2012 Meeting Report Form
Re: UNESCO-IUGS Contract and IUGS Supplementary Contribution

IGCP 587 – "Identity, Facies and Time, the Ediacaran (Vendian) Puzzle"

MEETING: Neoproterozoic to Cambrian Evolution of the Earth and Life
Date: May 24 – June 2, 2012
Place: St. John's, Newfoundland, Canada
May 24 – 26: Pre-meeting fieldtrip "The dawn of the Paleozoic on the Burin Peninsula"
May 27– 29: Symposium "Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann"
May 30 – June 2nd: Post-meeting trip "The Mistaken Point biota of Avalon: Ediacaran glaciation, oxidation, and the origin of animals"

SCOPE AND RESULTS OF MEETING:

Activities:

A pre-meeting fieldtrip (Thursday May 24th – Saturday May 26th) **"The dawn of the Paleozoic on the Burin Peninsula"** led by Paul Myrow (Colorado College) and Guy Narbonne (Queen's University) examined the Ediacaran-Cambrian GSSP and overlying fossiliferous basal Cambrian (Fortunian) strata on the Burin Peninsula of Newfoundland.

A superbly well-attended symposium **"Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann"** (May 27-29) was organized by Guy Narbonne (Queen's University) and Galen Halverson (McGill). The theme of this symposium is presented below, and a list of the formal presentations is appended to the end of this report:

The Neoproterozoic to Cambrian (1000-500 million years ago) represents a watershed in Earth evolution. Breakup of supercontinent Rodinia was the engine that produced some of the most severe glaciations in Earth history and coincident changes in atmospheric and ocean chemistry, including an increase in atmospheric oxygen to near-modern levels. These massive changes in the physical and chemical environment of Earth resulted in equally profound changes in the biosphere – the Ediacaran origin and early evolution of large, complex life forms, including the world's first animals. Subsequent Cambrian evolution of these mainly soft-bodied animals led to the appearance of shells, teeth, and complex body plans that include most modern animal phyla. This special session honoured the memory of Canada's pre-eminent Precambrian paleontologist, Hans Hofmann (1936-2010), through discussion of the physical, chemical, and biological features and events that characterized this critical stage in the evolution of the Earth and life.

A complementary post-meeting trip (Wednesday May 30th – Saturday June 2nd) **"The Mistaken Point biota of Avalon: Ediacaran glaciation, oxidation, and the origin of animals"** was led by Guy Narbonne (Queen's University), Marc Laflamme (Smithsonian Institution), and Richard Thomas (Mistaken Point Ecological Reserve). This excursion started with the 580 Ma glacial deposits of the Gaskiers Formation and evidence for massive oxidation of the deep-sea at the end of this glaciation, then visiting the numerous fossil surfaces of Mistaken Point (580-560 Ma) that record the earliest stages in complex Ediacaran life and are currently proposed as a UNESCO world heritage site, and ended with the enigmatic fossil *Aspidella* and the final fill of the Avalon Basin.

Results:

1. Pre-meeting trip highlighted the abrupt end of the Ediacaran and the beginning of the Cambrian "explosion. This trip was attended by 22 participants, including a good mix of established professionals, new researchers, and students. At least two scientific research programs were initiated by observations made during this trip, ensuring ongoing research at this important site.

2. The three-day symposium "Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann" included 28 oral and 3 poster presentations, with presentations representing research and researchers from eight countries (Australia, Brazil, Canada, China, Germany, Namibia, UK, USA) on six continents. There was a good mix of established professionals, new researchers, and students. This symposium superbly showcased the activities and contributions of IGCP to the broader geological community.

3. Post-meeting trip highlighted the deep-water beginnings of the Ediacara biota and the role of glaciation and oxidation in spurring the development of large size and biological complexity 580 million years ago. The trip was attended by 28 participants, including a good mix of established professionals, new researchers, and students. One of the trip leaders works for Newfoundland Parks and one of the stops on the fieldtrip was run by local community leaders who proudly explained their ongoing role in conservation of this fossil site, further solidifying the excellent relations between the academic community studying these important fossils, government officials who oversee its protection, and the local community who are increasingly relying on the economic benefits of steadily increasing ecotourism to this fossil site (see <http://www.npr.org/2011/10/04/141044355/fossils-help-rev-hard-hit-newfoundland-fishing-area>). Several scientific research programs were initiated by observations made during this trip, ensuring ongoing research at this important site.

Guy Narbonne
IGCP Project 587 co-leader
September 7, 2012

St. John's 2012

Technical Program

Sunday Afternoon, 27 May / Dimanche après-midi, le 27 mai

SY2: Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann *(Part I)*

Sponsored by / Parrainé par: **GAC Paleontology Division; GAC Precambrian Division; UNESCO/IGCP Project 587, "Identity, Facies, and Time: The Ediacaran-Vendian Puzzle"; UNESCO/ICS Neoproterozoic Subcommission**

Organizers / Organisateurs: **Guy Narbonne and Galen Halverson**

Room / Salle: **Salon C**

Chairs / Présidents:

Time	Authors / Title
2:00	**Schopf, J.W.** Hans Hofmann's contributions to Precambrian paleontology
2:20	**Sperling, E.A.*, MacDonald, F.A., Knoll, A.H. and Johnston, D.T.** A basin redox transect at the dawn of animal life
2:40	**Strauss, J.V.*, Knoll, A.H., Cohen, P., Macdonald, F.A. and Halverson, G.P.** Diverse vase-shaped microfossils in the Neoproterozoic Callison Lake dolostone, Coal Creek inlier, Yukon Territory, Canada
3:00	**Kunzmann, M.*, Halverson, G.P., Sossi, P.A., Raub, T.D., Payne, J.L. and Kirby, J.** Zn isotope evidence for immediate resumption of primary productivity after snowball Earth
3:20	***Refreshment Break***
3:40	**Macdonald, F.A.*, Strauss, J.V., Sperling, E., Johnston, D.T., Halverson, G.P. and Narbonne, G.** Geochemistry and refined correlations of Ediacaran strata in northwestern Canada: Implications for the age of Ediacaran fauna and their relationship to the Putative second rise of oxygen
4:00	**Zhou, C.*, Wang, W., Yuan, X., Xiao, S. and Chen, Z.** Carbon and oxygen isotopic chemostratigraphic constraints on the age of the Ediacaran Lantian biota of South China
4:20	**Chen, Z.*, Zhou, C., Yuan, X. and Xiao, S.** Trace fossil evidence for Ediacaran bilaterian animals with complex behaviors

Monday Morning, 28 May / Lundi matin, le 28 mai

SY2: Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann *(Part II)*

Sponsored by / Parrainé par: **GAC Paleontology Division; GAC Precambrian Division; UNESCO/IGCP Project 587, "Identity, Facies, and Time: The Ediacaran-Vendian Puzzle"; UNESCO/ICS Neoproterozoic Subcommission /**
Organizers / Organisateurs: **Guy Narbonne and Galen Halverson**
Room / Salle: **Salon C**
Chairs / Présidents:

Time	Authors / Title
8:30	**Van Kranendonk, M.J.** **Keynote (40 min):** Planetary driver of environmental change: Global supercycles and their significance for a chronostratigraphic Precambrian timescale
9:10	**Narbonne, G.M.** Contributions of Avalonian Newfoundland to our global understanding of the Ediacaran Period
9:30	**Liu, A.G.*, McIlroy, D., Matthews, J.J. and Brasier, M.D.** Remarkable insights into the paleoecology of the Avalonian Ediacaran biota
9:50	***Refreshment Break***
10:10	**Mitchell, E.G.** Spatial analysis of species distributions from Mistaken Point, Newfoundland
10:30	**Wilby, P.R.*, Kenchington, C.G., Carney, J.N. and Howe, M.P.A.** Revealing biotas in Charnwood Forest (UK): A clearer window on the Avalon Assemblage
10:50	**Mason, S.J.*, Narbonne, G.M., Dalrymple, R.W. and O'Brien, S.J.** Paleoenvionmental analysis of Ediacaran fossil-bearing formations of the Catalina Dome, Bonavista Peninsula, Newfoundland
11:10	**Brasier, M.D.*, Antcliffe, J.B. and Liu, A.G.** Questing the evidence from Earth's oldest 'animals'

Monday Afternoon, 28 May / Lundi après-midi, le 28 mai

SY2: Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann *(Part III)*

Sponsored by / Parrainé par: **GAC Paleontology Division; GAC Precambrian Division; UNESCO/IGCP Project 587, "Identity, Facies, and Time: The Ediacaran-Vendian Puzzle"; UNESCO/ICS Neoproterozoic Subcommission /**
Organizers / Organisateurs: **Guy Narbonne and Galen Halverson**
Room / Salle: **Salon C**
Chairs / Présidents:

Time	Authors / Title
2:00	**Matthews, J.J.*, McIlroy, D. and Brasier, M.D.** Opening the window on shallow marine to non marine palaeobiology in the Edicaran of Avalonia
2:20	**Tarhan, L.G.*, Droser, M.L., Gehling, J.G., Dzaugis, M.P., Dzaugis, M.E. and Rice, D.** Taphonomic variability of the Ediacaran form genus Aspidella (Ediacara Member, South Australia)
2:40	**Darroch, S.A.F.*, Laflamme, M., Schiffbauer, J.D. and Briggs, D.E.G.** Experimental formation of a microbial death mask
3:00	**Elliott, D.A.** Recent work on Erniettomorphs from the south of Namibia
3:20	***Refreshment Break***
3:40	**Vickers-Rich, P., Ivantsov, A.Yu., Trusler, P.W., Narbonne, G.M.*, Hall, M., Fedonkin, M.A., Elliot, D. and Hoffmann, C.K.H.** Reconstructing Rangea: New discoveries from the Ediacaran of southern Namibia
4:00	**Laflamme, M.*, Darroch, S.A.F., Tweedt, S.M., Peterson, K.J. and Erwin, D.H.** Extinction of the Ediacara biota
4:20	**Buatois, L.A.* and Mángano, M.G.** Relict ecosystems, matground restriction and the changing face of the deep

Tuesday Morning, 29 May / Mardi matin, le 29 mai

SY2: Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann *(Part IV)*

Sponsored by / Parrainé par: **GAC Paleontology Division; GAC Precambrian Division; UNESCO/IGCP Project 587, "Identity, Facies, and Time: The Ediacaran-Vendian Puzzle"; UNESCO/ICS Neoproterozoic Subcommission /**
Organizers / Organisateurs: **Guy Narbonne and Galen Halverson**
Room / Salle: **Salon C**
Chairs / Présidents:

Time	Authors / Title
8:30	**Heubeck, C.E.* and Evseev, S.** Seismogenic deformation of a carbonate platform straddling the Precambrian-Cambrian boundary, Karatau Range, Kazakhstan
8:50	**Caron, J-B.* and Conway Morris, S.** Pikaia gracilens from the Burgess Shale: Revisiting Walcott's most famous worm
9:10	**O'Brien, L.J.* and Caron, J-B.** Community analysis of the Tulip Beds (Burgess Shale) – Preliminary report
9:30	**Pratt, B.R.*, Pushie, J., Pickering, I. and George, G.** Biochemical copper (hemocyanin) in the middle Cambrian arthropod Marrella
9:50	***Refreshment Break***
10:10	**Butterfield, N.J.* and Harvey, T.H. P.** Using small carbonaceous fossils (SCFs) to resolve the Neoproterozoic-Palaeozoic transition
10:30	**Myrow, P.M.*, Taylor, J.F. and Ripperdan, R.L.** Rise and fall of Cambrian–Ordovician trilobite extinction patterns: Facies patterns and role of paleogeography
10:50	**Erwin, D.H.*, Laflamme, M. and Tweedt, S.M.** **Keynote (40 min):** The Cambrian Conundrum: The construction of animal biodiversity

May 27 mai

SY2: Neoproterozoic to Cambrian Evolution of the Earth and Life: A Symposium in Memory of Hans J. Hofmann (Posters)

Sponsored by / Parrainé par: **GAC Paleontology Division; GAC Precambrian Division; UNESCO/IGCP Project 587, "Identity, Facies, and Time: The Ediacaran-Vendian Puzzle"; UNESCO/ICS Neoproterozoic Subcommission /**

Organizers / Organisateurs: **Guy Narbonne and Galen Halverson**
Room / Salle: **Salon A**

Poster	Authors / Title
SY2-P0	**Kenchington, C.G.*, Wilby, P.R. and Rhodes, S.** Tuffs and turbidites: A deeper insight into the depositional environment of Charnwood Forest, UK
SY2-P0	**Hippler, D.*, Heubeck, C. and Franz, G.** Lowermost Cambrian phosphorites from the south-western Yangtze Platform, Yunnan (South China)
SY2-P0	**Boggiani, P.C.*, Gaucher, C. and Sial, A.N.** Possible occurrence of the Shuram-Wonoka negative C-isotope excursion in the Cloudina-bearing Corumbá Group (Ediacaran, Brazil)