Editorial

Foreword to the special volume on geology of the Mongolian Altay

Mongolia is a land of endless skyline and steppe, rugged mountains and deserts, which hide away a great mineral potential. This country attracts geologists and mining companies from all over the world. Although the collaboration between former Czechoslovakia and Mongolia has had a long tradition, in fact going back as far as into 1950's, it was broken after political changes in early nineties. While Czech geologists drew back, Mongolia began to open up to numerous foreign prospecting and exploration companies. The cooperation in geology between Czech Republic and Mongolia resumed in 1997 within the frame of the Czech International Development Cooperation. The first projects were focussed on geological mapping and geochemical reconnaissance/prospecting works, the current deal mainly with the environmental problems and hydrogeology.

Modern geological works starting after opening of Mongolia to foreign geologists have brought new insight into older, mainly Russian, geological maps. New approaches yielded numerous data on tectonics, sedimentology, geochemistry and radiometric dating. The first stage of this renewed geological research effort culminated by publishing of a new terrane subdivision for Mongolia compiled by Badarch et al. (2002). It at last put the Mongolian regional geology within the broader geotectonic context of the Central Asian Orogenic Belt (CAOB). This belt known also as Altaids was a site of major crustal growth in the Phanerozoic times, representing one of the largest accretionary terrains on the Earth (for review see e.g. Mossakovsky et al. 1993; Şengör 1993; Dergunov 2001; Jahn 2004; Yakubchuk 2005; Windley et al. 2007 or Kröner et al. 2007).

Traditionally, the geological structure of Mongolia is subdivided into the northern and southern domains. The northern domain is considered to be a Caledonian orogen with relics of Precambrian rocks, whereas the southern domain

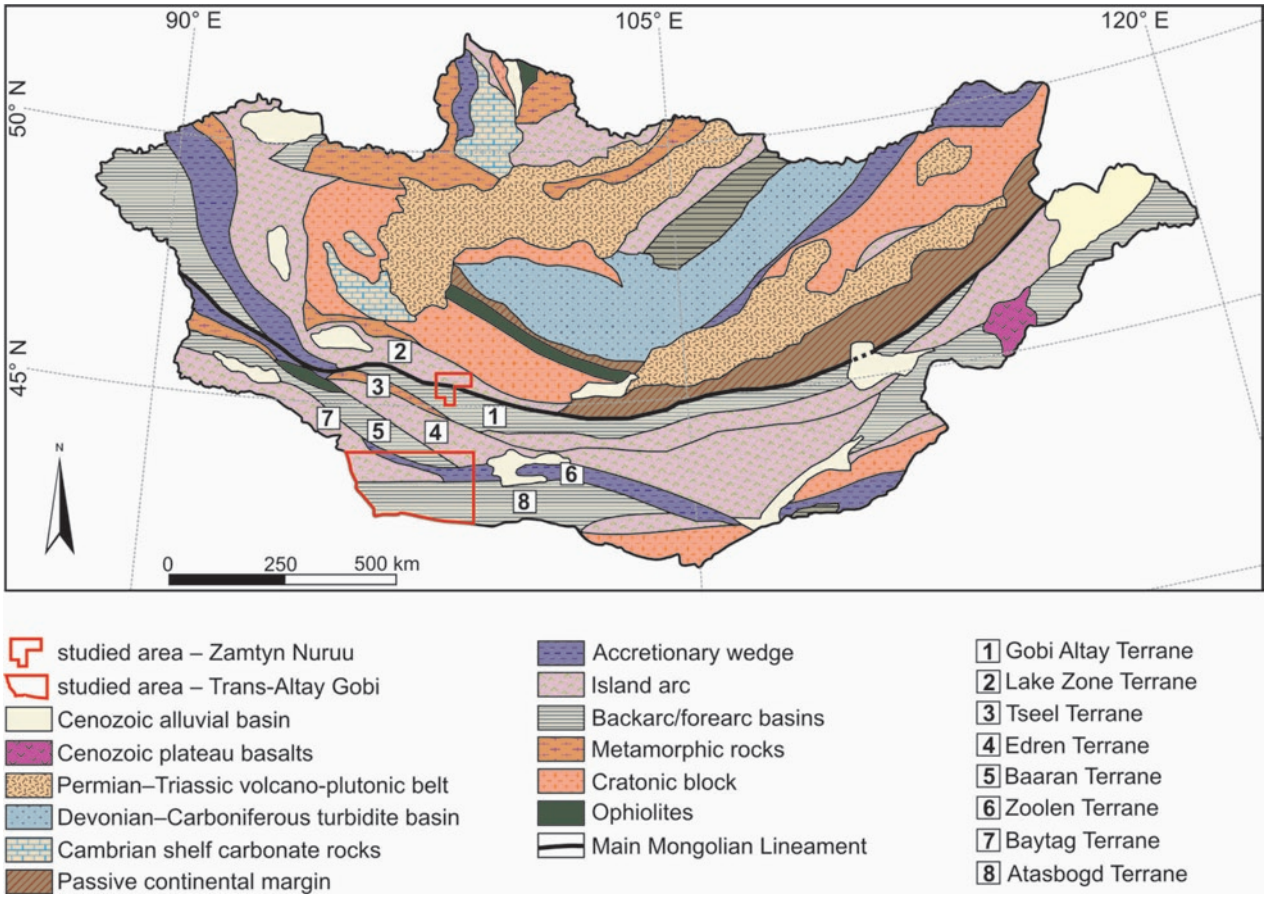

Fig. 1 Geological subdivision of Mongolia showing Zamtyn Nuruu and Trans-Altay Gobi areas as well as names of terranes discussed in the following papers. Simplified from Badarch et al. (2002).

is interpreted as a Variscan orogen. The two are divided by the so-called Main Mongolian Lineament – a regional topographic and structural boundary separating mostly Precambrian and Lower Palaeozoic rocks in the north from dominantly Middle–Upper Palaeozoic units in the south. The geological evolution of CAOB is characterised by accretion of various terranes between the Siberian, Tarim, and Sino-Korean cratons within time span of *c.* 1000–250 Ma (Windley et al. 2007). Collision culminated by extensive terrestrial volcanic activity in the SW Mongolia during the Permian and ended by the Early Mesozoic closure of the Mongolsk–Ochotsk marine basin (in the NE part of today's Mongolia). The Late Cretaceous–Palaeogene was in Mongolia a period of development similar to a platform evolution accompanied by within-plate magmatic activity (see Sinica 1993; Hendrix et al. 1996; Dergunov 2001; Barry et al. 2003 and references therein). The tectonic reactivation of the region was triggered by the collision of the Eurasian plate with the Indian subcontinent in the Late Cenozoic times. The E–W trending, recently active intra-continental faults accommodating deformation stress in the Himalayan region are responsible for the "horst" and "graben" topography of the SW Mongolia (e.g. Tapponier and Molnar 1979; Cunningham et al. 1996; Bayasgalan 1999; Vassallo et al. 2007; Cunningham 2008).

Although numerous geological publications have appeared since the Badarch's synthesis, it still represents the most systematic and comprehensive work summarizing geology of Mongolia. This geological subdivision presented in Fig. 1 hence provides basis also for all papers published in this Volume. The translation of local geographical terms used in the texts and figures is given in Tab. 1.

The original papers forming this volume of the *Journal of Geosciences* span from the extensive geological mapping, geochemical prospection and hydrogeological works performed in the SW Mongolia in the frame of the Czech International Development Cooperation in years 1999–2006 under the supervision by the Ministry of Environment of the Czech Republic.

The paper concerned with granites of the Trans-Altay Gobi results from the maps and data collected within the project "Geological and Geochemical Mapping of the Trans-Altay Gobi on a Scale of 1 : 200,000" carried out by the GEOMIN Co., Jihlava, in 1999–2003. Also the geological map of the Trans-Altay Gobi on the scale 1 : 500,000 that is enclosed in the current Volume summarizes results of the field campaign in the remote desert area on the south-western edge of Mongolia, along the border with China.

All remaining papers represent data acquired during the field work on the project "Geological mapping of the Mongolian Altay on the scale of 1 : 50,000" undertaken by the Czech Geological Survey. The Mongolian counterpart involved the Mineral Resources and Petroleum Authority of Mongolia (MRPAM), Geological Investigation Centre (GIC) and the geological departments of the Mongolian University of Science and Technology (MUST).

Pavel HANŽL, Guest Editor

Acknowledgements I appreciate the authors who spend much time preparing and finalizing papers in this Volume, beyond the scope of Czech International Development Cooperation projects, from which published data are gathered. This volume owes very much to editor-in-chief, handling editors, reviewers and other people who took the time to proofread it.

I would like to gratefully acknowledge the financial and logistic support during the field campaign by the Ministry of Environment of the Czech Republic, the Czech Embassy in Ulaanbaatar, the Czech Geological Survey, the Mineral Resources and Petroleum Authority of Mongolia, the Geological Investigation Centre of Mongolia, the Central Geological Laboratories, the Department of Geology and Mineral Resources of Ministry of Industry and Trade of Mongolia and the Geological Department of the Mongolian University of Science and Technology.

This work would not be possible without the support and co-operation of local authorities and people living in Chandman somon and Ekhin Gol. We owe also many thanks to the people we had pleasure to work with in Mongolia: students, helpers, drivers and mechanics.

Tab. 1 Translation of common Mongolian geographic terms used in this Volume

Aymag	province	Nuur	lake
Bulag	spring	Ovoo	shamanistic tumulus
Gol	river	Somon	district
Gov, Gobi	desert	Tolgoi	hill
Khudag	well	Uul	summit, mountain
Nuruu	mountain range		

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Foreword

In memory of Jaroslav Aichler

When we were working with Jarda on the last version of his manuscript on gold from the Zamtyn Nuruu area in the end of March 2008, no one expected that it would be his last publication and he would not live to see it published. In consequence, we would like to dedicate this issue of the *Journal of Geosciences* to commemorate his personality.

Jaroslav Aichler was born in 1955 in Litoměřice in a medical family where he got intellectual and emotional upbringing. He also gained fundamentals in arts during grammar school education. A wide interest in science brought him to the study of geology at Mining University in Ostrava where he graduated in 1979. Here he also met his future wife Zorka. Their marriage was a happy one with two, now adult children Jaroslav and Madla.

Jaroslav entered a job at a branch of the Czech Geological Survey in the town of Jeseník in 1980. He was involved in the great exploration and metallogenic projects concerned with base metals and gold ores in the Jeseníky Mts. In the years 1983–1990 he was head of the state prospecting project in the Jeseníky Mts. area. In these years of the geological boom in the Jeseníky Mts., Jarda's personality had matured in cooperation with a mineral resources group lead by Petr Orel and a geological mapping team headed by Jan Cháb. From this period comes his remarkable work on gold-bearing mineralization in black shales of the Andělská hora ore district. His outstanding professional as well as human qualities, honesty, enthusiasm and endurance lead the management of the Czech Geological Survey to appoint Jaroslav at the age of 28 the director of the Regional office in Jeseník which he remained until his death.

The coming of new computer technologies revealed a new horizon and he devoted himself to their implementation into processing of geological data. The spread of the Internet supported his visions about the flow and presentation of geological information. The time has shown that Jarda was a step ahead again. As the informatics manager he set up the Information Portal of Czech Geological Survey, hosting numerous science and popularisation sites today.

Experience in economic geology and ore prospecting took Jaroslav in many countries, e.g. Tanzania, Australia or China. For many years he was the executive secretary of the IAGOD, a worldwide institution incorporating more than ten thousands ore geologists, and he participated in numerous international conferences and workshops. The work on the geochemical prospecting and ore reconnaissance of the Zamtyn Nuruu area in the Mongolian Altay within a Czech International Development Cooperation project conducted by the Czech Geological Survey was the culmination of his activities abroad. His endurance, chosen methodologies and sound scepticism accompanied by great erudition lead to the discovery of several geochemical anomalies and interesting ore indications in the area so far considered as sterile.

Those who had the opportunity to meet Jaroslav either at work or privately always felt that they had encountered a person of a honest heart and outstanding abilities. His gift to mitigate conflicts and his short and smart comments on various situations, either at work meetings, in remote wilderness or at an informal evening, filled everybody by motivation, joy and hope for the future. Unfortunately, he himself ran out of inspiration on April 18, 2008.

The loss is hardly retrievable not only for his friends or the staff of the Czech Geological Survey but for the whole Czech geology and foreign partners. Jarda's scientific publications, web pages, popular lectures and mostly his personality will surely continue stimulating next generations of geologists to reveal secrets hidden in the Earth's interior.

Pavel HANŽL, with contribution of Petr MIXA and Petr OREL