 1:1'000.000. INGEOMINAS, 2 sheets. Bogotá.

Gómez, J., Nivia, A., Montes, N.E., Jiménez, D.M., Sepúlveda, M.J., Gaona, T., Osorio, J.A., Diederix, H., Mora, M. & Velásquez, M.E., compilers. 2007. Atlas Geológico de Colombia. 1st edition. Scale 1:500.000. INGEOMINAS, 26 sheets. Bogotá.

Weber, M., Cardona, A., Wilson, R., **Gómez, J.** & Zapata, G. 2007. High–pressure rocks from the Colombian Caribbean–Record of a changing convergent margin. Goldschmidt Conference 2007, Abstracts, p. A1095. Cologne, Germany.

Gómez, J., Nivia, A., Montes, N.E., Tejada, M.L., Uribe, H. & Gaona, T. 2007. El Mapa Geológico de Colombia 2007: Historia, explicación y perspectivas. Charla Magistral. IX Congreso Venezolano de Geología. Memories CD ROM, 2 p. Caracas.

Gómez, J., Nivia, A., Montes, N.E. & Tejada. M. 2008. Geological Map of Colombia 2007 as a contribution to the OneGeology Project. 33rd International Geological Congress. Abstracts, (*https://abstracts.congrex.com/scripts/JMEvent/ProgrammeLogic_Abstract_P.asp?PL=Y&Form_Id=8&Client_Id='CXST'&Project_Id='08080845'&Person_Id=1342234*). Oslo–Norway.

Vega, F.J., Feldmann, R.M., Etayo–Serna, F., Bermúdez–Aguirre, H.D. & **Gómez, J.** 2008. Occurrence of *Meyeria magna* M'Coy, 1849 in Colombia: A widely distributed species during Aptian times. Boletín de la Sociedad Geológica Mexicana, 60(1): 1–10.

Gómez, J., Nivia, A., Montes, N.E., Jiménez, D.M., Tejada, M.L., Sepúlveda, J., Osorio, J.A., Gaona, T., Diederix, H., Uribe, H. & Mora, M., compilers. 2008. Mapa Geológico de Colombia. 2nd edition. Scale 1:2'800.000. INGEOMINAS. Bogotá.

Gómez, J., Montaña, Y. & Galán, B. 2009. Estándar cartográfico para mapas geológicos en ArcGIS a escala 500K. INGEOMINAS, 1st edition, 150 p. Bogotá.

Gómez, J., Montaña, Y. & Galán, B. 2009. Estándar cartográfico digital para mapas geológicos en ArcGIS a escala 100K y 25K. INGEOMINAS, 1st edition, 100 p. Bogotá.

Gómez, J., Nivia, A. & Montes, N.E. 2009. Geological Map of Colombia. X Simposio Bolivariano Exploración Petrolera en las Cuencas SubAndinas. Abstracts, :48. Cartagena.

Etayo–Serna, F. & **Gómez, J.** 2009. Sedimentary facies distribution and contours of the Cretaceous seas in Colombia. INGEOMINAS, 14 sheets. Bogotá.

Etayo–Serna, F., **Gómez, J.**, Moreno, M., Gómez, A.J. & Rodríguez, G. In preparation. Albian amonites from sedimentary member of Quebradagrande Formation and their paleogeographic meaning.

Teaching

2008 Making a geological map with ArcGIS software. Caracas, 28th January–8th February 2008. Universidad Central de Venezuela.

JIN Xiaochi, Dr. rer. nat., Professor

I. PERSONAL DATA

November 1961, China
Institute of Geology, Chinese Academy of Geological Sciences
26 Baiwanzhuang Road, Beijing 100037
e-mail: jinxchi@cags.ac.cn; jinxchi@sina.com
Telephone: +86-10-68999702
Fax: +86-10-68997803
Spoken languages: English and German

Winner of Huang Jiqing (T. K. Huang) Geological Science and Technology Prize for Excellent Young Geologists (2004)

II. POST AND MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Member of IGCP Scientific Board

Voting Member of IUGS Subcommision on Carboniferous Stratigraphy

Deputy editor in chief of *Acta Geoscientica Sinica*

Vice-Chairman of Subcommission of the Upper Paleozoic and Leader of the Carboniferous Working Group of National Statigraphic Commission of China

"Co-leader of IGCP project-516: Geological Anatomy of East and South Asia"

III. UNIVERSITY EDUCATION ANDACADEMIC DEGREES OBTAINED

09. 1978 - 07. 1982 Nanjing University, Nanjing, China, Geology/Palaeontology. 1982, Bachelor of Science

10. 1982 - 07.1985 Graduate School of Chinese Academy of Geological Sciences, Beijing, China, Geology/Palaeontology 1985, Master of Science

10. 1989 - 07. 1994 University of Cologne, Cologne, Germany, Geology/Palaeontology (major), Geography (minor), Mineralogy (minor), 1994, Doctor of Science,

IV. PROFESSIONAL BACKGROUND

Main research field: Upper Paleozoic Stratigraphy, sedimentology and paleogeography.

Interested geological problems: Evolution of the Tethys, Pangea, and accretion of Asia.

Projects led in recent years:

2003-2006 Key Program of Natural Science Foundation of China "Effects of the Permo-Carboniferous glaciation on geographic distribution of marine invertebrates";

2006-2010 Chinese Geological Survey project "Correlation of Phanerozoic stratigraphy of China and Asia";

2009-2011 Chinese Geological Survey project "Lithofacies and Paleogeographic Map of China"

Marzieh Esterabi Ashtiani

27 Aug 1981 in Iran
m1981_straby@yahoo.com

Education

M.Sc. (Structural Geology) March 2007, Tarbiat Modares University, Tehran, Iran
B.Sc. (Geology) September 2003, University of Agricultural Sciences and Natural Resources of Gorgan, Gorgan, Iran

Research and Teaching Interests

Active tectonics, paleoseismology, Structural geology, Neo tectonics, Morphotectonics, Seismotectonics,

Employment History

August 2004-Present: Expert of the Geological Survey of Iran (GSI)

Papers and Abstracts

- **Esterabi**, M., and H.R. Javadi, 2003, A preliminary study of seismicity and estimation of seismic parameters in the East of Alborz.
- Javadi, H.R., Shahpasandzadeh, M., Ghasemi M.R., Yasaghi A., **Esterabi** M. 2006, Pliocene-Quaternary offset and evolution of Dorouneh fault system in Torbat-e-heidarieh – Kashmar segment.
- **Esterabi**, M., A. Yasaghi, M. shahpasandzadeh, M.R. Ghasemi, and H.R. Javadi, 2006, Geometric and kinematics analysis of Dorouneh fault west termination: Jandaq- Anarak.
- Javadi, H.R., Shahpasandzadeh, M., Ghassemi M.R., Yassaghi A., **Esterabi** M. 2006 Pliocene-Quaternary offset and evolution of Dorouneh fault system in Khalil Abad segment.
- **Esterabi**, M., M. shahpasandzadeh, A. Yasaghi, M.R. Ghasemi, and H.R. Javadi, 2006, Geometric and kinematics analysis of Dorouneh fault west termination in Talmesi area.
- Shahpasandzadeh, M., Javadi, H.R., Ghasemi M.R., Yasaghi A., **Esterabi** M., 2007, Recurrence time of major earthquakes along the Dorouneh fault system, eastern Iran, determined using geologic and geomorphic features.

Reports and project

- Translation of book titled "Guidelines for the compilation of geological maps"
- Structural Analysis of Dorouneh Fault System's west termination, 2007.

Computer Skills

Arc view, Global mapper, Adobe Illustrator, Adobe Photoshop, Corel Draw, Rock works, Microsoft office

Languages

Persian and English