

## 10th International Basement Tectonics Conference

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Volume 19, Number 4, December 1992

URI: [https://id.erudit.org/iderudit/geocan19\\_4con04](https://id.erudit.org/iderudit/geocan19_4con04)

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### Publisher(s)

The Geological Association of Canada

### ISSN

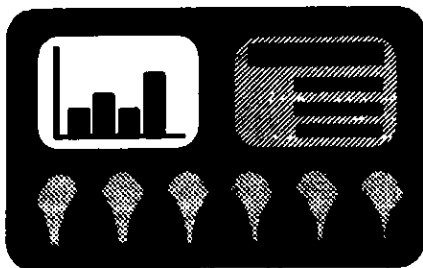
0315-0941 (print)

1911-4850 (digital)

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### Cite this article

Easton, R. M. (1992). 10th International Basement Tectonics Conference. *Geoscience Canada*, 19(4), 173–174.



## 10th International Basement Tectonics Conference

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Although basement-cover relationships have long fascinated geologists, the subject is not dealt with extensively in most undergraduate curricula, nor is it commonplace in the geologic literature. To provide a forum for discussions of basement-cover relationships and the role of basement in influencing subsequent depositional and tectonic events, the International Basement Tectonics Association was established in the early 1970s. Through a series of biennial ( $\pm 1$  year) conferences begun in 1974, the association has provided a forum for researchers studying basement tectonics to exchange ideas and information.

Three main themes highlighted the 10th International Basement Tectonics Conference held at the University of Minnesota in Duluth, 3-7 August 1992: Shear Zones, Basement Control on Younger Structures, and Rifting (with particular emphasis on the Midcontinent Rift). Each theme highlighted an aspect of Lake Superior area geology, all of which were reflected in the three field trips that were held in conjunction with the meeting.

Approximately 75 scientists registered for the meeting; however, its thematic nature meant that many attendees only attended talks directly related to their main research interests, making the meeting seem smaller than it actually was. Too often meetings such as this have an overall academic focus. This was not the case in Duluth, as there was a high level of participation by both oil and mining industry workers in both the presentations and the subsequent discussions. Perhaps this was because two of the main topics, shear zones and basement control on cover rocks (mainly focussing on midcontinental North America), are directly relevant to precious metal and oil and gas exploration, respectively.

The meeting attracted an international au-

dience, including speakers and participants from China, Russia, Egypt, Israel, Italy, Norway, Czechoslovakia, Argentina, as well as the United States and Canada. Unfortunately, as is too often the case in such international meetings, many foreign speakers commonly cannot get funding to attend, and six out of the 51 scheduled presentations were not given.

The first day of the meeting was devoted to shear zones. Much of the topic was "old hat" to anyone who has worked in the Superior Province during the past five years, and many of the talks in fact dealt with shear zones located in the Superior Province in northern Minnesota and northwestern Ontario. In the keynote address, Peter Hudleston (U. Minnesota—Minneapolis) provided an overview of the types of structures and fabrics found within shear zones. One of the more interesting talks was given by Dick Ojakangas (U. Minnesota—Duluth) and Jukka Marmo (Geological Survey of Finland) on the problem of distinguishing sheared rocks from undeformed volcanic or volcanoclastic rocks, using the Early Proterozoic leptonite and halleflinta terranes of southern Finland as an example. These rocks were originally mapped as mylonites, later re-interpreted as felsic pyroclastic rocks, and are now re-interpreted as mylonites again (perhaps derived from volcanic or volcanoclastic rocks). This is not a problem unique to Finland, and numerous examples of similar problematic rocks can be found throughout Archean and Proterozoic terranes in Canada.

Day two was devoted to basement control on younger structures. The keynote address by S. Parker Gay, Jr. (Applied Geophysics Inc.) provided numerous illustrations, determined by subsurface mapping or aeromagnetic data, of basement control on the development of younger structures. Most of the examples were from the central United States, where the Precambrian basement influences structures in the Phanerozoic cover. As Parker and several other speakers noted during the day, such control is not predicted by finite stress theory as commonly applied to rocks, and perhaps the time has come to re-examine common assumptions about standard finite-strain analysis. Richard Hoppin (U. Iowa—Iowa City) provided a retrospective look at basement control, providing an historical overview of the subject. The economic significance of such basement control was highlighted by talks by Albert Dickas (U. Wisconsin—Superior) on pre-Phanerozoic petroleum provinces, many of which represent migration of Phanerozoic oil into older structures, and by Mark Smyk (Ontario Geological Survey (OGS), Thunder Bay), who examined the relationship between silver-cobalt veins and the Archean-Huronian unconformity in the Cobalt area, and illustrated the influence of the underlying Archean basement on vein distribution.

Dennis Kolata and John Nelson (Illinois

Geological Survey) discussed the New Madrid Rift system and its role in the evolution of the Illinois basin. This was one of several talks during the meeting — *i.e.*, Ben Richard and Paul Wolfe (Wright State U.) and Joshua Stark (Equitable Resources Exploration) — that dealt with the southeastward extension of the midcontinent rift system in North America, and the problems of interpreting seismic sections and drill holes, some of which indicate the presence of a post-Grenville, but pre-Phanerozoic, sedimentary sequence through parts of Ohio and Kentucky. Whether this sequence should be correlated with the midcontinent rift (east continent rift of Joshua Stark) or represents an Ediacarian to earliest Cambrian sequence was the subject of considerable discussion. Relevant to these discussions is the tracing of the extension of the Grenville Front south from surface exposures near Killarney, Ontario, into Ohio. Terry Carter (Ontario Ministry of Natural Resources, London) and Mike Easton (OGS, Sudbury) presented a basement geology map of southern Ontario, based on core and well-cutting examinations, geophysical interpretation, and recent reflection seismic studies, which places the Grenville Front more than 50 km east of previous interpretations.

Day three of the technical program was highlighted by a talk by Commonwealth of Independent States researchers Lev Zonenshain and Vladimir Kazmin on submersible studies of Lake Baikal. This session on general rifting led up to day four, which dealt with detailed studies of the Midcontinent Rift System, exposures of which had been examined by all participants during the mid-meeting field trip. This remains one of the best studied rift systems in the world, in terms of geophysical studies of its three-dimensional architecture (talks by W. Hinze *et al.*, Mariano and Hinze, Purdue U., and Bill Cannon, United States Geological Survey), its subsurface extension (talk by Joshua Stark noted above), its volcanic fill (talks by John Green, U. Minnesota—Duluth), its sedimentary fill (talks by Dick Ojakangas and Tom Suszek, RREM Inc.), and its mineralization (talks by Steve Hauck *et al.*, U. Minnesota—Duluth, and Ted Bornhorst, Michigan Tech.).

One of the benefits of a small meeting such as this is the time available for formal and informal discussion. Most speakers kept to their allotted times, allowing for questions between talks. Discussion could have been enhanced if the organizers had distributed a list of speakers and talks before the meeting.

Participants were treated to an excellent banquet at the Guicchi Gummie Club, one of the prestigious clubs in Duluth. Organizers were left scrambling to find ties and jackets for the myriad participants who had neglected to bring theirs to this summer meeting. The resulting colour and style combinations were probably more offending in the end than if ties or jackets had not been worn. The after-dinner lecture was given by a dis-

tinguished European professor who lectured about armoured mud balls, one of the important, unsolved, yet widespread geological enigmas of our time. Conference and field trip organizers Richard Ojakangas, Albert Dickas and John Green deserve a hearty thanks for their efforts in organizing a timely and stimulating conference and set of field trips.

Copies of the Abstract Volume (extended abstracts, usually 2-3 pages with illustrations) and the Field Trip Guide (both reasonably priced at less than US \$10.00) are available from R.W. Ojakangas, Department of Geology, University of Minnesota-Duluth, Duluth, Minnesota, USA 55812. Copies of the proceedings volumes of previous international Tectonics Conferences are available as follows: Conferences 1 through 6 from the International Basement Tectonics Association, 675 South 400 East Street, Salt Lake City, Utah, USA 84111. Conferences 7 and 9 (8 is in press) are available from Kluwer International Publishers, Amsterdam. Proceedings of the Duluth meeting should be available sometime in 1994.

In order to provide greater continuity, meetings will now be held every two years in North America (currently it is four years between North American meetings), with overseas meetings fitted in as appropriate. The 11th International Basement Tectonics Conference will take place in Potsdam, Germany, in 1994, followed by the 12th Conference in Oklahoma in 1995. Contact the International Basement Tectonics Association (address given above) for further information on these meetings.

Accepted, as revised, 20 October 1992.

## Positions Available

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Applicants should send a curriculum vitae, a statement of current and future research interests, and the names of three references to:

Dr. F.A. Michel, Chairman  
Department of Earth Sciences  
Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario K1S 5B6

The application deadline is April 30, 1993.

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In accordance with Canadian Immigration and Employment regulations, this notice is directed in the first instance to Canadian citizens and permanent residents. The University of Victoria is committed to an employment equity program; women especially are encouraged to apply. Send inquiries or applications, with curriculum vitae and names of three referees to:

Dr. Chris R. Barnes, Director  
School of Earth and Ocean Sciences  
University of Victoria  
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V8W 2Y2 Canada

Deadline for application is April 15, 1993, or until the positions are filled.