

HOSTED BY

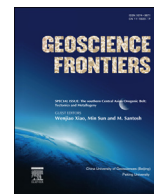


ELSEVIER

Contents lists available at ScienceDirect

China University of Geosciences (Beijing)

Geoscience Frontiers

journal homepage: www.elsevier.com/locate/gsf

Research paper

Main deposit styles and associated tectonics of the West Junggar region, NW China

Ping Shen ^{a,*}, Hongdi Pan ^{a,b}, Yuanchao Shen ^a, Yuhong Yan ^a, Shihua Zhong ^a^a Key Laboratory of Mineral Resources, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China^b College of Earth Sciences, Chang'an University, Xi'an 710054, China

ARTICLE INFO

Article history:

Received 2 December 2013

Received in revised form

3 May 2014

Accepted 13 May 2014

Available online 27 May 2014

Keywords:

Mineral deposit styles

Metallogenic belts

Tectonic-mineralized epoch

West Junggar

Xinjiang

ABSTRACT

The West Junggar region, located in the loci of the Central Asian Orogenic Belt, is a highly endowed metallogenic province with >100 tonnes Au, >0.7 Mt Cu, >0.3 Mt Mo, and >2.3 Mt chromite as well as significant amounts of Be and U. The West Junggar region has three metallogenic belts distributed systematically from north to south: (1) late Paleozoic Saur Au-Cu belt; (2) early Paleozoic Xiemisitai-Sharburtt Be-U-Cu-Zn belt; (3) late Paleozoic Barluk-Kelamay Au-Cu-Mo-Cr belt. These belts host a number of deposits belonging to at least eight economically important styles, including epithermal Au, granite-related Be-U, volcanogenic massive sulfide (VMS) Cu-Zn, podiform chromite, porphyry Cu, hydrothermal quartz vein Au, porphyry-greisen Mo(-W), and orogenic Au. These deposit styles are associated with the tectonics prevalent during their formation. Five tectonic-mineralized epochs can be recognized: (1) Ordovician subduction-related VMS Cu-Zn deposit; (2) Devonian ophiolite-related podiform chromite deposit; (3) early Carboniferous subduction-related epithermal Au and porphyry Cu deposits; (4) late Carboniferous subduction-related granite-related Be-U, porphyry Cu, and hydrothermal quartz vein Au deposits; and (5) late Carboniferous to early Permian subduction-related porphyry-greisen Mo(-W) and orogenic Au deposits.

© 2015, China University of Geosciences (Beijing) and Peking University. Production and hosting by Elsevier B.V. All rights reserved.

1. Introduction

The Central Asian Orogenic Belt (CAOB) is one of the largest orogenic collages in the world (Sengör et al., 1993; Jahn et al., 2000, 2004; Windley et al., 2007; Xiao et al., 2008, 2009, 2010a, 2013; Santosh and Kusky, 2010; Kröner et al., 2013, 2014; Xiao and Santosh, 2014). The West Junggar region in Xinjiang (NW China) is located in the loci of the CAOB (Fig. 1A) and is bounded by the Altai orogen to the north and by the Tianshan orogen to the south, and it extends westward to the Junggar-Balkhash region in adjacent Kazakhstan and eastward to the Junggar Basin in Xinjiang, China (Fig. 1B). It is a highly endowed metallogenic province in the CAOB

with >100 tonnes Au, >0.7 Mt Cu, >0.3 Mt Mo, and >2.3 Mt chromite as well as significant amounts of Be and U. It hosts many mineral deposits, such as Baiyanghe Be-U deposit, Kurzhenkuola, Kuogesay and Hatu Au deposits, Hongguleleng Cu-Zn deposit, Sartuohai chromite deposit, Baogutu Cu deposit, and Suyunhe and Hongyuan Mo(-W) deposits (Shen et al., 1993; Zhou et al., 2001; Wang et al., 2005, 2006; Yuan et al., 2006; Zhou et al., 2006, 2008; Zhu and Xu, 2006; Song et al., 2007; An and Zhu, 2010; Shen et al., 2010a,b; Tan and Zhu, 2010; Wei and Zhu, 2010; Pirajno et al., 2011; Wang et al., 2012; Zhang and Zhang, 2014). The spatial and temporal distribution of these deposits relates to their formation within a unique tectonic framework.

In this article we identify three metallogenic belts and describe the selected deposits of the West Junggar region using published literature and our own field observations. We also review the relationship between the deposits' metallogenesis and the tectonic settings and discuss models that attempt to explain the links of these deposits to aspects of the geodynamic evolution of the West Junggar region.

* Corresponding author. Tel.: +86 10 82998189; fax: +86 10 62010846.
E-mail address: pshen@mail.iggcas.ac.cn (P. Shen).

Peer-review under responsibility of China University of Geosciences (Beijing)

<http://dx.doi.org/10.1016/j.gsf.2014.05.001>

1674-9871/© 2015, China University of Geosciences (Beijing) and Peking University. Production and hosting by Elsevier B.V. All rights reserved.

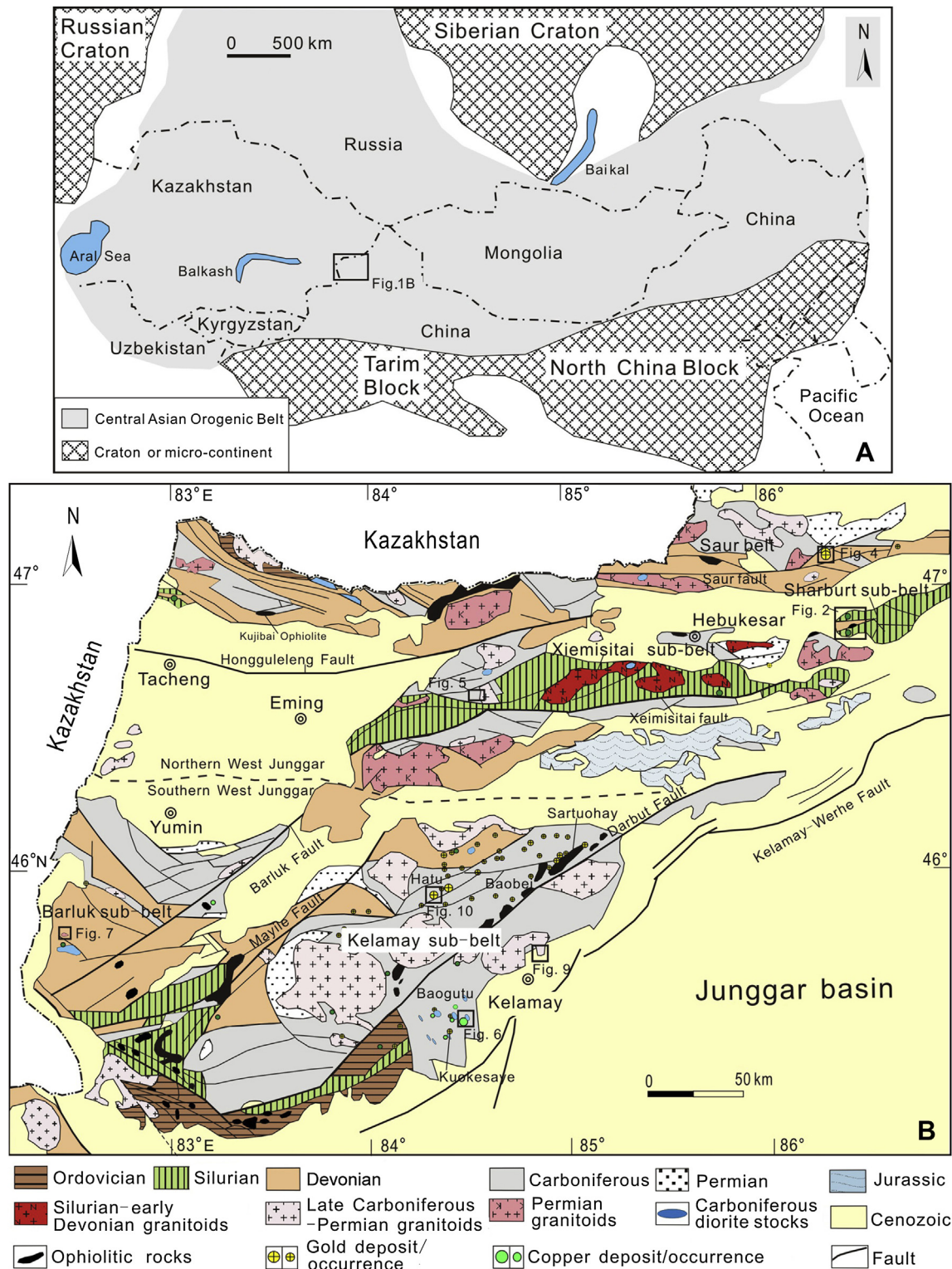


Figure 1. (A) Location of the study area in the Central Asian Orogenic Belt (modified after Jahn et al., 2000; Xiao et al., 2008, 2009). (B) Geological map of the West Junggar (modified after Shen et al., 1993; Chen et al., 2010; Shen et al., 2012a).

2. Geological outline

The West Junggar region has several mountains (Fig. 1B). The Saur, Tarbahatai, Xiemisitai, and Sharburti mountains are approximately E-trending in the northern part of the West Junggar region. The Barluke mountains and Kelamay region are mainly NE-trending in the southern part of the West Junggar region.

Geologically, in the northern part of the West Junggar region, the late Paleozoic volcanic rocks exclusively outcrop in the Saur mountains and the early Paleozoic volcanic rocks are confined to the Xiemisitai and Sharburti mountains (Fig. 1B). Strata from Ordovician to Permian are well-exposed (Zhu and Xu, 2006; Shen et al., 2008, 2012a; Zhou et al., 2008). In the southern part of the West Junggar region, the late Paleozoic volcanic rocks exclusively

Download English Version:

<https://daneshyari.com/en/article/4681630>

Download Persian Version:

<https://daneshyari.com/article/4681630>

[Daneshyari.com](https://daneshyari.com)