Metallogenesis and Tectonics of Northeast Asia
Edited by Warren J. Nokleberg
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Appendix A

Description of the Northeast Asia Project and Associated Products

By Warren J. Nokleberg [1], Leonid M. Parfenov [2], Alexander I. Khanchuk [3], Mikhail I. Kuzmin [4], Alexander A. Obolenskiy [5], Andrei V. Prokopiev [2], Sergey M. Rodionov [6], Alexander P. Smelov [2], Gombosuren Badarch [7], Hongquan Yan [8], Duk Hwan Hwang [9], and Masatsugu Ogasawara[10]

Introduction

This appendix provides an overview of the associated project on the Metallogenesis and Tectonics of Northeast Asia and lists the participating agencies and scientists and the extensive publications that have already been produced.

Project Area, Collaborating Agencies, Participants, and Purpose

The project area consists of eastern Russia (most of Siberia and most of the Russian Far East), Mongolia, Northeastern China, South Korea, Japan, and adjacent offshore areas (fig. 1), bounded by latitude 30-82° N. and longitude 75-144° E. Participating agencies in the project are the Russian Academy of Sciences, VNIIOkeangeologia and Ministry of Natural Resources of the Russian Federation; Mongolian Academy of Sciences; Mongolian University of Science and Technology; Mongolian National University; Jilin University, Changchun, People's Republic of China; the China Geological Survey; the Korea Institute of Geosciences and Mineral Resources; the Geological Survey of Japan/AIST; University of Texas Arlington; and the U.S. Geological Survey (USGS). Collaborating agencies are listed below in table 1. In addition to the numerous agencies and participants, several major Western organizations and universities have supported the project by inviting project-related talks and organizing symposia on the project at major and minor meetings, including the Colorado School of Mines; Stanford University; University of Alaska Fairbanks; University of Pittsburgh; the Alaska Miners Association; the Northwest Mining Association; and the Society of Economic Geologists.

This project extends and builds on data and interpretations from a previous project on Major Mineral Deposits, Metallogenesis, and Tectonics of the Russian Far East, Alaska, and the Canadian Cordillera that was conducted by the USGS, the Russian Academy of Sciences, the Alaska Division of Geological and Geophysical Surveys, and the Geological Survey of Canada.

The chapters in this volume and for the associated publications were compiled by a large group of international geologists, using new concepts and definitions for analyzing the metallogenesis and tectonics of a large and geologically complex region. Research was conducted over a 7-year period with large, end-of-year workshops in Northeast Asia. Each chapter should have major global significance. The information presented here will be useful for several purposes, including regional tectonic analysis, mineral resource and metallogenic analysis, mineral-resource assessment, petroleum-resource analysis and assessment, neotectonic analysis, and analysis of seismic and volcanic hazards.

The purpose of this project is to benefit participants and customers by (1) providing a comprehensive international database on the mineral resources of the region that will be the first, extensive knowledge available in English; (2) providing substantially new interpretations of the origin

[1] U.S. Geological Survey, Menlo Park, Calif.
[2] Russian Academy of Sciences, Yakutsk.
[3] Russian Academy of Sciences, Vladivostok.
[4] Russian Academy of Sciences, Irkutsk.
[5] Russian Academy of Sciences, Novosibirsk.
[6] Russian Academy of Sciences, Khabarovsk.
[7] Mongolian Academy of Sciences, Ulaanbaatar.
[8] Jilin University, Changchun, People's Republic of China.
[9] Korean Institute of Geosciences and Mineral Resources, Taejon.
[10] Geological Survey of Japan/AIST, Tsukuba.

and crustal evolution of mineralizing systems and their host rocks, thereby enabling enhanced, broad-scale metallogenic and tectonic reconstructions; and (3) promoting trade and scientific and technical exchanges between North America and Eastern Asia. With the numerous and detailed publications and presentations at important professional meetings (listed below), the project has provided vital data to a wide variety of customers for making sound economic planning and investment decisions and for increasing their geologic knowledge of the region, including (1) mining, petroleum, environmental, construction, investment, and information companies; (2) Federal and State government agencies in all countries; (3) professional organizations; (4) earth-science departments at universities; and (5) the news media.

Products of the Northeast Asia Project

Products for the project include (1) detailed mineral resource tables and location maps with data on 1,674 significant lode deposits and 91 selected placer districts in the project area, based on original, cited references; (2) regional geodynamics maps and detailed explanations that provide the geologic setting for mineral deposits and metallogenic belts; (3) mineral deposit location and metallogenic belt maps; and (4) metallogenic and tectonic interpretations, including a four-dimensional time-space model depicting the crustal origin and evolution of mineral deposits and host rocks. Publications are released in both hard copy (USGS publications and scientific journals), and digital format (CD-ROM, World Wide Web).

Figure 1. Regional summary geographic map of Northeast Asia showing majors regions and countries.

Table 1. Organizations and participants in international project on metallogenesis and tectonics of Northeast Asia.

Country	Organization	Participants
China	Geological Research Institute, Jilin University, Changchun	Yongsheng Dong Xujun Li Fengyue Sun Jiapeng Sun Weizhi Sun, Hongquan Yan Mao Ye Aihua Xi
Japan	Geological Survey of Japan/AIST, Tsukuba	Masatsugu Ogasawara Masakatsu Sasada Sadahisa Sudo Koji Wakita
Mongolia	Institute of Geology and Mineral Resources, Mongolian Academy of Sciences, Ulaanbaatar	Sodov Ariunbileg Gombosuren Badarch Demberel Orolmaa Onongin Tomurtogoo
	Mineral Resources Authority of Mongolia, and Ministry of Agriculture and Industry, Ulaanbaatar	Gunchin Dejidmaa Ayurzana Gotovsuren
	Mongolian University of Science and Technology, Ulaanbaatar	Ochir Gerel
	Department of Geology and Mineralogy, Mongolian National University, Ulaanbaatar	Jamba Byamba Dangindorjiin Dorjgotov
Russia	All Russia Research Institute for Geology and Mineral Resources of the World Ocean (VNIIOkeangeologia), Russian Ministry of Natural Resources, St. Petersburg	Boris I. Kim Eugeney A. Korago Mikhail K. Kos'ko Oleg I. Suprunenko
	Buryat Institute of Geology, Russian Academy of Sciences, Ulan-Ude	Alexander N. Bulgatov
	Buryat Scientific Center, Russian Academy of Sciences, Ulan-Ude	Ivan V. Gordienko
	Far East Geological Institute, Russia Academy of Sciences, Vladivostok	Alexander I. Khanchuk Marina Yu. Kapitanchuk Elena Koltunova Vera V. Naumova Mikhail I. Patuk Vladimir V. Ratkin
	Institute of Diamond and Noble Metal Geology, Russian Academy of Sciences, Yakutsk	Gennandiy B. Biryul'kin Yury V. Davydov Alexey V. Deikunenko Gennadiy N. Gamyanin Alexei V. Kostin Andrei V. Prokopiev Vladimir S. Oxman Leonid M. Parfenov Alexander P. Smelov Valeriy M. Supletsov Vladimir F. Timofeev Felix F. Tret'yakov Oleg A. Tyan

Table 1. Organizations and participants in international project on metallogenesis and tectonics of Northeast Asia.—Continued

Country	Organization	Participants
	Yakutian State University	Valeriy G. Vetluzhskikh Yakov.V. Yakovlev Alexander N. Zedgenizov Valeriy Yu. Fridovskiy Valeriy M. Nikitin Valeriy V. Stogniy Vladimir.I. Zhizhin
	Institute of Earth's Crust, Russian Academy of Sciences, Irkutsk	Valentina Belichenko Eugene V. Sklyarov Lydia M. Zorina
	Institute of Geochemistry, Russian Academy of Sciences, Irkutsk	TatianaV. Bounaeva Sergey I. Dril Mikhail I. Kuzmin Sergey A. Letunov Alexander M. Spiridonov
	Institute of Geology, Russian Academy of Sciences, Novosibirsk, Institute of Tectonics and Geophysics, Russian Academy of Sciences, Novosibirsk	Nikolay A. Berzin Elimir G. Distanov Alexander A. Obolenskiy Nikolay.V. Popov Sergey N. Rudnev Vitali I. Sotnikov Valery A. Vernikovsky Alexander G. Vladimirov Y.V. Yakovlev
	Irkutsk State Technical University	Anatoliy P. Kochnev Galina D. Malceva Zhan V. Seminskiy
	Institute of Tectonics and Geophysics, Russian Academy of Sciences, Khabarovsk	Galina L. Kirillova Lyudmila I. Popeko Sergey M. Rodionov
	Northeast Integrated Scientific Research Institute, Russian Academy of Sciences, Magadan	Nikolai A. Goryachev Vladimir D. Melnikov Vladimir I. Shpikerman
	ALROSA Joint Company, Mirnyi	Nikolay.N. Zinchuk
South Korea	Korea Institute of Geosciences and Mineral Resources, Taejon	Duk Hwan Hwang
U.S.A.	University of Texas, Arlington, Texas	Christopher R. Scotese
	U.S. Geological Survey, Menlo Park, California	Robert J. Miller Warren J. Nokleberg

Geodynamics maps and mineral-resource data and maps are compiled and published as Geographic Information Systems (GIS) spatial datasets. Following is a list of all project publications through the date of this publication.

Preliminary Publications, Book 1

Preliminary Publications Book 1 from project on mineral resources, metallogenesis, and tectonics of Northeast Asia, Nokleberg, W.J., Naumova, V.V., Kuzmin, M.I., and Bounaeva, T.V., eds., 1999: U.S. Geological Survey Open-File Report 99-165 [CD-ROM] [http://pubs.usgs.gov/of/1999/of99-165/].

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Preliminary description of mineral deposit models, by Gunchin, D., Dangindorjiin, D., Gerel, O., Gotovsuren, A., and Sodov, A., 1999, in Nokleberg, W.J., Naumova, V.V., Kuzmin, M.I., and Bounaeva, T.V., eds., Preliminary publications book 1 from project on mineral resources, metallogenesis, and tectonics of Northeast Asia: U.S. Geological Survey Open-File Report 99-165, 30 p. [CD-ROM] [http://pubs.usgs.gov/of/1999/of99-165/].

Preliminary geodynamic map of Yakutia region, eastern Siberia, by Parfenov, L.M., Prokopiev, A.V., Deikunenko, A.V., Oxman, V.S., Smelov, A.P., Timofeev, V.F., Tret'yakov, F.F., Zadgenizov, A.P., and Vernikovsky, V.A., 1999, in Nokleberg, W.J., Naumova, V.V., Kuzmin, M.I., and Bounaeva, T.V., eds., Preliminary publications book 1 from project on mineral resources, metallogenesis, and tectonics of Northeast Asia: U.S. Geological Survey Open-File Report 99-165, [CD-ROM], 2 sheets, scale 1:5,000,000 [http://pubs.usgs.gov/of/1999/of99-165/].

Preliminary table of lode and occurrences of Altay-Sayan Region and adjacent areas, eastern Siberia, Russia, by Obolenskiy, A.A., Distanov, E.G., and Sotnikov, V.I., 1999, in Nokleberg, W.J., Naumova, V.V., Kuzmin, M.I., and Bounaeva, T.V., eds., Preliminary publications book 1 from project on mineral resources, metallogenesis, and tectonics of Northeast Asia: U.S. Geological Survey Open-File Report 99-165, 13 p. [CD-ROM] [http://pubs.usgs.gov/of/1999/of99-165/].

Preliminary table of lode and placer deposits and occurrences of Mongolia, by Gunchin, D., Badarch, G., Chimed, N., Dorjgotov, D., and Gotovsuren, A., 1999, in Nokleberg, W.J., Naumova, V.V., Kuzmin, M.I., and Bounaeva, T.V., eds., Preliminary publications book 1 from project on mineral resources, metallogenesis, and tectonics of Northeast Asia: U.S. Geological Survey Open-File Report 99-165, 62 p. [CD-ROM] [http://pubs.usgs.gov/of/1999/of99-165/].

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Mineral deposit models for Northeast Asia, by Obolenskiy, A.A., Rodionov, S.M., Ariunbileg, Sodov, Dejidmaa, Gunchin, Distanov, E.G., Dorjgotov, Dangindorjiin, Gerel, Ochir, Hwang, Duk Hwan, Sun, Fengyue, Gotovsuren, Ayurzana, Letunov, S.N., Li, Xujun, Nokleberg, W.J., Ogasawara, Masatsugu, Seminsky, Z.V., Smelov, A.P., Sotnikov, V.I., Spiridonov, A.A., Zorina, L.V., and Yan, Hongquan, 2003, *in* Nokleberg, W.J., Miller, R.J., Naumova, V.V., Khanchuk, A.I., Parfenov, L.M., Kuzmin, M.I., Bounaeva, T.M., Obolenskiy, A.A., Rodionov, S.M., Seminskiy, Z.V., and Diggles, M.F., eds., Preliminary publications book 2 from project on mineral resources, metallogenesis, and tectonics of Northeast Asia: U.S. Geological Survey Open-File Report 03-203, 47 p. [CD-ROM].

Digital Data Files for Northeast Asia Geodynamics, Mineral-Deposit Locations, and Metallogenic-Belt Maps, Stratigraphic Columns, Descriptions of Map Units, and Descriptions of Metallogenic Belts

Digital files for Northeast Asia geodynamics, mineral deposit location, and metallogenic belt maps, stratigraphic columns,

descriptions of map units, and descriptions of metallogenic belts (CD and Web versions), by Nokleberg, W.J., Badarch, Gombosuren, Berzin, N.A., Diggles, M.F., Hwang, Duk Hwan, Khanchuk, A.I., Miller, R.J. Naumova, V.V., Obolenskiy, A.A., Ogasawara, Masatsugu, Parfenov, L.M., Prokopiev. A.V., Rodionov, S.M., and Hongquan, Yan, eds., 2004: U.S.G.S. Open-File Report 2004-1252 [CD-ROM] [http://pubs.usgs.gov/of/2004/1252/].

Descriptions of metallogenic belts, methodology, and definitions for Northeast Asia mineral deposit location and metallogenic belt maps, by Rodionov, S.M., Obolenskiy, A.A., Dejidmaa, G., Gerel, O., Hwang, D.H., Miller, R.J., Nokleberg, W.J., Ogasawara, M., Smelov, A.P., Yan, Hongquan, and Seminskiy, Z.V., compilers, 2004, U.S.G.S. Open-File Report 2004-1252, explanatory text, 442 p. [CD-ROM] [http://pubs.usgs.gov/of/2004/1252/].

Descriptions of overlap assemblages and tectono-stratigraphic terranes, definitions, and methods for compilation for Northeast Asia geodynamics map, by Parfenov, L.M., Khanchuk, A.I., Badarch, G., Berzin, N.A., Miller, R.J., Naumova, V.V., Nokleberg, W.J., Ogasawara, M., Prokopiev, A.V., and Yan, Hongquan, compilers, 2004, U.S.G.S. Open-File Report 2004-1252, explanatory text, 167 p. [CD-ROM] [URL: http://pubs.usgs.gov/of/2004/1252/]

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Additional Major Compilations

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