Comparative evolution of past and present accretionary orogens: Central Asia and the Circum-Pacific

Description and Objectives

The Central Asian Orogenic Belt (CAOB, also known as Altaids) is one of the largest accretionary orogens on Earth and evolved over some 800 million years from the latest Mesoproterozoic to the early Triassic. It contains a record of geodynamic processes during major Phanerozoic continental growth. There has been much discussion about its evolution over the last 20 years, and models range from a single, giant arc system to accretion of multiple arc/backarc systems. The CAOB crust appears to comprise long chains of arcs and slices of older continental crust that extend for several hundreds to thousands of kilometers. Amalgamation of these linear crustal elements and their interactions with continental margins generated considerable Phanerozoic continental growth. Its large size from the Pacific to the Urals and its extent across many countries and language barriers has complicated orogen-wide comparisons and correlations. Current tectonic models are largely speculative, but most see analogues with modern accretionary orogens. In view of the discovery of world-class mineral deposits, a wealth of new age and isotopic data, and much improved possibilities for international cooperation it is now timely to discuss and compare the formation of the CAOB with that of modern accretionary orogens such as the multiple arc terranes of the circum-Pacific in Indonesia, Melanesia, Taiwan, Japan, Alaska, and California. Such a multidisciplinary in-depth comparison will spur research and stimulate thinking about

the CAOB tectono-magmatic evolution, new concepts for accretionary orogeny in general, and new strategies for finding mineral deposits. This meeting will thus provide a unique forum to discuss what is known about the CAOB within the context of the archetypal accretionary orogens and, at the same time, bring together Asian, Russian and Western geoscientists.

Following overview talks on the circum-Pacific orogens and components of the CAOB, key speakers will address the issue of accretionary orogeny from the viewpoint of different expertises and methodologies, and these will be discussed, and shown on posters, with all participants during a 3-day field trip across the Chinese Tianshan orogen in NW China and a subsequent 3-day meeting in Urumqi, capital of the Xinjiang Uygur Autonomous Region. Emphasis will be on process-oriented comparisons between ongoing orogeny in the circum-Pacific region and geological observations in the CAOB. We do not think that there is a single, coherent model to explain the evolution of the vast accretionary terrane of Central Asia, but this conference should lead to a clearer path of research and potential avenues of international collaboration. We particularly encourage participation of young scientists from Asian countries.

Planned Itinerary

Day 1, Sunday, 4 September 2011

Arrival in Urumqi. Opening session in the late afternoon, followed by introductory talks on the Chinese Tianshan after dinner.

Day 2, Monday, 5 September 2011

Field trip across the Chinese Tianshan from Urumqi to Heshuo. Evening talks and discussions on geology of the Tianshan

Day 3, Tuesday, 6 September 2011

Field trip across the Chinese Tianshan from Heshuo to Korla. Evening talks and discussions on geology of the Tianshan and other components of the CAOB

Day 4, Wednesday, 7 September 2011

Return to Urumqi, optional stops en route

Day 5, Thursday, 8 September 2011

Discussion session, led by conveners and key speakers, with emphasis on overview talks. The discussions will be supported by poster presentations from participants with adequate time for presentation and discussion. Evening session after dinner.

Day 6, Friday, 9 September 2011

Discussion session, led by conveners and key speakers, with thematic sessions and group discussions and supported by poster presentations. Evening session after dinner.

Day 7, Saturday, 10 September 2011

Provocative discussion session on tectonic models, research methodologies, etc., led by conveners and key speakers. What needs to be done in Central Asia and what can we learn from the comparison with the circum-Pacific?

Day 8, Sunday, 11 September 2011

Participants depart Urumqi or participate in 7-day post-Conference field trip to the Chinese Altai (not part of the Penrose Conference arrangement)

Discussion sessions

Apart from overview talks on orogenic processes in the Circum-Pacific and in Central Asia, six thematic sessions on the following themes are proposed:

1. Ophiolite formation and emplacement
2. High-pressure and high-temperature metamorphism in accretionary orogens
3. Magmatism and metallogeny, with particular reference to granitoids and plumes
4. Structural geology, tectonics and kinematics of accretionary processes
5. Paleontology, stratigraphy, paleogeography, and sedimentary basins
6. Continental growth and reworking in accretionary orogens.

Logistics

The Conference will be organized by the Center for International Scientific Exchanges of the Chinese Academy of Sciences, Beijing, and this Centre will issue invitation letters to foreign participants which must accompany the Chinese visa applications. Participants should arrive in Urumqi on 4 September and are responsible for their own travel arrangements. Urumqi can be reached by air from Beijing, Shanghai, Guangzhou, Almaty, Bishkek and Novosibirsk. Additional details will be provided in the registration material.

The Registration Fee of US$450 (registered students US$200) will cover hotel lodging (double room occupancy) from 4 to 10 Sept., all meals, a guidebook, and transportation in the field. All meals will be taken together. Single rooms will incur an additional charge.

A 7-day post-Conference field trip (including a 1-day seminar) across the Chinese Altai will be organized by Prof. Min Sun of Hong Kong University. The trip begins in Urumqi on 11 Sept. and ends there on 17 Sept. The fee is approx. US$510.

Registration and payment

Deadline: 20 July, 2011

The registration fee can be paid by credit Card (Mastercard/VISA) and must be received before **20 July 2011** to qualify for participation. Please use the online registration system: http://www.conferencenet.org/conference/Penrose/reg/reg.htm. For more question about registration and paying, please contact Ms. Lan Cuiling (Center for International Scientific Exchanges, CAS, cllan@cashq.ac.cn).

Policy on non-registered spouses and friends:

We appreciate your cooperation in not bringing family members or non-registered friends to the meeting for two reasons: 1) most of us will be sharing rooms with other participants; and 2) the GSA rules for Penrose meetings do not allow this practice since it tends to distract participants from the science program and field trip. If you have family or friends coming after the meeting, please ask them to arrive no earlier than the morning of Sunday, 11 September 2011. Your cooperation in this matter is greatly appreciated.

CONVENERS:

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