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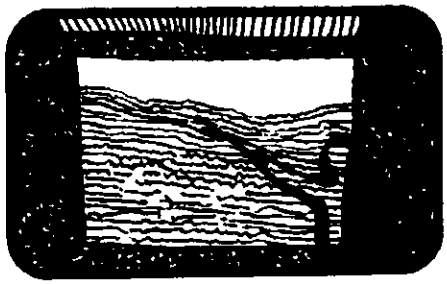

Pan Pacific '96 Hazards Conference and Trade Show

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The Disaster Preparedness Resource Centre, University of British Columbia (UBC), organized and sponsored a five-day interdisciplinary conference and trade show on natural hazards from 29 July to 2 August 1996 in Vancouver, British Columbia. According to the organizers, the meeting was "designed to build bridges between countries through the exchange of technology, experience, and practical knowledge of disaster management." Some 1200 delegates representing numerous countries around the world participated in Pan Pacific Hazards '96.

The strong political awareness and international stature of the conference was apparent at the opening ceremonies, with the presence of the Lieutenant Governor and Attorney General of British Columbia, and Canada's Secretary of State and Ambassador for the Environment, as well as the President of UBC, and the Director of the IDNDR (International Decade of Natural Disaster Reduction), UNESCO Secretariat.

Vancouver was an excellent venue for such a meeting, since the province fronts the seismically active Cascadia subduction zone, is frequently under the threat of flooding and landsliding, and shares many of the natural hazards experienced by other countries within the Pacific Rim. Pan Pacific Hazards '96 was immensely successful and follows two other equally successful, but much smaller hazards meetings in BC held in 1991 and 1993.

Technical talks were presented in 54 technical sessions over a four-day period, which in some cases involved up to nine concurrent sessions at any one time. Poster sessions complimented many of the oral sessions each day. The third day of the meeting provided an opportunity for the public to attend the Trade and Exhibit Show at no cost, during which time registered delegates participated in either technical tours or workshops.

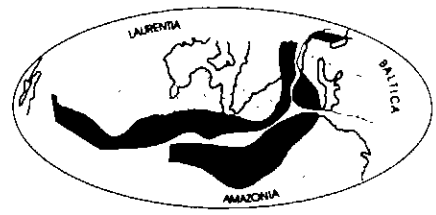
Technical tours varied considerably, ranging from the geology and hazards of the Squamish and Whistler areas, and examination of unreinforced masonry buildings in downtown Vancouver, to trips to the Pacific Geoscience Centre and Butchart Gardens in Victoria. Workshops were held on topics such as Business Impact Analysis, Structural Rehabilitation of Schools and Hospitals, Earthquake Loss Estimation Models, and the Role of Transportation in Disaster Response and Recovery.

Other informative and unique additions to this conference were 12 panel sessions moderated in each case by well-known specialists in the field in question and further supported by several equally international and knowledgeable discussion panelists. Panel discussions covered several interesting subjects from geology to economics: for example, Humanitarian and Military Assistance in Disaster Relief, Catastrophe Financial Planning and Recovery, Risk Communication, and Volcanic Ash and Aviation Safety.

The main attraction of the meeting was the diversity of topics addressed during the oral and poster technical sessions. This included themes such as the Evaluation of Structural and Non-structural Hazards, Managing Volcanic Risks, Hazard Maps for Earthquake Mitigation, The Epidemiological Profiles of Disasters, Great Earthquakes Around the Pacific Rim, Slope Failures, Tsunami and Floods, Insurance Issues, The Role of Media in Disasters, and School Preparedness.

The meeting attracted diverse participants, including volcanologists, geologists, psychologists, sociologists, engineers, planners, CEOs, insurance brokers, and medical practitioners. Talks were generally informative and well presented in spite of the common problems associated with using volunteer projectionists who were not adequately briefed or trained in carousel mechanics. The organizers are also credited with attracting dozens of sponsors including BC Hydro, IBM, Transport Canada, and the BC Ministry of Employment and Investment. Endorsements from groups such as Provincial Emergency Preparedness, the Canadian National Committee for the International Decade for Natural Disaster Reduction (IDNDR) and the IUGS Commission on Geological Sciences for Environmental Planning (COGEOENVIRONMENT) furthered the credibility of this meeting.

The conference was a great success, important facts were presented, state-of-the art technology was displayed, recent natural disasters were described, and critical hazard-related networking was greatly facilitated. The abstracts for the meeting appear in a 312 page volume and on CD-ROM, both still available from the conference organizers at The University of British Columbia.



Proterozoic Evolution in the North Atlantic Realm

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This conference was organized by *COPENA (Correlation of Precambrian of Europe and North America - IGCP 371)* in conjunction with *ECSOOT (Eastern Canadian Onshore-Offshore Transect - Lithoprobe)* and *IBTA (International Basement Tectonics Association)* and was held in Goose Bay, Labrador from 29 July to 2 August 1996. Eighty earth scientists from 14 countries attended the meeting, travelling from as far as China, Russia, Ukraine, Brazil and Australia. In addition, the Nordic countries of Finland, Sweden, Norway and Denmark were all represented; other European countries

participating were England, Ireland and Spain. On the North American side, Canada and the United States were both in strong attendance. During four days of talks and poster presentations, the whole span of Proterozoic time was discussed. Addressed below are some current or emerging research trends. A separate report (18 pages) has been written summarizing individual presentations and is available at http://www.gcosurv.gov.nf.ca/penar.html, or on request.

PALEOPROTEROZOIC OROGENS

The opening theme was consideration of the Paleoproterozoic orogens north of the Archean North Atlantic Craton (Torngat-Nagssugtoqidian-Lapland-Kola; 1.95-1.80 Ga). It is generally accepted that there was collision during geon 18, probably dominated by continent-margin subduction under (an) Archean microcontinent(s) to the north. What seems less certain is the history between the end of the Archean and geon 18. Several periods of rifting are recognized, but it appears that they are mostly just a legacy of failure, not managing to produce an ocean until roughly 2.0 Ga. Such false starts have characterized other times and places, and one message seemed to be that extensional faults during post-orogenic crustal-thickening collapse provide the locus for rifting; but unless some unrelated agent starts operating (*e.g.*, deep mantle convection cells?), the latent separation will not progress to irreconcilable oceanic divorce.

The next topic addressed was Paleoproterozoic orogens south of the Archean North Atlantic Craton (Makkovik-Ketilidian-Fennoscandian (1.89 - 1.80 Ga) and the younger Labradorian-Gothian (1.73-1.58 Ga). Beyond acceptance that the tectonic setting for preserved rocks throughout Laurentia-Baltica was indeed orogenic, there seems to be much more diversity of view than for coeval counterparts farther north. Discussion on the Laurentian side hinged mostly on direction(s?) of subduction (both for Makkovikian-Ketilidian and Labradorian orogenesis), partly drawing on the results of recent seismic reflection studies. It is evident that more tests are needed to define polarity, as existing criteria — such as alkalinity index, types and position of sedimentary depocentres, emplacement through older crust, degree of crustal contamination and seismic-reflector orientation — are apparently inadequate. Does a written synthesis on subduction-polarity criteria exist?

In northern Europe, themes continue to be reconciliation of time-space relationships between Paleoproterozoic early-, late- and post-orogenic activities, and re-interpretation of fixist concepts regarding trans-craton shear zones within the context of currently prevailing plate-tectonic theory. Perhaps the latter might well hold a seed to fruitful expansion of present postulates. A separate issue, addressed during the meeting in the context of Paleoproterozoic orogenesis (although not restricted to it), discussed the role of thermal anomalies as engines for mafic dyke swarms and A-type granites. How laterally extensive might these thermal anomalies be and how persistent in time? Could they cross orogens in both the spatial and temporal sense, and, if so, how could such a mechanism function, unless the sub-continental mantle lithosphere and the crust operate independently?

MESOPROTEROZOIC ROCKS

After the mid-meeting field-excursion break, orogenic and anorogenic Mesoproterozoic rocks in both Laurentia and Baltica and their coeval counterparts in South America were addressed, merging into Grenvillian topics and late Mesoproterozoic global models. The diversity of opinion expressed by conference participants regarding Paleoproterozoic orogens was trivial when compared to viewpoints regarding Mesoproterozoic tectonic settings. For the latter, suggestions included: 1) continent-margin subduction flanking southern Laurentia-Baltica throughout the period, 2) a succession of accreted island arcs, 3) dominantly back-arc magmatism, and 4) an anorogenic setting from 1.5 Ga until *ca.* 1.0 Ga Grenvillian collision. It is difficult to reconcile the various viewpoints into something approaching coherency. Although granted that, with distances involving several thousand kilometres, tectonic settings need not be the same at any given time along the entire length of the former continent, one is still left wondering how they could change drastically from one to another, apparently without a record of a boundary between them. Some of us, no doubt, will have to admit to following false doctrine!

ANOROGENIC SUITES?

The tectonic setting of anorthosite-monzonite-charnockite-granite (AMCG) suites as being anorogenic has been obliquely challenged in several recent publications and was more directly challenged during the conference. For example, ideas that such suites might be related to post-orogenic collapse following crustal thickening, and/or be distal, inboard expressions of continent-margin subduction are gaining favour. In the latter setting, AMCG suites were envisaged to have been emplaced up to 500 to 700 km inboard of the continental margin. Applying such models to the Mesoproterozoic Salmi massif and the Nain Plutonic Suite, for example, would require them to be "extreme-inboard," and only there because of very special emplacement controls along ancient crustal interfaces.

CONTINENTAL RECONSTRUCTIONS

Although continental reconstructions were a recurring theme throughout the conference, those applicable to the late-Mesoproterozoic and Neoproterozoic received most attention, mostly as a natural progression back in time from now well-established early Phanerozoic models. Lacking adequate paleonotological-stratigraphical weapons to correlate Precambrian time, advances in U-Pb and Nd-Sm geochronology and paleomagnetism have given these techniques the critical role in defining tectonic provinces and linking together former cratons, commonly now fragmented between several continents. It is evident that such studies must be completely integrated, involving various techniques applied to the same sample, and from carefully chosen localities without the complications of post-formation displacement or thermal effects. If this is done, future conferences can look forward to increasingly rigorous global reconstruction models.

LITHOSPHERE/ ASTHENOSPHERE CONTROLS?

An underlying theme to several talks was the role of sub-continental lithospheric mantle and the asthenosphere in petrological and tectonic processes, particularly with regard to the mechanism of heat transfer to the base of the crust (*e.g.*, the role of lithospheric thinning and/or coalescing of mantle hot spots in initiating rifting). It seems likely that this will be a burgeoning field in the next few years, and one that will impinge upon the consciousness of more than a handful of petrological specialists.

FIELD TRIPS

The conference was supplemented by two pre-conference field trips, a mid-conference field trip, and two post-conference field trips. Given this emphasis on field studies, scheduling of the conference guessed that optimum weather would be in early August. It turned out that the time chosen was fortunate, as the whole period, including pre- and post-conference field excursions, was blessed with excellent weather. The two pre-conference field excursions (each 2 days in length) were to western Labrador and to the Nain area. The western Labrador excursion addressed the geology of the Grenville Province in the vicinity of Labrador City and Wabush. The Nain excursion included Archean gneisses, Paleoproterozoic granites and the Mesoproterozoic Nain Plutonic Suite. The one-day syn-conference field excursion in the Goose Bay area examined Labradorian crust, reworked during Grenvillian orogenesis. Post-conference field excursions visited the Makkovik and southeast Labrador regions. The three-day Makkovik excursion was concerned with the tectonic transition from Archean gneiss at the margin of the Hopedale block to Paleoproterozoic plutonic and supracrustal rocks at the northwest margin of the Makkovik Province. The southeast Labrador field excursion extended over 4 days and examined Labradorian and Pinwarian (1.51-1.45 Ga) rocks with superimposed Grenvillian effects.

CONFERENCE PUBLICATIONS

Copies of the Program and Abstract volume are available at a cost of CDN$12.00 and each of the five field guides for CDN$10.00. A 6-volume set is available for CDN$50.00 (cheques or money orders payable to COPENA '96). These prices merely reflect the cost of production. Copies may be ordered from C.F. Gower (or other members of the organizing committee), at Newfoundland Dept. of Mines and Energy, P.O. Box 8700, St. John's, Newfoundland, A1B 4J6.

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The organizing committee for the conference comprised C.F. Gower, D.T. James, A.B. Ryan, R.J. Wardle (Newfoundland Department of Mines and Energy), and J. Hall (Memorial University of Newfoundland).