U.S. Department of the Interior
U.S. Geological Survey

Prepared in collaboration with
Russian Academy of Sciences, Mongolian Academy of Sciences, Jilin University, Korean Institute of Geoscience and Minerals,
Geological Survey of Japan/National Institute of Advanced Industrial Science and Technology

Scientific Investigations Map 3024
Sheet 2 of 2

INTRODUCTION AND COMPANION STUDIES

This map portrays the geodynamics of Northeast Asia at a scale of 1:5,000,000 using the concepts of plate tectonics and analysis of terranes and overlap assemblages. The map is the result of a detailed compilation and synthesis at 5 million scale and is part of a major international collaborative study of the *Mineral Resources, Metallogenesis, and Tectonics of Northeast Asia* conducted from 1997 through 2002 by geologists from earth science agencies and universities in Russia, Mongolia, Northeastern China, South Korea, Japan, and the USA.

This map is the result of extensive geologic mapping and associated tectonic studies in Northeast Asia in the last few decades and is the first collaborative compilation of the geology of the region at a scale of 1:5,000,000 by geologists from Russia, Mongolia, Northeastern China, South Korea, Japan, and the USA. The map was compiled by a large group of international geologists using the below concepts and definitions during collaborative workshops over a six-year period. The map is a major new compilation and re-interpretation of pre-existing geologic maps of the region. The map is designed to be used for several purposes, including regional tectonic analyses, mineral resource and metallogenic analysis, petroleum resource analysis, neotectonic analysis, and analysis of seismic hazards and volcanic hazards.

The map consists of two sheets. Sheet 1 displays the map at a scale of 1:5,000,000 and the map explannation. Sheet 2 displays the introduction, list of map units, and source references. Detailed descriptions of map units and stratigraphic columns are being published separately (Parfenov and others, 2004).

This map is one of a series of publications on the mineral resources, metallogenesis, and geodynamics of Northeast Asia. Companion studies and other articles and maps, and various detailed reports are (1) a compilation of major mineral deposit models (Rodionov and Nokleberg, 2000; Rodionov and others, 2000; (2) a series of metallogenic belt maps (Obolenskiy and others, 2001); (3) descriptions of metallogenic belts (Rodionov and others, 2004); and (4) a database on significant metalliferous and selected nonmetalliferous lode deposits, and selected placer districts (Ariunbileg and others, 2003).

KEY CONCEPTS FOR COMPILATION OF MAP

This map portrays major geologic and tectonic units of the region. The map illustrates both the onshore terranes and overlap volcanic assemblages of the region, including cratons, tectonostratigraphic terranes and overlap assemblages, major structures, and major offshore geologic features. Geologic mapping suggests that most of this region can be interpreted as a collage of fault-bounded tectonostratigraphic terranes that were accreted onto cratons and continental margins during the Paleozoic, Mesozoic, and Cenozoic eras.

A *tectonostratigraphic terrane* is defined as a fault-bounded geologic entity or fragment that is characterized by a distinctive geologic history that differs markedly from that of adjacent terranes (Jones and others, 1983; Howell and others, 1985). A tectonostratigraphic terrane (hereafter referred to as *terrane*) is a stratigraphically coherent assemblage that formed before tectonic juxtaposition to adjacent units. A few terranes are mainly subduction-zone or accretionary-wedge complexes. Terranes are bounded by major faults or fault zones, termed sutures. Paleontologic, stratigraphic, and paleomagnetic evidence suggests that some terranes were originally widely separated from one another, or from the North Asian, Sino-Korean, or South China (Yangzi) Cratons. On the other hand, some terranes may have formed within a few hundred kilometers of one another and (or) near the same craton.

On the map, terranes are interpreted and colored according to inferred tectonic environments: (1) cratonal; (2) passive continental margin; (3) metamorphosed continental margin; (4) continental-margin arc; (5) island arc; (6) oceanic crust, seamount, and ophiolite; (7) accretionary wedge and subduction zone; (8) turbidite basin; (9) transform continental-margin arc, and (10) metamorphic for terranes that are too highly-deformed and metamorphosed to determine the original tectonic environment. For terranes with complex geologic histories color indicates the tectonic environment most prevalent during the history of the terrane. Terranes in early Precambrian crystalline basement of cratons are also delineated; color indicates major lithologies.

The map also depicts overlap units that occurred after accretion of terranes to each other or to a continental margin: (1) Paleozoic, Mesozoic, and Cenozoic sedimentary and volcanic rocks that are deposited across two or more terranes and generally formed after accretion of most terranes in the region; (2) Paleozoic, Mesozoic, and Cenozoic basinal deposits that occur within a terrane or on cratons; and (3) plutonic rocks. Post-accretion igneous units are identified by age-lithologic abbreviations and by name.

Overlap assemblages and basinal deposits formed mainly during sedimentation and magmatism. Overlap assemblages provide minimum ages on the timing of accretion of terranes. Some overlap assemblages and basinal deposits, as well as fragments of terranes, are extensively offset by movement along post-accretion faults. In offshore areas, the map depicts major oceanic plates, oceanic spreading ridges, and seamounts. For onshore units, the map also depicts active continental margin and island arc-related assemblages, orogenic belt assemblages, magmatic formations, and transform-plate-boundary-related assemblages. Also depicted are younger neotectonic features including active faults, active volcanoes, astroblemes, aulacogen, and rifts.

TECTONIC DEFINITIONS

The following definitions are used for the compilation, synthesis, description, and interpretation of metallogenic belts. The definitions are adapted from Coney and others (1980), Jones and others (1983), Silberling and others (1984), Howell and others (1985), Monger and Berg (1987), Nokleberg and others (1994a, b, 2001), Wheeler and others (1988), and Scotese and others (2001).

Accretion Tectonic juxtaposition of two or more terranes, or tectonic juxtaposition of terranes with a craton margin. Accretion of terranes to one another or to a craton margin also defines a major change in the tectonic evolution of terranes and craton margins.

Accretionary wedge and subduction-zone terrane Fragment of a mildly to intensely deformed complex consisting of varying amounts of turbidite deposits, continental-margin rocks, oceanic crust and overlying units, and oceanic mantle. Divided into units composed predominantly of turbidite deposits or predominantly of oceanic rocks, mainly basalt. Units are interpreted to have formed during tectonic juxtaposition in a zone of major thrusting of one lithosphere plate beneath another, generally along the margin of a continent or an island arc. May include large fault-bounded units with a coherent stratigraphy. Many subduction-zone terranes contain fragments of oceanic crust and associated rocks that exhibit a complex structural history, occur in a major thrust zone, and possess blueschist-facies metamorphism.

Collage of terranes Groups of tectonostratigraphic terranes, generally formed in oceanic areas; insufficient data exists to identify separate units.

Craton Chiefly regionally metamorphosed and deformed shield assemblages of Archean and Early Proterozoic sedimentary, volcanic, and plutonic rocks, and overlying platform successions of Late Proterozoic, Paleozoic, and local Mesozoic and Cenozoic sedimentary and lesser volcanic rocks.

Craton margin Chiefly Late Proterozoic through Jurassic sedimentary rocks deposited on a continental shelf or slope. Consists mainly of platform successions. Locally has, or may have had an Archean and Early Proterozoic cratonal basement.

Cratonal terrane Fragment of a craton.

Continental margin arc terrane Fragment of an igneous belt of coeval plutonic and volcanic rocks, and associated sedimentary rocks that formed above a subduction zone dipping beneath a continent. Inferred to possess a sialic basement.

Deposit Any lode or placer mineral occurrence, mineral deposit, prospect, and (or) mine.

Island-arc terrane Fragment of an igneous belt of plutonic rocks, coeval volcanic rocks, and associated sedimentary rocks that formed above an oceanic subduction zone. Inferred to have a simatic basement.

Metamorphic terrane Fragment of a highly metamorphosed or deformed assemblage of sedimentary, volcanic, or plutonic rocks that cannot be assigned to a single tectonic environment because the original stratigraphy and structure are obscured. Includes intensely deformed structural melanges that contain intensely deformed fragments of two or more terranes.

Metamorphosed continental margin terrane Fragment of a passive continental margin, in places moderately to highly metamorphosed and deformed, that cannot be linked with certainty to the nearby craton margin. May be derived from either a nearby craton margin or a distant site.

Oceanic crust, seamount, and ophiolite terrane Fragment of part or all of a suite of deep-marine sedimentary rocks, pillow basalt, gabbro, and ultramafic rocks that are interpreted as oceanic sedimentary and volcanic rocks and the upper mantle. Includes both inferred offshore oceanic and marginal ocean basin rocks, minor volcaniclastic rocks of magmatic arc derivation, and major marine volcanic accumulations formed at a hotspot, fracture zone, or spreading axis.

Overlap assemblage A post-accretion unit of sedimentary or igneous rocks deposited on, or intruded into, two or more adjacent terranes. The sedimentary and volcanic parts either depositionally overlie, or are interpreted to have originally depositionally overlain, two or more adjacent terranes, or terranes and the craton margin. Overlapping plutonic rocks, which may be coeval and genetically related to overlap volcanic rocks, link or stitch together adjacent terranes, or a terrane and a craton margin.

Passive continental margin terrane Fragment of a craton margin.

Subterrane A fault-bounded unit within a terrane that exhibits similar, but not identical geologic history relative to another fault-bounded unit in the same terrane.

Superterrane An aggregate of terranes that is interpreted to share either a similar stratigraphic kindred or affinity, or a common geologic history after accretion. An approximate synonym is *composite terrane*.

Tectonic linkage The interpreted association of a suite of coeval tectonic units that formed in the same region and as the result of the same tectonic processes. An example is the linking of a coeval continental-margin arc, forearc deposits, a back-arc rift assemblage, and a subduction-zone complex, all related to the underthrusting of a continental margin by oceanic crust.

Tectonostratigraphic terrane A fault-bounded geologic entity or fragment that is characterized by a distinctive geologic history that differs markedly from that of adjacent terranes (Jones and others, 1983; Howell and others, 1985).

Transform continental-margin arc An igneous belt of coeval plutonic and volcanic rocks, and associated sedimentary rocks that formed along a transform fault that occurs along the margin of a craton, passive continental margin, and (or) collage of terranes accreted to a continental margin.

Turbidite basin terrane Fragment of a basin filled with deep-marine clastic deposits in either an orogenic forearc or backarc setting. May include continental-slope and continental-rise turbidite deposits, and submarine-fan turbidite deposits deposited on oceanic crust. May include minor epiclastic and volcaniclastic deposits.

ACKNOWLEDGMENTS

We thank the many geologists who worked with us in preparing this report for their valuable expertise in each region of Northeast Asia. We also thank N.L. Dobretsov, L.C. Gundersen, P.P. Hearn, K. Johnson, R.A. Koski, L.P. Leahy, J. Medlin, M. Power, and J.N. Weaver of the U.S. Geological Survey, for their encouragement and support of the project. We thank Russian interpreters Tatiana Bounaeva and Elena Koltunova for their skill and assistance during long and complex scientific dialogues and for translation of complex geologic descriptions and references.

REFERENCES

Ariunbileg, Sodov, and others, 2003, Significant metalliferous and selected non-metalliferous lode deposits, and selected placer districts for Northeast Asia: U.S. Geological Survey Open-File Report 2003-220, 1 CD. [Available on the World Wide Web at http://geopubs.wr.usgs.gov/open-file/of03-220]
Bilibin, Yu.A., 1955, Metallogenic provinces and metallogenic epochs: Moscow, Gosgeoltechizdat, 356 p. (in Russian).
Coney, P.J., Jones, D.L., and Monger, J.W.H., 1980, Cordilleran suspect terranes: Nature, v. 288, p. 329-333.
Cox, D.P., 1993, Estimation of undiscovered deposits in quantitative mineral resource assessments, examples from Venezuela and Puerto Rico: Nonrenewable Resources, v. 2, no. 2, p. 8291.
Cox, D.P., and Singer, D.A., eds., 1986, Mineral deposit models: U.S. Geological Survey Bulletin 1693, 379 p.
Dobretsov, N.L., and Kirdyashkin, A.G., 1994, Deep level geodynamics: Novosibirsk, Siberian Branch, Russian Academy of Sciences Press, 299 p. (in Russian).
Guild, P.W., 1978, Metallogenic maps; principles and progress: Global Tectonics Metallogeny, v. 1, no. 10, p. 10-15.
Howell, D.G., Jones, D.L., and Schermer, E.R., 1985, Tectonostratigraphic terranes of the Circum-Pacific region: Principles of terrane analysis, *in* Howell, D.G., ed., Tectonostratigraphic terranes of the Circum-Pacific region: Houston, Texas, Circum-Pacific Council for Energy and Mineral Resources, p. 3-31.
Itsikson, M.I., 1973, Metallogeny of planetary volcanogenic belts of Circum-Pacific: Evolution of volcanism in Earth's history: Nauka, Moscow, p.230-232. (in Russian).
Itsikson, M.I., 1979, Metallogenic zoning of Circum-Pacific: Nauka, Moscow, 232 p. (in Russian).
Itsikson, M.I., Krasny, L.I., and Matveenko, V.T., 1965, Volcanic belts of Circum-Pacific and their metallogeny, *in* Ore-bearing capacity of volcanogenic formations: Nedra, Moscow, p.181-196. (in Russian).
Jones, D.L., Howell, D.G., Coney, P.J., and Monger, J.W.H., 1983, Recognition, character, and analysis of tectonostratigraphic terranes in western North America, *in* Hashimoto, M., and Uyeda, S., eds., Accretion tectonics in the circum-Pacific regions; Proceedings of the Oji International Seminar on Accretion Tectonics, Japan, 1981: Advances in Earth and Planetary Sciences, Tokyo, Terra Scientific Publishing Company, p. 21-35.
Koroteev, V.A., ed., 1996, Metallogeny of fold system with respect to plate tectonics: Ekaterinburg, Urals Branch, Russian Academy of Sciences Press, 248 p. (in Russian).
Ludington, S., and Cox, D., 1996, Database for a national mineral-resource assessment of undiscovered deposits of gold, silver, copper, lead, and zinc in the conterminous United States by U.S. Geological Survey Minerals Team: U.S. Geological Survey Open-File Report 96-96, 1 CD-ROM.
Mitchell, A.G., and Garson, M.S., 1981, Mineral deposits and global tectonic settings: London, Academic Press, 421 p.
Monger, J.W.H., and Berg, H.C., 1987, Lithotectonic terrane map of western Canada and southeastern Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1874-B, 1 sheet, scale 1:2,500,000, 12 p.
Nokleberg, W.J., Bundtzen, T.K., Berg, H.C., Brew, D.A., Grybeck, Donald, Robinson, M.S., Smith, T.E., Yeend, Warren, 1994a, Metallogeny and major mineral deposits of Alaska, *in* Plafker, G. and Berg, H.C., eds., The geology of Alaska: Boulder, Colorado, Geological Society of America: The Geology of North America, v. G1, p. 855-904.
Nokleberg, W.J., Bundtzen, T.K., Grybeck, D., Koch, R.D., Eremin, R.A., Rozenblum, I.S., Sidorov, A.A., Byalobzhesky, S.G., Sosunov, G.M., Shpikennan, V.I., and Gorodinsky, M.E., 1993, Metallogenesis of mainland Alaska and the Russian Northeast: Mineral deposit maps, models, and tables, metallogenic belt maps and interpretation, and references cited: U.S. Geological Survey Open-File Report 93-339, 222 p., 1 map, scale 1:4,000,000, 5 maps, scale 1:10,000,000.
Nokleberg, W.J., Parfenov, L.M., Monger, J.W.H., Baranov, B.V., Byalobzhesky, S.G. Bundtzen, T.K., Feeney, T.D., Fujita, Kazuya, Gordey, S.P., Grantz, A., Khanchuk, A.I., Natal'in, B.A. Natapov, L.M., Norton, 1.0., Patton, W.W. Jr., Planer, G., Csholl, D.W., Sokolov, S.D., Sosunov, G.M., Stone, D.B., Tabor, R.W., Tsukanov, N.V., Vallier, T.L. and Wakita, Koji, 1994b, Circum-North Pacific tectonostratigraphic terrane map: U.S. Geological Survey Open-File Report 94-714, 221 p., 4 sheets, scale 1:5,000,000 and 1:10,000,000.
Nokleberg, W.J., Parfenov, L.M., Monger, J.W.H., Norton, I.0. Khanchuk, A.I., Stone, D.B., Scotese, C.R., Scholl, D.W., and Fujita, K., 2001, Phanerozoic tectonic evolution of the circum-North Pacific: U.S. Geological Survey Professional Paper 1626, 122 p.
Nokleberg, W.J., West, T.D., Dawson, K.M., Shpikerman, V.I., Bundtzen, T.K., Parfenov, L.M., Monger, J.W.H., Ratkin, V.V., Baranov, B.V., Byalobzhesky, S.G., Diggles, M.F., Eremin, R.A., Fujita, K., Gordey, S.P., Gorodinskiy, M.E., Goryachev, N.A., Feeney, T.D., Frolov, Y.F., Grantz, A., Khanchuk, A.I., Koch, R.D., Natalin, B.A., Natapov, L.M., Norton, I.O., Patton, W.W. Jr., Plafker, G., Pozdeev, A.I., Rozenblum, I.S., Scholl, D.W., Sokolov, S.D., Sosunov, G.M., Stone, D.V., Tabor, R.W., Tsukanov, N.V., and Vallier, T.L., 1998, Summary terrane, mineral deposit, and metallogenic belt maps of the Russian Far East, Alaska, and the Canadian Cordillera: U.S. Geological Survey Open-File Report 98-136, 1 CD-ROM.
Obolenskiy, A.A., and others, 2003, Preliminary metallogenic belt and mineral deposit maps for Northeast Asia: U.S. Geological Survey Open-File Report 03-204, 4 sheets, scale 1:7,500,000 and 1:15,000,000 [Available on the World Wide Web at http://geopubs.wr.usgs.gov/open-file/of03-204]
Obolenskiy, A.A., Rodionov, S.M., Parfenov, L.M., Kuzmin, M.I., Distanov, E.G., Sotnikov, V.I., Seminskiy, Zh.V., Spiridonov, A.M., Stepanov, V.A., Khanchuk, A.I., Nokleberg, W.J., Tomurtogoo, O., Dejidmaa, G., Hongquan, Y., Fengyue, S., Hwang, D.H., and Ogasawara, M., 2001, Metallogenic belt map of Northeast Asia [abs.]: Joint 6th Biennial SGA-SEG Meeting Program with abstracts, *in* Piestrzynski, Adam., and others, eds., Mineral Deposits at the Beginning of the 21st Century: Proceedings of Joint Sixth Biennial SGA-SEG Meeting, Krakow, Poland, A.A. Balkema Publishers, p.1133-1135.
Obruchev, V.V., 1928, Various investigations on ore deposit systematics: Journal of Mineralogy, Geology, and Paleontology, v. A., no. 4, p. 143-146. (in German).
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, H., 2004, Descriptions of overlap assemblages and tectono-stratigraphic terranes, definitions, and methods for compilation for Northeast Asia geodynamics map: U.S. Geological Survey Open-File Report 2004-1252 (CD-ROM).
Parfenov, L.M., Vetluzhskikh, V.G., Gamyanin, G.N., Davydov, Yu.V., Deikunenko, A.V., Kostin, A.V., Nikitin, V.M., Prokopyev, A.V., Smelov, A.P., Supletsov, V.M., Timofeev, V.F., Fridovsky, V.YU., Kholmogorov, A.I., Yakovlev, Ya.V., 1999, Metallogenic zonation of the territory ofSakha Republic: Pacific Ocean Geology, no. 2, p. 8-40.
Plyuschev, E.V., ed., 2001, Ore knots of Russia: VSEGEI, Saint-Petersburg, 416 p. (in Russian).
Pratt, W.P., ed., 1981, Metallic mineral-resource potential of the Rolla quadrangle, Missouri, as appraised in September 1980: U.S. Geological Survey Open-File Report 81-518, 77 p., 11 plates, scale 1:250,000.
Radkevich, E.A., 1982, Metallogeny of Circum-Pacific ore belt, *in* Metallogeny of Circum-Pacific: Far Eastern Branch, U.S.S.R. Academy of Sciences, p.3-16. (in Russian).
Remane, Jurgen, 1998, Explanatory note to global stratigraphic chart, *in* Circular of International Subcommission on Stratigraphic Classification (ISSC) of IUGS Commission on Stratigraphy, Appendix B: International Union of Geological Sciences (IUGS) Commission on Stratigraphy, v. 93, 11 p.
Rodionov, S.M., and Nokleberg, W.J., 2000, Mineral deposit models for Northeast Asia [abs.], *in* Mineral Resources and Tectonics of Northeast Asia: ITIT International Symposium June 8-9, Abstracts, AIST Research Center, Tsukuba, Japan, p. 51-53.
Rodionov, S.M., Obolenskiy, A.A., Khanchuk, A.I., Dejidmaa, G., Hongquan, Y., Hwang, D.H., and Nokleberg, W.J., 2000, Metallogenic belts of Northeast Asia: Definitions, principles, and examples [abs.], *in* Mineral resources and tectonics of Northeast Asia: ITIT International Symposium, June 8-9, Abstracts. AIST Research Center, Tsukuba, Japan, p. 82-83.
Rodionov, S.M., A. Obolenskiy, Gunchin Dejidmaa, Ochir Gerel, Duk Hwan Hwang, Robert J. Miller, Warren J. Nokleberg, Masatsugu Ogasawara, Alexander P. Smelov, Hongquan Yan, and Zhan V. Seminskiy, 2004, Descriptions of metallogenic belts, methodology, and definitions, for Northeast Asia mineral deposit location and metallogenic belt maps, *in* Digital files for Northeast Asia geodynamics, mineral deposit location, and metallogenic belt maps, stratigraphic columns, descriptions of map units, and descriptions of metallogenic belts: U.S. Geological Survey Open-File Report 2004-1252, 12 p.
Scheglov, A.D., 1980, Basis of metallogenic analyses: Nedra, Moscow, 431p. (in Russian).
Shatalov, E.G., 1965, Principles of metallogenic map compilation, *in* Questions of metallogeny: Nedra, Moscow, p. 45-61 (in Russian).
Silberling, N.J., Jones, D.L., Blake, M.C., Jr., and Howell, D.G., 1984, Lithotectonic terrane map of the western conterminous United States, pt. C *of* Silberling, N.J., and Jones, D.L., eds., Lithotectonic terrane maps of the North American Cordillera: U.S. Geological Survey Open-File Report 84-423, 43 p.
Singer, D.A., 1993, Development of grade and tonnage models for different deposit types, *in* Kirkham, R.V., Sinclair, R.V., Thorpe, W.D., and Duke, J.M., eds., Mineral deposit modeling: Geological Association Canada Special Paper 40, 27 p. 2130.
Singer, D.A., 1994, The relationship of estimated number of undiscovered deposits to grade and tonnage models in three part mineral resource assessments: 1994 Intern. Assoc Math. Geology Annual Conference, Papers and Entended Abstracts, Oct. 35, 1994, Mount Tremblant, Quebec, Canada, p. 325-326.
Scotese, C.R., Nokleberg, W.J., Monger, J.W.H., Norton, I.O., Parfenov, L.M., Bundtzen, T.K., Dawson, K.M., Eremin, R.A., Frolov, Y.F., Fujita, Kazuya, Goryachev, N.A., Khanchuk, A.I., Pozdeev, A.I., Ratkin, V.V., Rodinov, S.M., Rozenblum, I.S., Shipkerman, V.I., Sidorov, A.A., and Stone, D.B., 2001, in Nokleberg, W.J. and Diggles, M.F., eds., Dynamic computer model for the metallogenesis and tectonics of the Circum-North Pacific: U.S. Geological Survey Open-File Report 01-161, 1 CD-ROM.

SOURCES FOR MAP COMPILATION

This map was principally compiled from the following publications and from unpublished data of the authors.

Baba, K., 1999, Geological structure of Yamato basin: Geological structure of East Japan and formation based on the data from the Japan Sea: Earth Monthly, special volume no. 27, p. 100-106 (in Japanese).
Badarch, G., Khosbayar, P., Makhbadar, Ts., Orolmaa, D., and Tomurtogoo, O., 1998, *in* Tomurtogoo, O. ed., Geological Map of Mongolia: Mineral Resources authority of Mongolia, Geological Survey and Mongolian Academy of Sciences, Institute of Geology and Mineral Resources, 14 sheets, scale 1: 1,000,000.
Bazhanov, V.A., and Oleinik, Yu.N., eds., 1986, Geological map of the Primorsky region: Primorsky Production and Geological Association, Vladivostok, 2 sheets, scale 1:1,000,000 (in Russian).
Berzin, N.A., and Dobretsov, N.L., 1994, Geodynamic evolution of Southern Siberia in late Precambrian-early Paleozoic time, in Coleman, R.G., ed., Reconstruction of the Paleo-Asian Ocean: Proceedings of the 29th International Geological Congress, Part B, Utrecht, Netherlands, p. 53-70.
Berzin, N.A., and Kungurtsev, L.V., 1996, Geodynamic interpretation of Altai-Sayan Geological complexes: Geology and Geophysics, v. 37, no. 1, p. 56-73.
Berzin, N.A., Coleman, R.G., Dobretsov, N.L., Zonenshain, L.P., Xiao, Xuchang, and Chang, E.Z., 1994, Geodynamic map of the western part of the Paleoasian Ocean. Geology and Geophysics, v. 35, p. 5-22.
Bogdanov, N.A., Khain, V.E., Rosen, O.M., Shipilov, E.V., Vernikovskiy, V.A., Drachev, S.S., Kostyuchenko, S.L., Kuzmichev, A.B., and Sekretov, S.B., 1998, Tectonic map and xplanatory notes for the Kara and Laptev Seas and northern Siberia: Institute of Lithosphere of Marginal and Inland Seas, Russian Academy of Sciences, Moscow, scale 1:2,500,000, 127 p. (in Russian).
Bulgatov, A.N., and Klimuk, V.S., 1998, Structural features of the Dzhida Zone, Caledonides: Geotectonics, no. 1, p. 45-55 (in Russian).
Bulgatov, A.N., Turunkhaev, V.I., 1996, Geodynamics of Central Asia in Late Mesozoic: Doklady Russian Academy of Sciences, v. 349, no. 6, p. 783-785 (in Russian).
Bureau of Geology and Mineral Resources of Heibei Province, 1990, Geological Map of Heibei Province, People's Republic of China: Geological Publishing House, Beijing, 4 sheets, scale 1:1,000,000 (in Chinese).
Bureau of Geology and Mineral Resources of Heilongjiang Province, 1993, Geological Map of Heilongjiang Province, People's Republic of China: Geological Publishing House, Beijing, 6 sheets, scale 1:1,000,000 (in Chinese).
Bureau of Geology and Mineral Resources of Inner Mongolia Autonomous Region, 1993, Geological Map of Inner Mongolia Autonomous Region, People's Republic of China: Geological Publishing House, Beijing, 9 sheets, scale 1:1,000,000 (in Chinese).
Bureau of Geology and Mineral Resources of Jilin Province, 1998, Geological Map of Jilin Province, People's Republic of China: Geological Publishing House, Beijing, 6 sheets, scale 1:1,000,000 (in Chinese).
Bureau of Geology and Mineral Resources of Liaoning Province, 1989, Geological Map of Liaoning Province, People's Republic of China: Geological Publishing House, Beijing, 4 sheets, scale 1:1,000,000 (in Chinese).
Bureau of Geology and Mineral Resources of Shandong Province, 1991, Geological Map of Shandong Province, People's Republic of China: Geological Publishing House, Beijing, 4 sheets, scale 1:1,000,000 (in Chinese).
Bureau of Geology and Mineral Resources of Shanxi Province, 1990, Geological Map of Shanxi Province, People's Republic of China: Geological Publishing House, Beijing, Beijing, 4 sheets, scale 1:1,000,000 (in Chinese).
Bureau of Geology and Mineral Resources of Xinjiang Autonomous Region, 1993, Geological Map of Xinjiang Autonomous Region, People's Republic of China: Geological Publishing House, Beijing, 4 sheets, scale 1:1,000,000 (in Chinese).
Chang, E.Z., Coleman, R.G., and Ying D.X., 1995, Tectonic transect map across Russia-Mongolia-China (western part): Stanford University and U.S. Geological Survey, scale 1:2,500,000.
Chang, K.H., 1975, Cretaceous stratigraphy of southeast Korea: Journal of Geological Society of Korea, v. 11, p.1-23 (in English).
Cheng, Yuqi, ed., 1990, Geological map of China: Geological Publishing House, Beijing, 2 sheets, scale 1:5,000,000 (in Chinese).
Cheong, C.H., Lee, H.Y., Ko, I.S. and Lee, J.D., 1979, A study on stratigraphy and sedimentological environments of the lower Paleozoic sequences in South Korea (chiefly in Jeongseon area): Journal of National Academy of Sciences, Republic of Korea, Natural Science Series, v. 18, p. 123-159 (in Korean and English).
Dergunov, A.B., 1989, The caledonides of Central Asia: Nauka, Moscow, 192 p. (in Russian).
Dobretsov, N.L., and Bulgatov A.N., 1991, Geodynamic map of Transbaikalia (concepts of preparation and legend): Novosibirsk: United Institute of Geology, Geophysics and Mineralogy and the Buryat Geological Institute, Siberian Branch, Russian Academy of Sciences, no. 8, 51 p. (in Russian).
Drachev, S.S., Savostin, L.A., Groshev, V.G., and Bruni, I.E., 1998, Structure and geology of the continental shelf of the Laptev Sea, Eastern Russian Arctic: Tectonophysics, v. 298, p. 357-393.
Fomin, I.N., Sizich I.V., Cherednichenko, V.P., and Falkin, E.M. 1985, Transbaikalian tectonic complexes and their analogues in the adjacent regions: Tectonics of Siberia, v. 12: Nauka, Novosibirsk, p. 42-52 (in Russian).
Gaiduk, V.V., 1988, Middle Paleozoic Vilyui rift system: Yakutian Division, Russian Academy of Sciences, Yakutsk, 128 p. (in Russian).
Geological Survey of Japan, 1992, Geologic Map of Japan, *in* Geological Atlas of Japan (Second Edition): Asakura Publishing Co. Ltd., Tokyo, scale 1:1,000,000.
Gordienko, I.V., 1987, Paleozoic magmatism and geodynamics of the Central Asian fold belt: Nauka, Moscow, 240 p. (in Russian).
Gordienko, I.V., 1997, Major terranes of the Transbaikalian region: Tectonic evolution of the East Asian continent. Short papers for the International Symposium. Seoul, Korea, p. 17-19.
Gunibidenko, H., 1979, The tectonics of the Japan Sea: Marine Geology, v. 32, p. 71-87.
Hwang, D.H. and Reedman, A.J., 1975, Report on the Samhan Janggun Mine: Report of Geological Mineral Exploration, Geology Institute of Korea, 1, p.87-216 (in English).
Ichikawa, K., Mizutani, S., Hara, I., Hada, S. and Yao, A., 1990, Pre-Cretaceous Terranes of Japan: Nippon Insatsu Shuppan Co. Ltd., Osaka, Japan, 413 p.
Inoue, E. and Honza, E., 1982, Marine geological map around Japanese islands: Geological Survey of Japan Marine Geology Map Series 23, scale 1:3,000,000.
Kang, P.C., Chwae, U.C., Kim, K.B., Hong, S.H., Lee, B.J., Park, K.H., Hwang, S.K., Choi, P.Y., Song, K.Y. and Jin, M.S., 1995, Geological Map of Korea: Korea Institute of Geology, Mining and Materials, scale 1:1,000,000 (in Korean and English).
Khain, V.E., Gusev, G.S., Khain, E.V., Vernikovsky, V.A., Volobuyev, M.I., 1997, Circum-Siberian Neoproterozoic ophiolite belt: Ofioliti, v. 22, no. 2, p. 195-200.
Khanchuk, A.I., and Ivanov, V.V., 1999, Mesozoic-Cenozoic geodynamic environments and ore mineralization of the Russian Far East: Geology and Geophysics, v.40, 11, p.1607-1617.
Khanchuk, A.I., Ratkin, V.V., Ryazantseva, M.D., and others, 1996, Geology and mineral deposits of Primorskiy Krai: Dalnauka, Vladivostok, 61 p.(in Russian).
Khanchuk, A.I., Ratkin, V.V., Ryazantseva, M.D., Golozubov, V.V., Gonokhova, N.G.,1996, Geology and mineral deposits of Primorsky Krai (Territory): Russian Academy of Sciences, Far East Branch, Dalnauka Publishing, Vladivostok, 62 p.
Kim, O.J., 1972, Precambrian geology and structure of the central region of south Korea: Journal of Korean Institute of Mining Geology, v. 5, p. 231-240 (in Korean and English).
Krasny, L.I., and Peng, Yungbia, eds., 1991, Geological map of Amur region and adjacent areas, Harbin-St. Petersberg-Blagoveshchensk: Dalnauka, Vladivostok, 3 sheets, scale 1:2,500,000 (in Chinese,Russin and English).
Krasny, L.I., ed., 1991, Geological map of the Khabarovsk territory and Amur region: Far East Production and Geologic Association, Leningrad, 2 sheets, scale 1: 2,500,000 (in Russian).
Kuzmin, M.I., Gordienko, I.V., Almukhamedov, A.I., Antipin, V., Baynov, V.D., and Filimonov A., 1995, Paleo-oceanic complexes: the Dzhida zone of caledonides (Southwestern Transbaikalia): Russian Geology and Geophysics, v. 36, no. 1, p. 1-16, (in Russian).
Lee, Dai-Sung, ed., 1987, Geology of Korea: Kyohak-Sa Publishing Company, Seoul, South Korea, 514 p, scale 1:2,000,000.
Martynyuk, M.V., Vaskin, A.F., Volsky, A.S., and others, 1983, Geologic map of the Khabarovsk territory and the Amur region, Khabarovsk: U.S.S.R. Ministry of Geology, 1 sheet, scale 1:500,000 (in Russian).
Miller, R.J., Koch, R.D., Nokleberg, W.J., Hwang, Duk-Hwan, Ogasawara, Masatsugu, Orolmaa, Demberel, Prokopiev, A.V., Sudo, Sadahisa, Vernikovsky, V.A., and Ye, Mao, 1998, Geographic base map of Northeast Asia: U.S. Geological Survey Open-File Report 98-769, scale 1:5,000,000, 2 floppy disks.
Miller, R.J., Koch, R.D., Nokleberg, W.J., Hwang, Duk-Hwan, Ogasawara, Masatsugu, Orolmaa, Demberel, Prokopiev, A.V., Sudo, Sadahisa, Vernikovsky, V.A., and Ye, Mao, 1999, Geographic base map of Northeast Asia, *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), 1 sheet, scale 1: 5,000,000, 3 p.
Natal'in, B.A., 1993, History and mode of Mesozoic accretion in southeastern Russia: The Island Arc, v. 2, p. 32-48.
Nokleberg, W.J., Parfenov, L.M., and Monger, J.W.H., and Baranov, B.V., Byalobzhesky, S.G., Bundtzen, T.K., Feeney, T.D., Fujita, Kazuya, Gordey, S.P., Grantz, Arthur, Khanchuk, A.I., Natal'in, B.A., Natapov, L.M., Norton, I.O., Patton, W.W., Jr., Plafker, George, Scholl, D.W., Sokolov, S.D., Sosunov, G.M., Stone, D.B., Tabor, R.W., Tsukanov, N.V., and Vallier, T.L., 1997, Summary Circum-North Pacific tectono-stratigraphic terrane map: Geological Survey of Canada Open-File 3428, scale 1:10,000,000.
Obolenskiy, A.A., and others, 2003, Preliminary metallogenic belt and mineral deposit maps for Northeast Asia: U.S. Geological Survey Open-File Report 03-204, 4 sheets, scale 1:7,500,000 and 1:15,000,000 [Available on the World Wide Web at http://geopubs.wr.usgs.gov/open-file/of03-204]
Obolenskiy, A.A., Rodionov, S.M., Parfenov, L.M., Kuzmin, M.I., Distanov, E.G., Sotnikov, V.I., Seminskiy, Zh.V., Spiridonov, A.M., Stepanov, V.A., Khanchuk, A.I., Nokleberg, W.J., Tomurtogoo, O., Dejidmaa, G., Hongquan, Y., Fengyue, S., Hwang, D.H., and Ogasawara, M., 2001, Metallogenic belt map of Northeast Asia [abs.]: Joint 6th Biennial SGA-SEG Meeting Program with abstracts, in Piestrzynski, Adam., and others, eds., Mineral Deposits at the Beginning of the 21st Century: Proceedings of Joint Sixth Biennial SGA-SEG Meeting, Krakow, Poland, A.A. Balkema Publishers, p.1133-1135.
Okamura, Y., Kuramoto, S., and Satoh, M., 1998, Active structures and their relation to earthquakes along the eastern margin of the Japan Sea: Bulletin of the Geological Survey of Japan, v. 49, p. 1-18 (in Japanese with English abstract).
Paek, R.J., Kang, H.G. and Jon, G.p., 1996, Geology of Korea. section 4. Paleozoic era, Institute of Geology, State Academy of Sciences, DPR of Korea. p.80-84, 109-112, 139-140.
Parfenov, L.M., 1984, Continental margins and island arcs of mesozoides in northeast Asia: Nauka, Novosibirsk, 192 p. (in Russian).
Parfenov, L.M., 1991, Tectonics of the Verkhoyansk-Kolyma mesozoides in the context of plate tectonics: Tectonophysics, v. 139, p. 319-342.
Parfenov, L.M., ed., 1994, Geodynamic map of Yakutia and adjacent areas: Committee on Geology, Yakutsk, Geological Department, 12 sheets, scale 11,500,000 (in Russian).
Parfenov, L.M., Bulgatov, A.N., and Gordienko, I.V., 1995, Terranes and accretionary history of the Transbaikalian orogenic belts: International Geology Review, v. 37, no. 8, p. 73-751.
Parfenov, L.M., and Kuz'min M.I., eds., 2001, Tectonics, geodynamics, and metallogeny of the territory of the Sakha Republic (Yakutia): MAIK Science International Publishing Company, Moscow, 600 p. (in Russian).
Parfenov, L.M., Natapov, L.M., Sokolov, S.D., and Tsukanov, N.V., 1993, Terrane analysis and accretion in North-East Asia: The Island Arc, v. 2, p. 35-54.
Rikhter, A.V., 1986, The structure and tectonic evolution of Sakhalin Island in Mesozoic time: Nauka, Moscow, 90 p. (in Russian).
Surkov, V.S., Korobeinikov, V.P., and Kraevsky, B.G., 1998, Geostatic tectonic maps for Early (Precambrian and Paleozoic) and Late (Mesozoic and Cenozoic and Neogene) of Siberia: Institute of Geology, Geophysics, and Mineral Resources, Russian Ministry of Natural Resources, Novosibirsk, scale 1:2,500,000, 94 p. (in Russian).
Taira, A., Saito, S., Aoike, K., Morita, S., Tokuyama, H., Suyehiro, K., Takahashi, N., Shinohara, M., Kiyokawa, S., Naka, J., and Klaus, A., 1998, Nature and growth rate of the Northern Izu-Bonin (Ogasawara) arc crust and implications for continental crust formation: Island Arc, v. 7, p. 395-407.
Tamaki, K., 1988, Geological structure of the Japan Sea and tectonic implications: Bulletin of the Geological Survey of Japan, v. 39, p. 1-269.
Vasilyev, I.A., Kapanin, V.P., Kovtonyuk, G.P., Melnikov, V.D., Luzhnov, V.L., and Danilov, A.P., eds., 2000, Raw mineral base of the Amur Territory at the period between two centuries: Russian Academy of Sciences, Blagoveschensk, 168 p. (in Russian).
Vernikovsky, V.A., 1996, Geodynamic evolution of Taimyr fold area: United Institute of Geology and Geophysics, Siberian Branch, Russian Academy of Sciences, Novosibirsk, 203 p. (in Russian).
Vernikovsky, V.A., Vernikovskaya, A.E., 2001, Central Taimyr accretionary belt (Arctic Asia): Meso-Neoproterozoic tectonic evolution and breakup of Rodinia: Precambrian Research, v. 110, no. 1-4, p. 127-141.
Vernikovsky, V.A., Vernikovskaya, A.E., Nozhkin, A.D., Ponomarchuk, V.A., 1994, Riphean ophiolites of the Isakov belt (Yenisey Ridge): Geology and Geophysics, v. 35, no. 7-8, p.146-156.
Wakita, K., Okamura, Y., and Awata, Y., 1992, Tectonic Map of Japan, *in* Geological Survey of Japan., ed., Geological Atlas of Japan (Second Edition): Asakura Publishing Co. Ltd., Tokyo, scale 1:1,000,000.
Won, C.H., 1983, A study of the Quaternary volcanism in the Choogaryeong rift valley, Korean Peninsula: Journal of Geological Society of Korea. v. 19. p. 159-168 (in Korean and English).
Yanshin, A.L., ed., 1975, Tectonic map of the Mongolian People's Republic: U.S.S.R. Academia Sciences, Moscow, 4 sheets, scale 1:1,5,000,000.
Yanshin, A.L., ed., 1976, Map of Mesozoic and Cenozoic tectonics of the Mongolian People's Republic: U.S.S.R. Academia Sciences, Moscow, 4 sheets, scale 1:1,5,000,000.
Yanshin, A.L., ed., 1989, Map of Geologic formations of the Mongolian People's Republic: U.S.S.R. Academia Sciences, Moscow, 2 sheets, scale 1:5,000,000.

LIST OF MAP UNITS

[Geologic time scale units are according to the IUGS Global Stratigraphic Chart (Remane, 1998). For this study, the term *Riphean* is used for the Mesoproterozoic through Middle Neoproterozoic (1600 to 650 Ma), and the term *Vendian* is used for Neoproterozoic III (650 to 540 Ma)]

TECTONOSTRATIGRAPHIC TERRANES

[Aranged alphabetically by map label]

ACH	Anui-Chuya terrane (Continental margin turbidite) (Early to Late Paleozoic) (Gorny Altai)
AG	Agardag terrane (Oceanic) (Vendian and Cambrian) (Southern Tuva)
AI	Amil terrane (Accretionary wedge, type A) (Vendian and Cambrian) (Western Sayan)
AL	Alambai terrane (Accretionary wedge, type B) (Vendian and Early Cambrian) (South Salair and northern Gorny Altai)
AM	Akiyoshi-Maizuru terrane (Accretionary wedge, type B) (Carboniferous and Permian) (Japan)
AN	Angurep terrane (Metamorphic) (Middle Silurian and older) (South Salair)
ANV	Aniva terrane (Accretionary wedge, type B) (Middle Triassic through early Late Cretaceous) (Southern Russian Far East)
AO	Agoi terrane (Metamorphic) (Pre-Paleozoic) (Eastern Tuva)
AR	Argunsky terrane (Passive continental margin) (Paleoproterozoic through late Paleozoic) (Northeast China, Transbaikalia)
AT	Altai terrane (Continental margin turbidite) (Precambrian and Cambrian through Devonian) (Southern Gorny Altai, Northwest China, Mongolia)
AV	Atamanov terrane (Granulite-paragneiss) (Paleoproterozoic) (Yenisey Ridge)
AY	Ayansk terrane (Passive continental margin) (Ordovician through Late Carboniferous) (Yakutia)
BA	Beitianshan -Atasbogd terrane (Island arc) (Devonian through Carboniferous) (Northwest China, Mongolia)
BD	Badzhal terrane (Accretionary wedge, type B) (Permian through Jurassic) (Southern Russian Far East)
BG	Bayanleg terrane (Accretionary wedge, type A) (Ordovician to Devonian) (Gobi Altay)
BH	Bayanhongor Oceanic (Oceanic) (Neoproterozoic) (Western Mongolia)
BI	Birusa terrane (Paragneiss) (Paleoproterozoic to Neoproterozoic) (Eastern Sayan)
BK	Belaya-Kitoy terrane (Metamorphic) (Archean?) (Eastern Sayan)
BL	Baladek terrane (Metamorphic) (Paleoproterozoic through Ordovician) (Southern Russian Far East)
BLK	Belokurikha terrane (Metamorphic) (Late Permian and older) (Northern Gorny Altai)
BM	Baikal-Muya terrane (Island arc) (Neoproterozoic) (Transbaikalia)
BR	Baratal terrane (Accretionary wedge, type B) (Late Neoproterozoic through Early Cambrian) (Southeastern Gorny Altai)
BRG	Barguzin terrane (Metamorphic) (Late Neoproterozoic) (Transbaikalia)
BS	Borus terrane (Accretionary wedge, type B) (Early Cambrian) (Northwest Sayan)
BU	Bureya terrane (Metamorphic) (Neoproterozoic and older through Triassic) (Southern Russian Far East)
BY	Baydrag terrane (Cratonal) (Neoproterozoic and older) (Northwest Mongolia)
BZ	Bazibai terrane (Metamorphic) (Late Neoproterozoic and Cambrian) (Eastern Sayan)
CA	Central Angara terrane (Passive continental margin) (Neoproterozoic) (Yenisey Ridge)
	Central Aldan superterrane (Yakutia)
CANM	Nimnyr terrane (Granulite-orthogneiss) (Paleoproterozoic) (Yakutia)
CAST	Sutam terrane (Granulite-paragneiss) (Late Archean) (Yakutia)
CACG	Chogar terrane (Granulite-orthogneiss) (Archean) (Yakutia)
CH	Chuja terrane (Paragneiss) (Late Archean through Neoproterozoic) (Transbaikalia)
CHN	Cheongjin terrane (Accretionary wedge, type B) (Permian) (Korea)
CHR	Charysh terrane (Continental margin turbidite) (Cambrian through Devonian) (Northwestern Gorny Altai)
	Central Taimyr superterrane (Taimyr Peninsula)
CTC	Chelyuskin terrane (Island arc) (Neoproterozoic) (Northeast and Central Taimyr Peninsula)
CTF	Faddey terrane (Metamorphic) (Neoproterozoic and older) (North-East Taimyr Peninsula)
CTK	Kolosovsky terrane (Passive continental margin) (Late Neoproterozoic) (Central Taimyr Peninsula)
CTM	Mamont terrane (Metamorphic) Mesoproterozoic and Neoproterozoic) (Taimyr Peninsula)
DB	Dibinsky terrane (Accretionary wedge, type A) (Late Neoproterozoic) (Eastern Sayan, Mongolia)
DL	Daldyn terrane (Granulite-orthogneiss) (Middle Archean) (Yakutia)
DN	Dongujimqin-Nuhetdavaa terrane (Island arc) (Cambrian through Middle Devonian) (China, Mongolia)
DR	Derba terrane (Passive continental margin) (Late Neoproterozoic) (Eastern Sayan)
DZ	Dzhida terrane (Island arc) (Late Neoproterozoic and Early Cambrian) (Transbaikalia, Mongolia)
DZA	Dzhagdy terrane (Accretionary wedge, type B) (Late Carboniferous and Permian) (Southern Russian Far East)
DZE	Dzhebash terrane (Accretionary wedge, type A) (Late Neoproterozoic and Early Cambrian) (Northwestern Sayan)
ED	Edren terrane (Island arc) (Devonian and Early Carboniferous) (Southwestern Mongolia)
	East Aldan superterrane (Yakutia)
EUC	Uchur terrane (Granulite-paragneiss) (Paleoproterozoic) (Yakutia)
EBT	Batomga composite terrane (Granite-greenstone) (Late Archean) (Yakutia)
ER	Eravna terrane (Island arc) (Late Neoproterozoic and Early Cambrian) (Transbaikalia)
GA	Govi Altai terrane (Continental-margin turbidite) (Cambrian through Devonian) (Mongolia)
GG	Gargan terrane (Cratonal) (Archean and Paleoproterozoic) (North Huvsgol, Mongolia, Eastern Sayan)
GL	Galam terrane (Accretionary wedge, type B) (Cambrian through Early Carboniferous) (Southern Russian Far East)
GN	Gonzha terrane (Passive continental margin) (Late Archean(?), Paleoproterozoic(?), and early Paleozoic) (Southern Russian Far East)
GR	Gar terrane (accretionary wedge, type B) (Proterozoic?) (Southern Russian Far East)
GS	Gurvansayhan terrane (Island arc) (Silurian through Early Carboniferous) (Southern Mongolia)
HD	Hangay-Dauria terrane (Accretionary wedge, type A) (Silurian through Late Carboniferous) (Transbaikalia, Mongolia)
HE	Heilongjiang terrane (Accretionary wedge, type B) (Ordovician and Silurian) (Northeastern China)
HG	Hegenshan terrane (Accretionary wedge, type B) (Devonian through Permian) (Southeastern Mongolia, Northeastern China)
HI	Hida terrane (Metamorphic) (Jurassic) (Central Japan)
HL	Herlen terrane (Oceanic) (Late Neoproterozoic through Early Cambrian) (Eastern Mongolia).
HM	Hamar-Davaa terrane (Metamorphic) (Paleoproterozoic through Early Cambrian) (Mongolia and Transbaikalia)
HU	Hug terrane (Accretionary wedge, type B) (Neoproterozoic) (Northern Mongolia, Eastern Sayan)
HV	Hovd terrane (Continental-margin turbidite) (Neoproterozoic through Silurian) (Mongolia Altay)
HX	Hutaguul-Xilinhot terrane (Metamorphic) (Paleoproterozoic and Neoproterozoic) (Mongolia, Northern China)
IB	Izu-Bonin terrane (Island arc) (Miocene through Quaternary) (Japan)
ID	Idermeg terrane (Passive continental margin) (Proterozoic and Cambrian) (Eastern Mongolia)
IG	Igarka terrane (Island arc) (Neoproterozoic) (Yenisey Region)
IH	Ih Bogd terrane (Oceanic) (Neoproterozoic and Early Cambrian) (Gobi Altay, southwestern Mongolia)
IL	Ilchir terrane (Oceanic) (Neoproterozoic through Ordovician) (Eastern Sayan, Mongolia)
IM	Imjingang terrane (Accretionary wedge, type B) (Devonian) (Korea)
IS	Isakov terrane (Island arc) (Neoproterozoic) (Yenisey Ridge)
JI	Jiamusi terrane (Metamorphic) (Neoproterozoic and older and Early Cambrian) (China)
JT	Japan trench terrane (Accretionary wedge, type A) (late Tertiary and Quaternary) (Western Pacific Ocean)
KA	Kan terrane (Cratonal) (Paleoproterozoic) (Eastern Sayan)
KBG	Kabarga terrane (Accretionary wedge, type A) (Neoproterozoic and early Paleozoic) (Southern Russian Far East)
KBN	Kalba-Narim terrane (Accretionary wedge, type A) (Ordovician through Early Carboniferous) (Kalba-Narim area)
KE	Kema terrane (Island arc) (late Early Cretaceous) (Southern Russian Far East)
KH	Khapchan terrane (Granulite-paragneiss) (Paleoproterozoic) (Yakutia)
KHM	Khamsara terrane (Island arc) (Cambrian) (Northeastern Tuva)
KI	Kanim terrane (Island arc) (Late Neoproterozoic and Early Cambrian) (Central Kuznetsk Alatau)
KK	Kizir-Kazir terrane (Island arc) (Cambrian) (Southwestern Eastern Sayan)
KLM	Kiselyovka-Manoma terrane (Accretionary wedge, type B) (Jurassic and Early Cretaceous) (Southern Russian Far East)
KM	Kamensky terrane (Continental margin arc) (Early and Middle Triassic) (Transbaikalia)
KN	Kular-Nera terrane (Continental margin turbidite) (Permian through Early Jurassic) (Yakutia)
KO	Khor terrane (Island arc) (Early Paleozoic?) (Southern Russian Far East)
KOZ	Kozhukhov terrane (Island arc) (Late Neoproterozoic and Cambrian) (Northern Kuznetsk Alatau)
	Kolyma-Omolon superterrane (Yakutia)
KMN	Munilkan terrane (Oceanic) (Early Paleozoic) (Yakutia)
KOV	Omulevka terrane (Passive continental margin) (Late Neoproterozoic through Triassic) (Yakutia)
KPD	Polousnyi-Debin terrane (Accretionary wedge, type A) (Jurassic) (Yakutia)
KNG	Nagondzha terrane (Continental margin turbidite) (Carboniferous through Late Triassic) (Yakutia)
KPR	Kyushu-Palau terrane (Island arc) (Paleocene) (Western Pacific Ocean)
KR	Kara terrane (Continental margin turbidite) (Late Neoproterozoic) (northern part of Taimyr Peninsula)
KRT	Kurtushiba terrane (Accretionary wedge, type B) (Late Neoproterozoic and Early Cambrian) (Southern West Sayan)
KT	Khemchik-Tapsa terrane (Accretionary wedge, type A) (Cambrian through Ordovician) (Tuva)
KTN	Kaitanak terrane (Accretionary wedge, type B) (Early Paleozoic or older)(Southern Gorny Altai)
KU	Kurai terrane (Island arc) (Early Cambrian) (Eastern Gorny Altai)
KUV	Kuvai terrane (Accretionary wedge, type A) (Neoproterozoic) (Northwestern Eastern Sayan)
KV	Kamyshovy terrane (Island arc) (Late Jurassic through Late Cretaceous) (Southern Russian Far East)
KY	Kotel'nyi miogeoclinal terrane (Passive continental margin) (Late Neoproterozoic through Late Triassic) (Taimyr Peninsula)
KZ	Kuzeev terrane (Granulite-orthogneiss) (Paleoproterozoic) (Yenisey Ridge)
LA	Laoling terrane (Island arc) (Late Ordovician through Silurian) (Northeastern China)
LG	Laoyeling-Grodekov superterrane (Island arc) (Late Carboniferous and Permian) (Northeastern China, Southern Russian Far East)
LK	Lake terrane (Island arc) (Late Neoproterozoic and Cambrian) (Western Mongolia)
LN	Lan terrane (Continental margin turbidite) (Devonian through Triassic) (Southern Russian Far East)
MB	Mogen-Buren terrane (Oceanic) (Late Neoproterozoic and Early Cambrian) (Southeastern Gorny Altai)
MC	Mino Tamba Chichibu terrane (Accretionary wedge, type B) (Permian through Early Cretaceous) (Southwestern Japan)
MG	Magan terrane (Tonalite-trondhjemite-gneiss) (Paleoproterozoic) (Yakutia)
MK	Malokhingansk terrane (Accretionary wedge, type B) (Neoproterozoic and Cambrian) (Southern Russian Far East)
MO	Mandalovoo-Onor terrane (Island arc) (Middle Ordovician through Early Carboniferous) (Southern Mongolia, Northeastern China)
MM	Manyn terrane (Passive continental margin) (Archean?) (Southern Russian Far East)
MN	Mandah terrane (Accretionary wedge, type A) (Devonian) (Southern Mongolia)
MR	Maralikha terrane (Accretionary wedge, type A) (Middle Devonian or older) (Northwestern Gorny Altai)
MS	Muya terrane (Metamorphic) (Late Archean? and Paleoproterozoic?) (Transbaikalia)
MT	Matveevka terrane (Metamorphic) (Archean? or Proterozoic?) (Southern Russian Far East)
NA	Nadanhada terrane (Accretionary wedge, type B) (Middle Triassic through Middle Jurassic) (Northern China)
NAB	Nabilsky terrane (Accretionary wedge, type B) (Late Cretaceous through Paleogene) (Southern Russian Far East)
ND	Nora-Sukhotin-Duobaoshan terrane (Island arc) (Neoproterozoic through Early Carboniferous) (Mongolia, Northeastern China, Russian Far East)
NK	Nakhimovka terrane (Metamorphic) (Archean? or Proterozoic?) (Southern Russian Far East)
NL	Nilan terrane (Accretionary wedge, type B) (Devonian through Permian) (Southern Russian Far East)
NN	Nankai terrane (Accretionarry wedge, type A) (Miocene through Quaternary) (Western Pacific Ocean, Central Japan)
NO	North Margin terrane (Accretionary wedge, type B) (Carboniferous and Early Permian) (Northeastern China)
NR	Nechera terrane (Granulite-paragneiss) (Archean? and Proterozoic) (Transbaikalia)
NRS	North Sayan terrane (Island arc) (Neoproterozoic and Early Cambrian) (Northwestern Sayan)
OD	Olokit-Delunuran terrane (Accretionary wedge, type A) (Paleoproterozoic through Neoproterozoic) (Transbaikalia)
OG	Ogcheon terrane (Accretionary wedge, type B) (Proterozoic) (Korea)
OH	Okhotsk terrane (Cratonal) (Archean through Jurassic) (Yakutia)
OI	Orhon-Ikatsky terrane (Continental margin arc) (Late Neoproterozoic through Silurian) (Mongolia, Transbaikalia)
OL	Oldoy terrane (Passive continental margin) (Silurian through Early Carboniferous) (Southern Russian Far East)
OM	Ondum terrane (Island arc) (Late Neoproterozoic through Ordovician) (Southern Tuva)
ON	Olenek terrane (Greenschist) (Paleoproterozoic) (Yakutia)
OS	Ononsky terrane (Accretionary wedge, type B) (Neoproterozoic? or Silurian?) (Transbaikalia, Mongolia)
OT	Onot terrane (Granite-greenstone) (Middle Archean? or Paleoproterozoic?) (Eastern Sayan)
OZ	Orogen-Zalantun terrane (Metamorphic) (Proterozoic) (Mongolia, China)
PP	Poputninsk terrane (Oceanic) (Mesoproterozoic and Neoproterozoic) (Yenisey Ridge)
PR	Predivinsk terrane (Island arc) (Late Neoproterozoic) (Yenisey Ridge)
QT	Qinghe-Tsel terrane (Metamorphic) (Mesoproterozoic and Neoproterozoic) (China, Mongolia)
RA	Rudny Altai terrane (Island arc) (Late Silurian through Early Carboniferous) (Rudny Altai Upland)
SA	Sangilen terrane (Passive continental margin) (Paleoproterozoic or Neoproterozoic) (Southeastern Tuva, Mongolia)
SAL	Salair terrane (Island arc) (Early Cambrian through Early Ordovician) (Salair Ridge)
SE	Seluohe terrane (Accretionary wedge, type B) (Neoproterozoic) (Northeastern China)
SG	Sergeevka terrane (Island arc) (Cambrian? and Ordovician?) (Southern Russian Far East)
SH	Shalaurov terrane (Accretionary wedge, type B) (Permian and Triassic) (Yakutia)
SHA	Sharizhalgay terrane (Tonalite-trondhjemite-gneiss) (Archean through Paleoproterozoic) (Eastern Sayan)
SHE	Shevli terrane (Passive continental margin) (Early Cambrian through Late Devonian) (Southern Russian Far East)
SHK	Sangun-Hidagaien-Kurosegawa terrane (Island arc) (Silurian through Permian) (Japan)
SHM	Shimanto terrane (Accretionary wedge, type A) (Early Cretaceous through Miocene) (Japan)
SHT	Shmidt terrane (Island arc) (Late Jurassic through Late Cretaceous) (Southern Russian Far East)
SHU	Shutkhulai terrane (Metamorphic) (Late Neoproterozoic) (Eastern Sayan)
SK	South Kitakami terrane (Island arc) (Silurian through Cretaceous) (Northeastern Japan)
SL	Solon terrane (Accretionary wedge, type B) (Late Carboniferous through Permian) (China, Mongolia)
SM	Sisim terrane (Island arc) (Cambrian) (Eastern Sayan)
SMA	Samarkina terrane (Accretionary wedge, type B) (Late Permian through Middle Jurassic) (Southern Russian Far East)
SN	Saratan terrane (Oceanic) (Late Neoproterozoic and Early Cambrian) (Eastern Gorny Altai)
SP	Spassk terrane (Accretionary wedge, type B) (Cambrian and older through Early Silurian) (Northeastern China, Southern Russian Far East)
SR	Sarkhoy terrane (Island arc) (Late Neoproterozoic) (Northern Mongolia, Eastern Sayan)
SS	Sosunay-Langeri terrane (Accretionary wedge, type B) (Jurassic through Paleogene) (Southern Russian Far East)
SU	Sugash terane (Island arc) (Early and Middle Cambrian) (Southern Gorny Altai)
SW	Sambagawa terrane (Metamorphic) (Cretaceous) (Japan)
TA	Talitsk terrane (Continental-margin turbidite) (Cambrian through Early Triassic) (Northwestern Gorny Altai)
TB	Tumangang terrane (Island arc) (Late Carboniferous and Permian) (Korea)
TD	Tukuringra-Dzhagdy terrane (Accretionary wedge, type B) (Silurian through Permian) (Southern Russian Far East)
TE	Tersa terrane (Oceanic) (Late Neoproterozoic) (Central Kuznetsk Alatau)
TF	Tonod terrane (Greenschist) (Paleoproterozoic) (Transbaikalia)
TG	Tsagaan Uul-Guoershan terrane (Continental margin arc) (Paleoproterozoic through Permian) (Mongolia, Northeastern China)
TH	Taukha terrane (Accretionary wedge, type B) (Late Jurassic through Early Cretaceous) (Southern Russian Far East)
TK	Terekta terrane (Accretionary wedge, type A) (Late Neoproterozoic through Early Cambrian) (Southern Gorny Altai)
TL	Teletsk terrane (Accretionary wedge, type A) (Late Neoprotoerozoic) (Eastern Gorny Altai)
TM	Tomsk terrane (Metamorphic) (Late Neoproterozoic) (Kuznetsk Alatau)
TN	Tokoro-Nemuro terrane (Island arc) (Late Cretaceous through Paleogene) (Hokkaido Island, Japan)
TO	Tannuola subterrane (Island arc) (Cambrian and older?) (Southern Tuva and Northern Mongolia)
TR	Terpeniy terrane (Island arc) (Late Cretaceous) (Southern Russian Far East)
TT	Telbes-Kitat terrane (Island arc) (Neoproterozoic through Devonian) (Kuznetsk Alatau)
TU	Tunka terrane (Island arc) (Ordovician? and Silurian?) (Eastern Sayan)
TY	Tynda terrane (Tonalite-trondhjemite-gneiss) (Archean and Paleoproterozoic) (Yakutia)
TZ	Tumanshet terrane (Paragneiss) (Proterozoic) (Eastern Sayan)
UB	Uniya-Bom terrane (Continental margin turbidite) (Late Triassic and Early Jurassic) (Southern Russian Far East)
UC	Ulus-Cherga terrane (Island arc) (Cambrian) (Gorny Altai)
UG	Ulgey terrane (Island arc) (Neoproterozoic through Devonian) (Mongolia)
UK	Urik-Iya terrane (Greenschist) (Proterozoic) (Eastern Sayan)
UL	Uimen-Lebed terrane (Island arc) (Cambrian through Ordovician) (northeastern Gorny Altai)
UN	Ulban terrane (Continental margin turbiditie) (Late Triassic through Middle Jurassic) (Southern Russian Far East)
UO	Ulugo terrane (Island arc) (Early Cambrian) (Tuva)
UR	Urmi terrane (Passive continental margin) (Archean through Middle Triassic) (Northeast China, Southern Russian Far East)
VS	Voznesenka terrane (Passive continental margin) (Cambrian through Permian) (Southern Russian Far East)
WAD	West Aldan terrane (Granite-greenstone) (Archean) (Yakutia)
WAG	West Angara terrane (Passive continental margin) (Neoproterozoic) (Yenisey Ridge)
WB	Waizunger-Baaran terrane (Island arc) (Ordovician through Permian) (Northwestern China, Mongolia)
WD	Wundurmiao terrane (Accretionary wedge, type B) (Mesoproterozoic through Middle Ordovician) (Northwestern China, Mongolia)
WSA	West Sakhalin terrane (Accretionary wedge, type A) (Cretaceous) (Southern Russian Far East)
WST	West Stanovoy terrane (Metamorphic) (Archean through Mesoproterozoic) (Transbaikalia, Mongolia)
WSY	West Sayan terrane (Continental margin turbidite) (Late Neoproterozoic through Devonian) (Western Sayan and eastern Gorny Altai)
XC	Xichangjing terrane (Metamorphic) (Proterozoic) (China)
YN	Yenisey terrane (Paragneiss) (Paleoproterozoic?) (Yenisey Ridge)
ZA	Zavhan terrane (Continental margin arc) (Late Neoproterozoic) (Mongolia)
ZN	Zhangguangcailing superterrane (Continental margin arc) (Neoproterozoic through Devonian) (Northeastern China)
ZO	Zoolen terrane (Accretionarry wedge, type B) (Ordovician(?) and Devonian) (Mongolia)
ZRA	Zhuravlevsk-Amur River terrane (Continental margin turbidite) (Late Jurassic and Early Cretaceous) (Southern Russian Far East)
ZS	Zasurin terrane (Oceanic) (Late Cambrian and Early Ordovician) (Northwestern Gorny Altai)

SEDIMENTARY AND VOLCANIC OVERLAP ASSEMBLAGES

[Arranged alphabetically by map label]

ad	Adycha intermountain sedimentary basin (Miocene and Pliocene) (Yakutia)
ag	Agul (Rybinsk) molasse basin (Middle Devonian to Early Carboniferous) (Eastern Sayan)
ags	Argun sedimentary basin (Early Paleozoic) (China)
ajb	Asia-Japan backarc basin on extended continental crust (late Tertiary and Quaternary) (Offshore areas between Eastern Asia continent and Japan)
ajc	Asia-Japan continental shelf (late Tertiary and Quaternary) (Offshore areas between Eastern Asia continent and Japan)
ajr	Asia-Japan backarc basin on rifted continental crust (late Tertiary and Quaternary) (Offshore areas between Eastern Asia continent and Japan)
	Akitkan volcanic-plutonic belt (Paleoproterozoic) (Transbaikalia)
akv	Volcanic-rich part
akp	Plutonic part
	Altai volcanic-plutonic belt (Devonian and Early Carboniferous) (Gorny Altai, Salair, Mongolia, Northwest China)
alv	Volcanic part
alp	Plutonic part
als	Alashan plutonic belt (Silurian) (Northeast China)
am	Altai-Mongolia intermontane basin (Paleogene, Neogene, and Quaternary) (Altai-Sayan region)
an	Anabar anorthositic belt (Archean) (Yakutia)
	Altai-Sayan back-arc basin (Vendian and Cambrian) (Eastern Gorny Altai, Kuznetsk Alatau, eastern Sayan)
asbk	Altai-Sayan back-arc basin (Biya-Katun unit) (Late Neoproterozoic and Cambrian) (eastern Gorny Altai)
aski	Altai-Sayan back-arc basin (Kiya unit) (Late Neoproterozoic and Cambrian) (northern Kuznetsk Alatau)
askm	Altai-Sayan back-arc basin (Kizhikhem unit) (Late Neoproterozoic) (southwestern Eastern Sayan)
asmb	Altai-Sayan back-arc basin (Mrassu-Bateni unit) (Late Neoproterozoic and Cambrian) (Gornaya Shoriya, Kuznetsk Alatau, Eastern Sayan)
ay	Alashan-Yinshan plutonic belt (Triassic) (Northwest China)
ayp	Alashan-Yinshan plutonic belt (Proterozoic)(Northwest China)
az	Amur-Zeya sedimentary basin (Late Jurassic to Quaternary) (Southern Russian Far East)
ba	Biya sedimentary basin (Cambrian and Ordovician) (Northeastern Gorny Altai)
bh	Bohai sedimentary basin (Cenozoic) (China)
bi	Billyahk plutonic belt (Paleoproterozoic) (Yakutia)
bk	Baikal sedimentary-volcanic rift belt (Oligocene through Quaternary) (Transbaikalia)
bl	Belokurikha plutonic belt (Late Permian through Early Jurassic) (Altai, Mongolia, China)
bo	Bogdarin molasse basin (Ordovician? and Devonian?) (Transbaikalia)
bt	Balyktakh volcanic field (Early Cretaceous) (Yakutia)
bu	Bureya sedimentary basin (Early Jurassic to Early Cretaceous) (Southern Russian Far East)
bug	Bulgugsa granite (Late Cretaceous) (Korea)
bv	Barguzin-Vitim granitoid belt (Late Carboniferous) (Transbaikalia)
bw	Beitianshan-Waizunger sedimentary basin (Carboniferous through Permian) (China)
ca	Central Asian plateau basalt belt (Neogene and Quaternary) (Russia, Mongolia, China, Korea)
cc	Chokhchur-Chekurdakh granite belt (Cretaceous) (Yakutia)
chs	Chosun sedimentary basin (Cambrian and Ordovician) (Korea)
	Chara-Uchur rift system (Paleoproterozoic) (Yakutia)
cuk	Udokan basin (Paleoproterozoic) (Yakutia)
cug	Uguy basin (Paleoproterozoic) (Yakutia)
Czs	Cenozoic undivided sedimentary rocks (Paleogene, Neogene, and Quaternary) (All areas)
db	Daebo granite belt (Early to Late Jurassic) (Korea)
dms	Damaoqi sedimentary basin (Cenozoic) (Northeast China)
dr	Dzhakhtardakh volcanic field (Cretaceous) (Yakutia)
dxs	Daxingaling sedimentary overlap assemblage (Carboniferous through Permian) (Northeast China)
dz	Dzugdzur anorthositic belt (Paleoproterozoic) (Yakutia)
ea	Eurasia oceanic basin (Late Cretaceous through Present) (Arctic ocean)
ed	Erduosi sedimentary basin (Triassic through Cretaceous) (China)
ej	East Jlin plutonic belt (Silurian) (Northeast China)
el	Erlian sedimentary basin Late Jurassic through Quaternary) (China)
	East Sikhote-Alin volcanic-plutonic belt (Late Cretaceous through Miocene) (Southern Russian Far East)
es	Volcanic part
esp	Plutonic part
et	East Tuva back-arc basin (Late Neoproterozoic and Cambrian) (Eastern Tuva and southeastern Eastern Sayan)
fh	Fenhe sedimentary basin (Cenozoic) (Northeast China)
ga	Gazimur sedimentary basin (Late Neoproterozoic through Early Ordovician) (Transbaikalia)
	Gobi-Khankaisk-Daxing'anling volcanic-plutonic belt (Permian) (Mongolia, Transbaikalia, China)
ghv	Volcanic part
ghp	Plutonic part
gl	Great Lakes sedimentary basin (Jurassic and Cretaceous) (Mongolia)
	Hasan-Amurian volcanic-plutonic belt (Paleocene to Early Miocene) (Korea and Russian Southeast)
ha	Volcanic part
hap	Plutonic part
hb	Huvsgol-Bokson sedimentary overlap assemblage (Late Neoproterozoic through Middle Cambrian) (Mongolia, Eastern Sayan)
hg	Hangay plutonic belt (Late Carboniferous and Early Permian) (Mongolia)
hh	Huanghai sedimentary basin (Mesozoic through Cenozoic) (China)
hi	Hiroshima granitic plutonic belt (Cretaceous and Paleogene) (Japan)
hlt	Hailar-Tamsag sedimentary basin (Late Jurassic and Cretaceous) (Eastern Mongolia and Northeastern China)
hn	Hongjesa granite (Proterozoic) (Korea)
hr	Kharinsk granitic assemblage (Triassic) (Russian Southeast)
hs	Hyesan granite (Permian to Triassic) (Korea)
ht	Hutuo rift basin (Paleoproterozoic) (China)
hx	Hexizoulang sedimentary basin (Jurassic through Cenozoic) (Northern China)
ib	Izu-Bonin volcanic belt (Miocene through Quaternary) (Western Pacific Ocean)
jb	Japan basin (Neogene and Quaternary) (west of Hokkaido Island)
jh	Jihei volcanic and plutonic belt (Mesozoic) (Northeast China)
ji	Jihei plutonic belt (Permian) (Northeastern China)
jifb	Japan and Izu-Bonin forearc basin (Paleogene through Quaternary) (Western Pacific Ocean)
jl	Jilin-Liaoning-East Shandong volcanic-plutonic belt (Late Jurassic and Cretaceous) (Southeastern part of Northeastern China)
jn	Japan Cenozoic sedimentary basin (Paleogene and Neogene) (Japan)
jq	Japan Quaternary sedimentary basins (Quaternary) (Japan)
js	Jasong volcanic belt (Jurassic) (Korea)
jsb	Japan sedimentary basin (Mesozoic) (Japan)
jv	Japan volcanic belt (Quaternary) (Japan)
ka	Kan collisional granitic belt (Neoproterozoic) (Yenisey Ridge)
kb	Kalba-Narym plutonic belt (Late Carboniferous through Early Triassic) (Kalba-Narym area)
kbu	Khanka-Bureya granitic belt (Ordovician and Silurian) (Russian Southeast)
kd	Kodar granitic belt (Paleoproterozoic) (Yakutia)
kh	Khmelev back-arc basin (Devonian and Carboniferous) (Southwestern Salair)
khs	Khemchik-Sistigkhem basin (Middle Cambrian through Silurian) (Tuva)
klr	Kalar anorthosite belt (Paleoproterozoic) (Yakutia)
kni	Konino-Nimelen sedimentary basin (Neogene and Quaternary) (Russian Southeast)
	Khingan-Okhotsk volcanic-plutonic belt (Cretaceous) (Southern Russian Far East)
ko	Volcanic part
kog	Plutonic part
kr	Kara granitic belt (collisional and postcollisional) (Late Carboniferous and Early Permian) (Taimyr Peninsula)
ks	Kuznetsk-Sayan plutonic belt (Early Silurian to Early Devonian) (Kuznetsk Alatau, West Sayan, Tuva, Altai)
ksh	Kara Sea shelf sedimentary cover (Cambrian thorugh Permian) (Kara Sea)
kt	Kolyvan-Tom back-arc basin (Devonian to Permian) (Kalyvan-Tom area)
ktb	Khungari-Tatibi granitic belt (Middle Cretaceous) (Russian Southeast)
kul	Kular granite belt (Early Cretaceous) (Yakutia)
ky	Kyongsang sedimentary basin (Early Cretaceous) (Korea)
kz	Kuznetsk orogenic basin (Devonian to Early Triassic) (Kuznetsk area)
la	Laptev Sea continental slope (Late Cretaceous through Oligocene) (Arctic ocean)
lb	Lower Borzja fore-arc basin (Early Carboniferous through Early Triassic) (Transbaikalia)
lch	Lenivaya-Chelyuskin sedimentary assemblage (Vendian through Carboniferous) (Taimyr Peninsula)
ldp	Liaodong plutonic belt (Triassic) (Northeast China)
lg	Lugyngol volcanic-sedimentary basin (Permian) (Southeastern Mongolia)
ly	Laiyang volcanic -sedimentary basin (Cretaceous) (Northeast China)
ll	Lower Lena graben sedimentary rocks (Paleocene through Early Eocene) (Yakutia)
ma	Mana sedimentary basin (Late Neoproterozoic through Middle Cambrian) (Northwestern Eastern Sayan)
mb	Main granite belt (Late Jurassic) (Yakutia)
mch	Myongchon sedimentary basin (Cenozoic) (Korea)
mn	Minusa molasse basin (Middle Devonian through Early Permian) (Kuznetsk Alatau, Eastern Sayan)
mr	Moma rift sedimentary basin (Miocene and Pliocene) (Yakutia)
	Mongol-Transbaikalia volcanic-plutonic belt (Late Triassic through Early Cretaceous) (Mongolia)
mtv	Volcanic part
mtp	Plutonic part
nb	Northern granite belt (Early Cretaceous) (Yakutia)
nc	North China sedimentary basin (Cenozoic) (southeast part of Northeastern China)
nm	North marginal plutonic belt of North China Platform (Carboniferous and Permian) (Northeastern China)
no	Noyon foreland basin (Middle Triassic through Early Jurassic) (Mongolia)
np	North Tarimu plutonic belt (Permian) (Northwest China)
nr	Nohi rhyolite volcanic belt (Cretaceous) (Japan)
ns	North-Sakhalin sedimentary basin (Oligocene through Quaternary) (Russian Southeast)
nw	Northern, Eastern, and Western Siberia sedimentary basins (Mesozoic and Cenozoic) (Western and Eastern Siberia)
ob	Okhota sedimentary basin (Late Eocene through Miocene) (Russian Far East)
obg	Obong Group (Cenozoic) (Korea)
	Okhotsk-Chukotka volcanic-plutonic belt (late Early Cretaceous and Late Cretaceous) (Yakutia)
oc	Volcanic part
ocp	Plutonic part
ok	Okinsky (Sedimentary basin) (Ordovician through Devonian) (Eastern Sayan)
pb	Pacific Ocean basin (Cretaceous through Cenozoic) (Pacific Ocean)
pl	Primorsk lowland and Laptev sea shelf sedimentary cover (Pliocene through Holocene) (Yakutia)
pn	Pyeongang sedimentary basin (Carboniferrous to Triassic) (Korea)
pp	Popigay astrobleme (Late Eocene) (Yakutia)
	Postamalgamation assemblages of the KolymaOmolon superterrane (Yakutia)
pku	Uyandina-Yasachnaya volcanic belt (Late Jurassic) (Yakutia)
pki	Ilin'-Tas back arc basin (Late Jurassic) (Yakutia)
psm	Pacific Ocean seamounts (Cretaceous) (Pacific Ocean)
sa	Sayan collisional granitic belt (Paleoproterozoic?) (Eastern Sayan)
sab	South Aldan sedimentary basin (Jurassic) (Yakutia)
sal	South Altai back-arc basin (Middle Devonian through Early Carboniferous) (Southwestern Altai)
sb	Subgan granite belt (Paleoproterozoic) (Yakutia)
	Selenga sedimentary-volcanic plutonic belt (Permian through Jurassic) (Transbaikalia, Mongolia)
sev	Volcanic part
sep	Plutonic part
sg	Sinegorsk volcanic-plutonic assemblage (Devonian and Mississippian) (Russian Southeast)
sgg	Shangganhe sedimentary basin (Cenozoic) (Northeast China)
shb	Shikoku back arc basin (Neogene and Quaternary) (Offshore area south of Japan)
sj	Sanjiang sedimentary basin and Yishu graben (Mesozoic and Cenozoic) (Northeastern China)
sk	South Sakhalin sedimentary basin (Cenozoic) (Russian Southeast)
skc	Sino-Korea platform sedimentary cover (Proterozoic through Triassic) (China)
sl	Sedimentary basin of Laptev Sea shelf (Early Cretaceous through Present) (Yakutia)
slj	East Shandong-East Liaoning-East Jilin rift basin (Paleoproterozoic) (Northeastern China)
smb	Seamounts in Japan back-arc basin (Neogene and Quaternary) (Offshore area northwest of Japan)
sms	Seamounts in Shikoku back-arc basin (Neogene and Quaternary) (Offshore area south of Japan)
	South Mongolian volcanic-plutonic belt (Middle Carboniferous through Late Triassic) (Mongolia)
smv	Volcanic part
smp	Plutonic part
sn	Svyatoi Nos volcanic belt (Late Jurassic) (Yakutia)
snw	Sangwon sedimentary basin (Paleoproterozoic) (Korea)
sol	Songliao sedimentary basin (Jurassic through Cenozoic) (Northeastern China)
	South Siberian volcanic-plutonic belt (Early Devonian) (Eastern Altai-Sayan)
ss	Volcanic part
ssp	Plutonic part
st	Stanovoy granite belt (Jurassic and Early Cretaceous) (Yakutia)
sv	South Verkhoyansk granite belt (Late Jurassic) (Yakutia)
sy	South Yakutian subalkaline and alkaline igneous belt (Early Jurassic through Early Cretaceous) (Yakutia)
tb	Transverse granite belt (Early Cretaceous) (Yakutia)
tbr	Tyrma-Burensk granitic assemblage (Permian) (Russian Southeast)
td	Taidon graben (Middle Cambrian through Early Ordovician) (Northwestern Kuznetsk Alatau)
	Tes volcanic-plutonic belt (Devonian through Late Triassic?) (Mongolia)
tev	Volcanic part
tep	Plutonic part
tg	Tamirgol sedimentary basin (Permian) (Mongolia)
tk	Tas-Kystabyt magmatic belt (Jurassic) (Yakutia)
tkn	Tyrkanda granite belt (Paleoproterozoic or older) (Yakutia)
tl	Telmen plutonic belt (Middle Cambrian through Early Ordovician) (Mongolia)
tm	Tumangang granite belt (Late Permian through Late Triassic) (Korea)
tn	Tannuola plutonic belt (Cambrian and Ordovician) (Eastern Altai-Sayan)
to	Torom sedimentary basin (Late Triassic through Early Cretaceous) (Russian Southeast)
tr	Taraka collisional granitic belt (Paleoproterozoic) (Yenisey Ridge)
	Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt (Middle Jurassic through Early Cretaceous) (Transbaikalia, Mongolia, China)
trbs	Sedimentary part
trbp	Plutonic part
trbv	Volcanic part
	Tungus plateau basalt, sills, dikes, and intrusions (Permian and Triassic) (Siberia)
tuv	Volcanic-rich part
tup	Plutonic-rich part
tv	Tuva molasse basin (Middle Devonian through Late Carboniferous) (Tuva)
ua	Upper Angara carbonate sedimentary basin (Late Neoproterozoic thorugh Middle Cambrian) (northern Transbaikalia)
ub	Upper Borzja marine molasse basin (Early Jurassic) (Transbaikalia)
ubn	Uboynaya granite-syenite belt (anorogenic) (Early Triassic) (Taymir Peninsula)
ud	Uda volcanic-plutonic belt (Late Jurassic and Early Cretaceous) (Yakutia)
uds	Uda sedimentary basin (Late Jurassic and Cretaceous) (Russian Southeast)
ul	Ulkan plutonic belt (Paleoproterozoic) (Yakutia)
	Umlekam-Ogodzhin volcanic-plutonic belt (Cretaceous) (Northwestern Russian Southeast)
uo	Volcanic part
uog	Plutonic part
ur	Urmogtey sedimentary basin (Early and Middle Carboniferous) (Northern Mongolia)
us	Ussuri sedimentary assemblage (Early Cretaceous through Quaternary) (Russian Southeast)
ut	Ust-Taimyr sedimentary assemblage (Late Jurassic and Early Cretaceous) (Taimyr Peninsula)
vch	Vorogovka-Chapa basin (Late Neoproterozoic through Cambrian?) (Yenisey Ridge)
vl	Vladivostok sedimentary and magmatic assemblage (Permian) (Russian Southeast)
vor	Voronin trough sedimentary basin (Mesozoic through Cenozoic) (Kara Sea)
vz	Verkhnezeya sedimentary basin (Cenozoic) (Russian Southeast)
wsa	West Sakhalin sedimentary basin (Paleocene through Quaternary) (Russian Southeast)
xa	Xinjiang Altai plutonic belt (Silurian) (China)
yc	Yong-il sedimentary basin (Cenozoic) (Korea)
yj	Yanji-Jixi-Raohe overlap sedimentary assemblage (Mesozoic and Cenozoic) (Northeast China)
	Yanliao volcanic-sedimentary basin and plutonic belt (Jurassic through Cretaceous) (Northeastern China)
yl	Volcanic-sedimentary basin
ylp	Plutonic belt
yn	Yonil Group (Cenozoic) (Korea)
yss	Yinshan volcanic-sedimentary basin (Jurassic through Cretaceous) (Northeast China)
zbl	Zhangbei-Bayan Obo-Langshan metasedimentary and metavolcanic rocks (Paleoproterozoic and Mesoproterozoic) (Western part of Northeast China)
zg	Zhangguangcailing plutonic belt (Silurian through Ordovician) (Northern China)
zh	Zag-Haraa turbidite basin (Middle Cambrian through Early Ordovician) (Transbaikalia, Mongolia)
zhs	Zhangguangcailing sedimentary overlap assemblage (Paleozoic) (Northeast China)
zr	Zyryanka sedimentary basin (Late Jurassic through Cenozoic) (Yakutia)
zs	Zhangguangcailiang sedimentary overlap assemblage (Mesozoic) (Northeast China)

CRATONS AND CRATON MARGINS

NORTH ASIAN CRATON AND CRATON MARGIN

NAC	North Asian Craton (Archean through Mesozoic) (Siberian Platform)
NAE	North Asian Craton Margin (East Angara fold and thrust belt) (Late Neoproterozoic through Cambrian) (Yenisey Ridge)
NAP	North Asian Craton Margin (Patom-Baikal fold and thrust belt) (Mesoproterozoic and Neoproterozoic) (Transbaikalia)
NAV	North Asian Craton Margin (Verkhoyansk fold and thrust belt) (Carboniferous through Middle Jurassic) (Yakutia)

NORTH ASIAN CRATON MARGIN (SOUTH-TAIMYR FOLD BELT) (ORDOVICIAN THROUGH TRIASSIC) (TAIMYR PENINSULA)

NATT	Predominantly clastic rocks
NATC	Predominantly carbonate rocks
NATB	Predominantly plateau basalt

SOUTH CHINA (YANGZI) CRATON (KOREA AND NORTHEAST CHINA)

SCG	Gyenggi terrane (Granulite-paragneiss) (Mesoproterozoic and Neoproterozoic and older) (Korea)
SCJ	Jiaonan Ultra-High Pressure (UHP) terrane (Metamorphic) (Paleoproterozoic) (Northeastern China)

SINO-KOREAN CRATON (NORTH-CENTRAL CHINA AND KOREA)

SKA	Alashan terrane (Granulite-paragneiss) (Paleoproterozoic) (North-Central China)
SKE	Erduosi terrane (Granulite-paragneiss) (Archean) (North-Central China)
SKJ	Jilin-Liaoning-East Shandong terrane (Tonalite-trondhjemite-gneiss) (Archean) (Northeastern China)
SKL	West Liaoning-Hebei-Shanxi terrane (Granulite-orthogneiss) (Archean) (North-Central China)
SKM	Machollyong terrane (Granulite-paragneiss) (Archean to Paleoproterozoic) (Korea)
SKR	Rangnim terrane (Granulite-paragneiss) (Archean) (Korea)
SKYE	Yeongnam terrane (Granulite-paragneiss) (Late Archean to Paleoproterozoic) (Korean)
SKYS	Yinshan terrane (Granite-greenstone belt) (Archean) (North-Central China)

MAJOR MELANGE ZONES

amz	Amga tectonic melange zone (Yakutia)
bil	Billyakh tectonic melange zone (Yakutia)
kl	Kalar tectonic melange zone (Yakutia)
ktz	Kotuykan tectonic melange zone (Yakutia)
mg	Magan tectonic melange zone (Yakutia)
trz	Tyrkanda tectonic melange zone (Yakutia)

MAJOR FAULT ZONES

AB	Atasborg fault
AD	Adycha-Taryn fault
AG	Arigingol fault
AM	Amur fault
BL	Bilyakchan fault
BTL	Butsuzo tectonic line
BU	Bulgan fault
CS	Central Sikhote-Aline fault
CT	Charysh-Terekta strike-slip fault
DG	Dochgol thrust fault
DH	Delhairhan fault
DR	Westdarhad fault
ET	Eastern Sayan strike-slip fault
FT	Futaba shear zone
GA	Galuut fault
GI	Gichgene fault
GT	Gobi-Tien Shan fault
HA	Hangay fault
HE	Herlen fault
HO	Hovd fault
HT	Hatagawa shear zone
IH	Ihbogd fault
IR	Irtysh shear zone
ISH	Ishimba fault
ISTL	Itoigawa Shizuoka tectonic line
JN	Jzhuinsky strike-slip fault
KA	Kuznetsk-Altai strike-slip fault
KD	Kandat strike-slip fault
KY	Kyllak thrust fault
LA	Lower Aldan thrust fault
LE	Lena thrust fault
MK	Mikabu tectonic line
MN	Mandah fault
MO	Mongol-Okhotsk strike-slip fault
MS	Main Sayan strike-slip fault
MT	Main Taimyr thrust fault
MTL	Median tectonic line
NJ	Nenjiang strike-slip fault
NP	Nepsky overthrust-fold zone
PF	Pyasina-Faddey thrust fault
SA	Sayan-Tuva strike-slip fault
SD	Sayhandulaan fault
SE	Serhnuruu fault
SH	Arhust fault
SN	Sharganuruu fault
SO	Sulinheer fault
ST	Stanovoy strike-slip fault
TA	Tatarka-Ayakhta fault
TG	Turgin Gol fault
TL	Tanlu strike-slip fault
TR	Taryat fault
TRA	Transaltay fault
TS	Tsagaanshuvuut fault
TTL	Tanakura tectonic line
TU	Tasuul fault
UB	Ulaanbadrah fault
YI	Yana-Indigirka fault
YA	Santmargats fault
YR	North Hentey fault
ZA	Zavhan fault
ZB	Zuunbayan fault
ZG	Bayanhongar fault

Geodynamics Map of Northeast Asia

Compiled by

Leonid M. Parfenov[1], Alexander I. Khanchuk[2], Gombosuren Badarch[3], Robert J. Miller[15], Vera V. Naumova[2],
Warren J. Nokleberg[14], Masatsugu Ogasawara[13], Andrei V. Prokopiev[1], and Hongquan Yan[8]

2013

[1] Institute of Diamond and Precious Metal Geology, Russian Academy of Sciences, Yakutsk, Russia
[2] Far East Geological Institute, Russian Academy of Sciences, Vladivostok, Russia
[3] Mongolia Institute of Geology and Mineral Resources, Mongolian Academy of Sciences, Ulaanbaatar, Mongolia
[4] Institute of Earth's Crust, Russian Academy of Sciences, Irkutsk, Russia
[5] United Institute of Geology and Geophysics, Russian Academy of Sciences, Novosibirsk, Russia
[6] Buryat Institute of Geology, Russian Academy of Sciences, Ulan-Ude, Russia
[7] Department of Geology and Mineralogy, Mongolian National University, Ulaanbaatar, Mongolia
[8] Geological Research Institute, Jilin University, Changchun, China
[9] Institute of Geochemistry, Russian Academy of Sciences, Irkutsk, Russia
[10] Buryat Scientific Center, Russian Academy of Sciences, Ulan-Ude, Russia
[11] Korean Institute of Geology, Mining, and Mineral Resources, Taejon, South Korea
[12] All Russia Research Institute for Geology and Mineral Resources of the World Ocean (VNIIOkeangeologia), Russian Ministry of Natural Resources, Moscow, Russia
[13] Geological Survey of Japan/AIST, Tsukuba, Japan
[14] Institute of Tectonics and Geophysics, Russian Academy of Sciences, Khabarovsk, Russia
[15] U.S. Geological Survey, Menlo Park, California U.S.A.

For sale by U.S. Geological Survey, Information Services, Box 25286, Federal Center, Denver, CO 80225, 1–888–ASK–USGS

Digital files available at http://pubs.usgs.gov/sim/3024/

Suggested citation: Parfenov, L.M., Khanchuk, A.I., Badarch, G., Miller, R.J., Naumova, V.V., Nokleberg, W.J., Ogasawara, M., Prokopiev, V., and Yan, H., 2013, Geodynamics map of Northeast Asia: U.S. Geological Survey Scientific Investigations Map 3024, 2 sheets, sheet 1 scale 1:5,000,000, http://pubs.usgs.gov/sim/3024/.