Prepared in collaboration with Russian Academy of Sciences, Mongolian Academy of Sciences, Korean Institute of Geosciences and Mineral Resources, Geological Survey of Japan/AIST, and Jilin University

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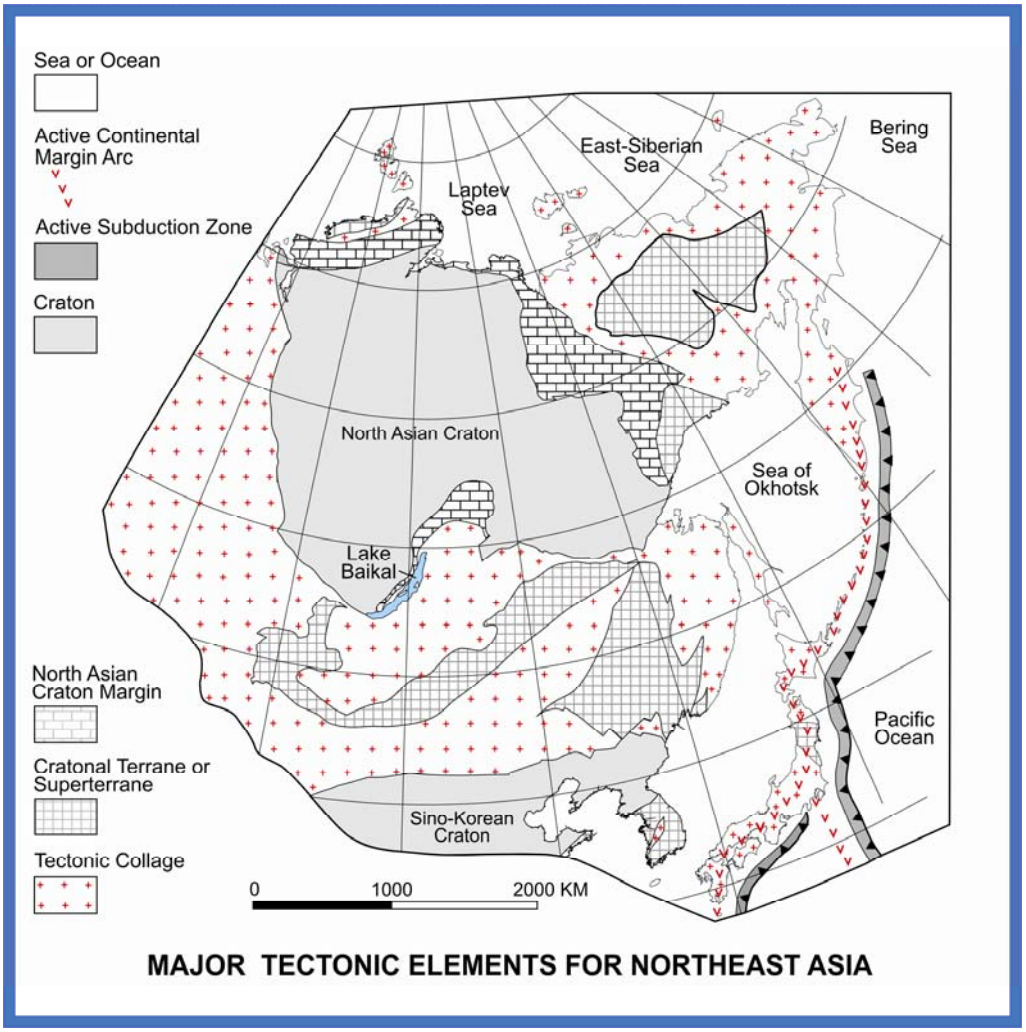

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U.S. Department of the Interior

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Prepared in collaboration with Russian Academy of Sciences, Mongolian Academy of Sciences, Korean Institute of Geosciences and Mineral Resources, Geological Survey of Japan/AIST, and Jilin University

Appendix C – Summary of Major Metallogenic Belts for Northeast Asia (Russian Far East, Yakutia, Eastern Siberia, Transbaikalia, Northern China, Mongolia, South Korea, and Japan

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Available online at: http://pubs.usgs.gov/of/2007/1183/Appendix C/.

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Appendix C – Summary of Major Metallogenic Belts for Northeast Asia (Russian Far East, Yakutia, Eastern Siberia, Transbaikalia, Northern China, Mongolia, South Korea, and Japan

Introduction and Purpose

The important features of the major metallogenic belts for Northeast Asia are summarized in table 1. For each time span, metallogenic belts are listed from west to east, progressing from north to south. The major features of the metallogenic belts are adapted from detailed descriptions of metallogenic belts in Rodionov and others (2004), Nokleberg and others (2004), and Naumova and others (2006). The major features of contained deposits in each belt are adapted from Ariunbileg and others (2003).

The metallogenic belts for Northeast Asia are synthesized, compiled, described, and interpreted with the use of modern concepts of plate tectonics, analysis of terranes and overlap assemblages, and synthesis of mineral deposit models. The data supporting the compilation are: (1) comprehensive descriptions of mineral deposits; (2) compilation and synthesis of a regional geodynamics map the region at 5 million scale with detailed explanations and cited references; and (3) compilation and synthesis of metallogenic belt maps at 15 million scale with detailed explanations and cited references.

Key Metallogenic and Tectonic Definitions

For the compilation, synthesis, description, and interpretation of metallogenic belts, the following and mineral deposit, metallogenic, and tectonic definitions are employed. The definitions are adapted from Coney and others (1980), Jones and others (1983), Howell and others (1985), Wheeler and others (1988), Monger and Berg (1987), and Nokleberg and others (2001, 2004, 2005).

Accretion. Tectonic juxtaposition of two or more terranes, or tectonic juxtaposition of terranes to 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. Units are interpreted to have formed during tectonic juxtaposition in a zone of major thrusting of one lithosphere plate beneath another, generally in zones of thrusting 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 in oceanic areas, for which insufficient data exist to 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. A general term for 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 possess a simatic basement.

Metallogenic belt. A geologic unit (area) that either contains or is favorable for a group of coeval and genetically-related, significant lode and placer deposit models. With this definition, a metallogenic belt is a predictive for undiscovered deposits.

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 either from a nearby craton margin or from a distant site.

Mine. A site where valuable minerals have been extracted.

Mineral deposit. A site where concentrations of potentially valuable minerals for which grade and tonnage estimates have been made.

Mineral occurrence. A site of potentially valuable minerals on which no visible exploration has occurred, or for which no grade and tonnage estimates have been made.

Oceanic crust, seamount, and ophiolite terrane. Fragment of part or all of a suite of *eugeoclinal* 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 postaccretion 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.

Post-accretion rock unit. Suite of sedimentary, volcanic, or plutonic rocks that formed in the late history of a terrane, after accretion. May occur also on adjacent terranes or on the craton margin either as an overlap assemblage or as a basinal deposit. A relative-time term denoting rocks formed after tectonic juxtaposition of one terrane to an adjacent terrane.

Pre-accretion rock unit. Suite of sedimentary, volcanic, or plutonic rocks that formed in the early history of a terrane, before accretion. Constitutes the stratigraphy and igneous geology inherent to a terrane. A relative-time term denoting rocks formed before tectonic juxtaposition of one terrane to an adjacent terrane.

Prospect. A site of potentially valuable minerals in which excavation has occurred.

Significant mineral deposit. A mine, mineral deposit, prospect, or occurrence that is judged as important for the metallogenesis of a geographic region.

Subterrane. A fault-bounded unit within a terrane that exhibit 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 (Moore, 1992). 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.

Geologic Time Scale and Time Spans

Geologic time scale units are according to the IUGS Global Stratigraphic Chart (Remane, 1998). For this study, for some descriptions of metallogenic belt and geologic units, 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).

According to the main geodynamic events and the major deposit-forming and metallogenic belt-forming events for Northeast Asia, the following twelve time spans are used for groupings of metallogenic belts.

Archean (> 2500 Ma)
Paleoproterozoic (2500 to 1600 Ma)
Mesoproterozoic (1600 to 1000 Ma)
Neoproterozoic (1000 to 540 Ma)
Cambrian through Silurian (540 to 410 Ma)
Devonian through Early Carboniferous (Mississippian) (410 to 320 Ma)
Late Carboniferous (Pennsylvanian) through Middle Triassic (320 to 230 Ma)
Late Triassic through Early Jurassic (230 to 175 Ma)
Middle Jurassic through Early Cretaceous (175 to 96 Ma)
Cenomanian through Campanian (96 to 72 Ma)
Maastrichnian through Oligocene (72 to 24 Ma)
Miocene through Quaternary (24 to 0 Ma)

Mineral Deposit Models

For descriptions of metallogenic belts, lode and placer mineral deposits are classified into various models or types. Detailed descriptions of models are provided in Chapter C of this report.

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MINERAL RESOURCES, METALLOGENESIS, TECTONICS
RAS, MAS, JU, KIGAM, GSJ, USGS
NORTHEAST ASIA

Table 1. Summary of major features of metallogenic belts for Northeast Asia.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
MAJOR METALLOGENIC BELTS - ARCHEAN (> 2500 Ma)					
Jidong (JD)	Banded iron formation (BIF, Algoma Fe) (Shuichang, Sijiaying); Au in shear zone and quartz vein (Jinchangyu)	Northern China	Sino-Korean Craton - West Liaoning-Hebei-Shanxi granulite-orthogneiss terrane.	Archean for BIF deposits that have Rb-Sr isotopic age greater than 3,500 Ma. Proterozoic or younger for Au deposits in shear and retrograde metamorphic zones with isotopic ages of 2.5 to 2.6 Ga., 1.7 to 1.8 Ga., or younger.	BIF interpreted as forming in volcanic and sedimentation basin along an unstable proto-continental margin, or in fragment of Archean craton. Au deposits interpreted as forming during retrograde metamorphism to greenschist facies.
Liaoji (LJ)	Banded iron formation (BIF, Algoma Fe) (Gongchangling); Volcanogenic Zn-Pb-Cu massive sulfide (Hongtoushan); Au in shear zone and quartz vein (Jiapigou)	Northeastern China	Sino-Korean Craton, Jilin-Liaoning-East Shandong terrane.	Late Archean. Metamorphic age of the Anshan Group hosting BIF is 2,500 to 2,650 Ma. Isotopic age of BIF units probably older than 2,800 Ma. U-Pb zircon isotopic age for trondhjemite (mylonite) is 3,804 Ma.	Host greenstone belt in Northern Liaoning (Hunbei) area interpreted as forming in an active continental margin whereas greenstone belts in Anshan-Benxi and Jiapigou areas interpreted as forming in oceanic rifts along a continental margin. Au deposits interpreted as forming during retrograde metamorphism to greenschist facies. Because of the ancient geologic units and lack of detailed data, several mineral deposit types are combined into a composite belt.
Sharizhalgaiskiy (SH)	Banded iron formation (BIF, Algoma Fe); Talc (magnesite) replacement (Sosnovy Baits, Baikalskoye, Savinskoye)	Russia, Southern-Eastern Siberia (East Sayan)	Sharizhalgay terrane (Tonalite-trondhjemite gneiss, included with North Asian Craton) and Onot granite-greenstone terrane, derived from North Asian Craton).	Archean. Sharyzhalgay series has U-Pb, Rb-Sr, Sm-Nd isotopic ages of 2.42 to 3.12 Ga. Sedimentary rocks in Onot terrane are Paleoproterozoic.	Some deposits (Kitoy group and Baikalskoye deposit) are Archean sequences. Others (Onot group – Sosnovy Baits deposits) are Proterozoic. Layering in ferruginous quartzite and occurrence in two-pyroxene schists are interpreted as derived from ferruginous volcanic and sedimentary rock sequences.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Sutam (ST)	Banded iron formation (BIF, Algoma Fe) (Olimpiyskoe)	Russia, Southern Yakutia	Central Aldan superterrane (included with North Asian Craton).	Archean. Gneiss in Sutam block has isotopic age of 2.5 to 3.0 Ga.	Two rock groups with BIF occur in belt. (1) Magnetite-hypersthene and magnetite-pyroxene gneiss interbedded with amphibole-pyroxene and magnetite-pyroxen-plagioclase schist. BIF consists of magnetite and hypersthene-magnetite quartzite occur in outer part of an antiform. (2) Feldspar quartzite interlayered with garnet- and sillimanite-bearing schist with diopside calciphyre. Also occurring are magnetite-hypersthene and garnet-magnetite hypersthene layers.
West Aldan (WA)	Banded iron formation (BIF, Algoma Fe) (Charskoye, Tarynnakh, Nelyuki, Dagda, Sulumatskoye, Severnoye and Yuzhnoye NizhneSakukan, Sakukannyrskoye and Oleng-Turritakhskoye); Au in shear zone and quartz vein (Lemochi, Olondo)	Russia, Southern Yakutia	West Aldan terrane (included with North Asian Craton).	Archean to Paleoproterozoic. Metavolcanic and sedimentary rocks interlayered with BIF have isotopic ages of 2.7 to 3.2 Ga. Age of Au occurrences is Late Archean to Paleoproterozoic.	Belt interpreted as forming in back-arc basin and (or) island arc. Au occurrences mainly in the shear zones cutting metabasalt, amphibilite, and ultramafic rock. Shear zones formed during amalgamation of terranes or during later tectonic events. BIF (magnetite quartzite) forms stratiform layers and lenses in metabasalt and amphibolite, and local siliceous metavolcanic rock and schist.
Wutai (WT)	Banded iron formation (BIF, Algoma Fe) (Baizhiyan)	Northern China	Sino-Korean Craton - West Liaoning-Hebei-Shanxi terrane (Granulite-orthogneiss)	Archean. Isotopic ages of >2500 Ma.	Wutai greenstone belt and contained BIF deposits interpreted as forming in non-mature to mature island arc.
MAJOR METALLOGENIC BELTS - PALEOPROTEROZOIC (2500 to 1600 Ma)					
Baydrag (BD)	Banded iron formation (BIF, Algoma Fe) (Baydragiin Gol)	Central Mongolia	Baydrag cratonal terrane, part of Tuva-Mongolia superterrane.	Paleoproterozoic. K-Ar phlogopite isotopic age for skarn is 1,900 Ma. U-Pb isochron and Pb-Pb thermo-isochron zircon ages range from 2650 to 2800 Ma for tonalite gneiss in Baydrag metamorphic complex, and 2,400 Ma for charnokite in Bombogor intrusive Complex	BIF deposits hosted in Paleoproterozoic gneiss, amphibolite, crystalline schist marble and quartzite derived from a volcanic and clastic sedimentary rock basin. Host rocks intruded by Bombogor intrusive complex that is interpreted as a continental margin arc.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Jiliaojiao (JLJ)	Sedimentary-metamorphic borate (Wengquangou); Sedimentary-metamorphic magnesite (Xiafangshen); Talc (magnesite) replacement (Fanjiapuzi); Banded iron formation (BIF, Superior Fe) (Dalizi); Korean Pb-Zn massive sulfide (Qingchengzi); Metamorphic graphite (Nanshu); Au in shear zone and quartz vein (Baiyunshan, Nancha)	Northeastern China	East Shandong-East Liaoning-East Jilin rift basin overlying Sino-Korean Craton.	Late Paleoproterozoic. Metamorphism and intense deformation occurred at 1.9 Ga. Paleoproterozoic Dashiqiao Formation is with isotopic age of 1,700 to 1,500 Ma. Marble in Proterozoic Liaohe group has isotopic age of 1,800 Ma.	Belt interpreted as forming in a passive continental margin, possibly as part of the Paleoproterozoic East Shandong-East Liaoning-East Jilin rift. Environment of formation and deposit controls are debated. A composite metallogenic belt that includes several mineral deposit types.
Kalar-Stanovoy (KS)	Au in shear zone and quartz vein (Ledyanoe, Namark, Pravokabaktanskoe)	Russia, Southern Yakutia	Veins in Kalar tectonic melange zone (included in North Asian Craton).	Interpreted as Paleoproterozoic (about 2,000 Ma)	Belt interpreted as forming during the collision between Tynda and West Aldan terranes in Aldan-Stanovoy region and during subsequent collapse of orogenic belt. Cause of collision was amalgamation of terranes during the formation of the North Asia Craton. Au deposits occur in shear zones that cut metamorphosed mafic and ultramafic and plutonic rock.
Luliangshan (LL)	Banded iron formation (BIF, Superior Fe) (Yuanjiachun); Au in shear zone and quartz vein (Hulishan)	Northern China	Hutuo rift basin or foreland basin.	Early Paleoproterozoic. Pb-Pb isotopic age of 2,230 Ma. U-Pb zircon isotopic age of 2,366 Ma.	BIF iron and shear zone Au deposits interpreted as forming in a Paleoproterozoic Hutuo Basin that was superposed on the Archean Northern China Craton. A composite metallogenic belt that includes several mineral deposit types.
Nimnyr (NM)	Apatite carbonatite (Seligdar)	Russia, Southern Yakutia	Central Aldan superterrane (included with North Asian Craton).	Paleoproterozoic. Carbonatite pluton with isotopic age of 1900 Ma	Carbonatite interpreted as forming during interplate rifting. Deposits consist of apatite-carbonate, apatite-quartz-carbonate, martite-apatite-quartz-carbonate, and martite-apatite-carbonate and apatite-carbonate-quartz ores in carbonatite in asymmetric stocks.
Qinglong (QL)	Banded iron formation (BIF, Algoma Fe) (Zhalanzhangzhi); Clastic-sediment-hosted Sb-Au (Qinglonghe)	Northern China	Sino-Korean Craton -West Liaoning-Hebei-Shanxi terrane.	Paleoproterozoic	BIF hosted in marine volcaniclastic and clastic sedimentary rocks with minor conglomerate that are metamorphosed to amphibolite and greenschist facies. The belt is interpreted as forming in a passive continental margin or aulacogen that was subsequently regionally metamorphosed and thrusted (Zhang Yixia and others, 1986).

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Tyrkanda-Stanovoy (TS)	Au in shear zone and quartz vein (Kolchedannyi Utyos)	Russia, Southern Yakutia	Veins in Tyrkanda tectonic melange zone (included in North Asian Craton).	Interpreted as Paleoproterozoic (about 2,000 Ma).	Belt interpreted as forming during collision between the Tynda composite terrane and Central Aldan and East Aldan superterranes. The reason for collision is unclear. in the Aldan-Stanovoy region and during subsequent collapse of orogenic belt. Au shear zone deposits cut metamorphosed mafic and utramafic bodies and plutonic rocks.
Uguy-Udokanskiy (UU)	Zoned mafic-ultramafic Cr-PGE (Chineyskoye;); Sediment-hosted Cu (Udokanskoye); Ta-Nb-REE alkaline metasomatite;, Pravo-Ingamakit, Sakinskoye, Sulbanskoye, Katuginskoye)	Russia, Southern Yakutia	West Aldan terrane (included with North Asian Craton).	Paleoproterozoic. Cu sandstone in Udokan deposit is 2.2 to 1.8 Ga. Ta, Nb, REE alkaline metasomatite deposits age is 2.0 to 1.6 Ga	Cr and PGE deposits in zoned mafic-ultramafic plutons and Cu in the sedimentary rocks interpreted as forming along a passive continental-margin rift. Ta-Nb-REE alkaline metasomatite deposits interpreted as forming during later collision and formation of anatectic granite.
MAJOR METALLOGENIC BELTS - MESOPROTEROZOIC (1600 to 1000 Ma)					
Darvi (DR)	Sedimentary bauxite (Alag Uul); Sedimentary Fe-V	Mongolia	Baydrag cratonal terrane (part of Tuva-Mongolia superterrane).	Interpreted as Mesoproterozoic	Belt interpreted as forming during bauxite sedimentation in Lower to Middle Riphean sedimentary basin along a passive continental margin.
Langshan-Bayan Obo (LB)	Sedimentary exhalative Pb-Zn (SEDEX) (Huogeqi) Polygenic REE-Fe-Nb deposits (Bayan Obo)	Northwestern and North-Central China	Layers in Zhangbei-Bayan Obo-Langshan rift-related metasedimentary and metavolcanic units deposited on Sino-Korean Craton.	Mesoproterozoic. Sm-Nd isochron ages for monazite, bastnaesite, riebeckite gains are 1,200 to 1,300 Ma. Th-Pb and Sm-Nd ages of Ba-REE-F carbonates and aeschynite are 474 to 402 Ma.	Bayan Obo deposit interpreted as a SEDEX deposit related to a carbonatite magma and associated hydrothermal activity. Belt hosted in Mesoproterozoic overlap sedimentary assemblages that formed in a rift along the passive continental margin of the Sino-Korean Craton.
Yanliao (YL)	Chemical-sedimentary Fe-Mn (Wafangzi); Sedimentary exhalative Pb-Zn (SEDEX) (Gaobanhe)	Northern and Northeastern China	Jixian Group - sedimentary cover on Sino-Korea Craton.	Mesoproterozoic. Age of Jixian Group is 1,400 to 1,100 Ma.	Belt interpreted as forming in a shallow marine basin on the Sino-Korean Craton.
MAJOR METALLOGENIC BELTS - NEOPROTEROZOIC (1000 to 540 Ma)					
Angara-Pit (AP)	Sedimentary Siderite Fe (Nizhne-Angarskoye); Volcanogenic-sedimentary Fe	Russia, Eastern Siberia (Yenisei Ridge)	North Asian Craton Margin, East Angara fold and thrust belt.	Upper Riphean.	Belt interpreted as forming during pre-orogenic subsidence of the North Asian Craton margin in a back-arc (interland) sedimentary basin.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Baikalo-Muiskiy (BM)	Volcanogenic-hydrothermal-sedimentary massive sulfide Pb-Zn (±Cu); Polymetallic (Pb, Zn, Ag) carbonate-hosted metasomatite; Serpentinite-hosted asbestos (Kholodninskoye, Lugovoye, Molodezhnoye)	Russia, Northern Transbaikalia	Baikal-Muya island arc terrane, part of Circum-Siberia collage, and Muya metamorphic terrane, part of Tuva-Mongolia superterrane.	Neoproterozoic.	Various deposits in belt interpreted as forming in Baikal-Muya island arc or during Riphean accretion of terrane with Muya metamorphic terrane and Olokit-Delunuran subduction zone terrane.
Bodaibin-skiy (BO)	Au in black shale (Sukhoy Log, Vysochaishi, Dogaldynskoye)	Russia, Northern Transbaikalia	North Asian Craton Margin, Patom fold and thrust belt.	Belt formation started in Neoproterozoic with subsequent enrichment in Devonian to Early Carboniferous. Age of gold from Sukhoy Log deposit is about 320 Ma.	Initial gold deposition during sedimentation and later metamorphism and hydrothermal activity. Subsequent Neoproterozoic post-collisional magmatic and hydrothermal activity formed economic deposits. Subsequent formation of gold-silver-sulfosalt deposits during magmatic and hydrothermal activity in middle and late Paleozoic.
Bokson-Kitoiskiy (BK)	Sedimentary bauxite (Boksonskoye); Magmatic nepheline (Botogolskoye); Serpentine-hosted asbestos (Ilchirskoye); Au in shear zone and quartz vein (Zun-Kholba)	Russia, Southern-Eastern Siberia (East Sayan)	Layers in, and veins and plutons intruding or associated with Belaya-Kitoy metamorphic terrane, Hug subduction zone terrane, Tunka island arc terrane, Tannuola plutonic belt, and Huvsgol-Bokson sedimentary overlap assemblage, all part of Yenisey-Transbaikal collage).	Neoproterozoic through Silurian. Neoproterozoic sedimentary rocks with Cambrian through Silurian metamorphism, hydrothermal alternation, and plutonic intrusion. Younger of Sumsunur tonalite complex with U-Pb and Rb-Sr isotopics ages of 790 Ma.	Belt hosted in metamorphic, oceanic, subduction zone, and tonalite-trondhjemite-gneiss terranes that underwent Cambrian through Silurian metamorphism, hydrothermal alternation, and plutonic intrusion. Deposits formed in multiple events. Metallogenic belt is a composite that includes several mineral deposit types.
Central-Yenisei (CY)	Au in black shale (Olympiada); Au in shear zone and quartz vein (Sovetskoye); Clastic-sediment-hosted Sb-Au (Udereiskoye)	Russia, Eastern Siberia (Yenisei Ridge)	Central Angara passive continental margin terrane, part of Central Siberia collage.	Late Neoproterozoic. K-Ar isotopic age for late-stage hydromica metasomatites in Sb-Au deposit is 605 Ma to 664 Ma. Rb-Sr isotopic age for Tatarsk granitoid is 601 Ma.	Gold deposits interpreted as forming during collisional development of the late Riphean continental margin of the North Asian Craton. Gold initially occurring in black shale was subsequently concentrated and remobilized during collision-related metamorphism, granitoid intrusion, and hydrothermal activity.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Hovsgol (HO)	Sedimentary phosphate (Hubsugul); Volcanogenic-sedimentary Mn (Saihangol); Sedimentary Fe-V (Hitagiin gol)	Northern Mongolia	Huvsgol-Bokson sedimentary overlap assemblage deposited on Tuva-Mongolia superterrane.	Vendian through Early Cambrian.	Belt interpreted as forming during sedimentation in a carbonate-dominated basin along a continental shelf.
Jixi (JX)	Banded iron formation (BIF, Algoma Fe) (Shuangyashan); Homestake Au (Dongfengshan); Metamorphic graphite; (Liumao); Metamorphic sillimanite	Northeastern China	Jiamusi terrane (Metamorphic) terrane and Zhangguangcailing (Continental margin arc) superterrane.	Neoproterozoic to Cambrian.	Belt is part of a khondalite that is interpreted as derived from Al-rich mudstone and carbonates of the Mashan and the Xingdong groups that were deposited in a shallow sea and isolated oceanic basin and lagoon.
Kyllakh (KY)	Carbonate-hosted Pb-Zn (Mississippi valley type) (Sardana)	Russia, Far East	Verkhoyansk (North Asian) Craton Margin.	Vendian.	Belt interpreted as forming on passive margin of the North Asian Craton in the Vendian. Economic deposits occur in areas of facial thinning of dolomite.
Lake (LA)	Volcanogenic Cu-Zn massive sulfide (Urals type) (Borts uul); Volcanogenic-sedimentary Fe; Podiform Cr; Mafic-ultramafic related Ti-Fe (±V); Cu (±Fe, Au, Ag, Mo) skarn; Fe skarn; Granitoid-related Au vein (Khyargas) Cyprus Cu-Zn Massive Sulfide (Naran Davaa); Mafic-ultramafic related Cu-Ni-PGE (Tsagdaltyn Davaa)	Western Mongolia	Lake island arc terrane, part of Yenisey-Transbaikal collage.	Late Neoproterozoic. Khantayshir ophiolite with U-Pb zircon isotopic age of 568 Ma. Dariv ophiolite with U-Pb zircon isotopic age of 573 Ma.	Various deposits in belt are interpreted as forming during sea floor spreading volcanism and related mafic-ultramafic magmatism, and in subduction-related island arc volcanism and mafic plutonism, and multiple-phase granitic magmatism.
Pribaikal-skiy (PB)	Carbonate-hosted Pb-Zn (Mississippi Valley type) (Barvinskoye)	Russia, East Sayan	Sheared margin between Paleoproterozoic Akitkan volcanic-plutonic belt and Verkhoyansk (North Asian Craton Margin).	Riphean.	Belt interpreted as forming along shear zones and faults that occur between an ancient active continental margin along the North Asian Craton Margin.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Prisayan-skiy (PR)	REE (±Ta, Nb, Fe) carbonatite (Beloziminskoye); Mafic-ultramafic related Ti-Fe (±V)	Russia, Southern-Eastern Siberia (East Sayan)	Various units in North Asia Craton: Onot granite-greenstone and Sharizhalgay tonalite-trondhjemite gneiss terranes containing mafic-ultramafic plutons in the Ziminsky complex, and ultramafic alkaline plutonic rock.	Late Neoproterozoic. Rb-Sr isochron age for talc deposit is 633 Ma; Rb-Sr and ^{40}Ar-^{39}Ar age for REE carbonatite deposits is 547 Ma.	Belt occurs in enderbite-gneiss, tonalite-trondjemite, anorthosite-paragneiss formation of terranes that are fragments of Precambrian craton crystalline basement. Host terranes are uplifted parts of North Asian Craton.
Vorogovsko-Angarsk (VA)	Sedimentary exhalative Pb-Zn (SEDEX) (Gorevskoye); Carbonate-hosted Pb-Zn (Mississippi valley type) (Moryanikhinskoye); Fe skarn (Enashiminskoye)	Russia, Eastern Siberia (Yenisei Ridge)	West Angara passive continental margin terrane, part of Central Siberia collage.	Early Neoproterozoic. Model Pb-Pb isotopic age for Gorevskoye deposit is 834 to 852 Ma. Pb isotopic age of Moryanikhinskoye deposit is 740 to 849 Ma. Host rocks have isotopic age of 950 Ma.	SEDEX deposits interpreted as forming along transcrustal block-bounding faults in margin of the platform. Carbonate-hosted Pb-Zn deposits hosted in reefs. Fe skarn deposits formed during contact metasomatism of marine volcanic and sedimentary rocks.
METALLOGENIC BELTS - CAMBRIAN THROUGH SILURIAN (540 to 410 Ma)					
Bedobinsk (BE)	Sediment-hosted Cu (Bedobinsk, Kurishskoye)	Russia, Eastern Siberia (Yenisey Ridge area)	North Asian Craton.	Middle to Late Cambrian.	Belt interpreted as forming in an inland-sea basin during post-saline stage of rock deposition. Main source of copper was weathered Riphean rocks as well as lode deposits in the Yenisei Ridge, and from hydrothermal activity along deep-fault zones related to rifting.
Bayanhon-gor (BH)	Au in shear zone and quartz vein (Bor Khairhan, Khan Uul, Dovont); Granitoid-related Au vein (Tsagaantsakhir Uul); Cu-Ag vein (Jargalant, Bayantsagaan, Burdiingol); Cu (±Fe, Au, Ag, Mo) skarn (Khokhbulgiin Khondii)	Central Mongolia	Veins in Hangay-Dauria subduction zone terrane, Orhon-Ikatsky continental margin arc terrane, and Zag-Haraa turbidite basin, all part of Yenisey-Transbaikal collage.	Late Ordovician. K-Ar metamorphic isotopic ages of foliated and metamorphosed host mudstone (Vendian to Early Cambrian Olziitgol Formation in Orhon terrane) are 447 and 453.9 Ma.	Belt interpreted as forming during regional metamorphism associated with accretion of Bayanhongor and Baydrag terranes.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
East Liaoning (EL**)**	Diamond-bearing kimberlite (Fuxian)	Northeastern China	Kimberlites intruding Sino-Korean Craton - Jilin-Liaoning-East Shandong tonalite-trondhjemite-gneiss terrane.	Ordovician(?). Isotopic age of kimberlite is about 340 to 455 Ma. Isotopic age of kimberlite on Shandong Peninsula is 460 to 490 Ma.	Kimberlite and associated intrusions occur along northeast-trending regional Tanlu fault along northern margin of the Sino-Korean Platform.
Govi-Altai (GA)	Volcanogenic-sedimentary Fe (Uhin Ovoo); Volcanogenic-sedimentary Mn (Tahilgat Uul, Sharturuutiin gol)	Southwestern Mongolia	Govi Altai continental-margin turbidite terrane, part of South Mongolia-Khingan collage.	Middle Cambrian to Early Ordovician.	Belt interpreted as forming during sedimentation along an early Paleozoic continental slope.
Hovd (HO)	Granitoid-related Au vein; Au skarn; Cu (±Fe, Au, Ag, Mo) skarn (Yolochka)	Western Mongolia	Replacements related to Turgen granitoid complex that intrudes Hovd continental-margin turbidite terrane, part of Altai collage.	Ordovician to Late Silurian. K-Ar isotopic age of Hovd complex is 426 to 456 Ma.	Belt interpreted as forming during subduction related granitic magmatism that occurred along a continental-margin arc.
Hunjiang-Taizihe (HT)	Evaporite sedimentary gypsum (Rouguan)	Northeastern China.	Platform sedimentary cover on Sino-Korean Craton.	Cambrian to Ordovician	Gypsum interpreted as forming in a super-tidal sabkha sedimentary environment.
Jinzhong (JZ)	Evaporite sedimentary gypsum (Taiyuan)	Northern China	Sino-Korean platform sedimentary cover.	Cambrian through Ordovician	Gypsum interpreted as forming in a large epicontinental marine basin.
Jixi (JX)			Started in Neoproterozoic (1000 to 540 Ma)		
Kiyalykh-Uzen (KY)	Cu (±Fe, Au, Ag, Mo) skarn (Kiyalykh-Uzen, Juliya Mednaya); W±Mo±Be skarn (Tuim); Fe skarn (Samson); W-Mo-Be greisen, stockwork, and quartz vein (Verhne-Askizskoye, Turtek)	Russia, Southern-Eastern Siberia (Kuznetsk Alatau Mountains)	Replacements related to Tannuola plutonic belt, part of Yenisey-Transbaikal collage.	Early Ordovician to Early Silurian. $^{40}Ar/^{39}Ar$ host-rock isotopic age of 480 to 420 Ma.	Belt related to early Paleozoic collisional granitoids that intrude Vendian and Cambrian shelf carbonate and clastic-carbonate rocks during transpressive (dextral-slip) movement along the Kuznetsk Alatau fault.
Kizir-Kazyr (KK)	Fe skarn (Irbinskoye); Volcanogenic-sedimentary Fe (Belokitatskoye); Granitoid-related Au vein (Olkhovskoye)	Russia, Southern-Eastern Siberia (Eastern Sayan Ridge)	Replacements related to Tannuola plutonic belt, part of Yenisey-Transbaikal collage.	Middle Silurian. K-Ar isotopic age for deposit-related gabbro, diorite, and granodiorite plutons in Irbinskoye district is 430 Ma.	Deposits hosted in gabbro, diorite, and granodiorite in the collisional Tannuola plutonic belt, and in volcanogenic-sedimentary rocks of the Kizir-Kazir island-arc terrane, part of the Yenisey-Transbaikal collage.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Martaiginsk (MT)	Granitoid-related Au vein (Sarala, Komsomolskoye); Au skarn (Natal'evskoye, Sinyukhinskoye, Komsomolskoye)	Russia, Southern-Eastern Siberia (Kuznetsk Alatau, Gorny Altai Mountains)	Granitoids and veins related to Tannuola plutonic belt, part of Yenisey-Transbaikal collage.	Late Ordovician and Early Silurian. $^{40}Ar/^{39}Ar$ isotopic age of 480 to 460 Ma for Martaiginsk complex; K-Ar age of 445 to 427 Ma for Lebed complex; Rb-Sr ages of 472 Ma, 458 Ma, 444 Ma, and 433 Ma for gangue minerals and metasomatite for Gavrilovskoye, Centralnoye, Komsomolskoye, Sarala deposits.	Belt related to early Paleozoic collisional granitoids that intrude Vendian and Cambrian shelf carbonate and clastic-carbonate rocks during transpressive (dextral-slip) movement along the Kuznetsk Alatau fault. Deposits clusters in along fault and shear zones that are branches of the Kuznetsk Alatau fault.
Ozerninsky (OZ)	Volcanogenic-hydrothermal-sedimentary massive sulfide Pb-Zn (±Cu); (Ozernoye); Volcanogenic-sedimentary Fe (Arishinskoye)	Russia, Western Transbaikalia	Eravna island arc terrane, part of Yenisey-Transbaikal collage.	Cambrian to Silurian. Isotopic age of younger granitoids intruding terrane is 320 to 400 Ma.	Belt interpreted as forming in an island arc that was subsequently intruded by the Barguzin-Vitim batholith.
South Khingan (SK)	Banded iron formation (BIF, Superior Fe) (Yuzhno-Khingan, Kimkanskoe, Kostenginskoe)	Russia, Far East	Malokhingansk subduction zone terrane, included in Sino-Korean Craton.	Neoproterozoic and Cambrian. BIF intruded by granitic plutons with K-Ar isotopic ages of 604 and 301 Ma.	Belt is interpreted as forming in volcanic and sedimentation basin along an unstable proto-continental margin, or in a fragment of Archean craton that was incorporated into an subduction zone terrane.
Uda-Shantar (US)	Volcanogenic-sedimentary Fe (Gerbikanskoe); Volcanogenic-sedimentary Mn (Ir-Nimiiskoe-1); Sedimentary phosphate (North-Shantarskoe, Nelkanskoe, Ir-Nimiiskoe-2, Lagapskoe)	Russia, Far East	Galam subduction zone terrane, part of Mongol-Okhotsk collage.	Early Paleozoic	Belt interpreted as forming during sea floor hydrothermal activity associated with basaltic volcanism that was accompanied by chert deposition in basins. Fe and Mn deposits occur in elongate beds and lenses. Sedimentary P deposits are interpreted as formed in limestone caps that formed in two stages on accreted seamounts, atolls, and guyots. Units and deposits were subsequently incorporated into an subduction zone.
METALLOGENIC BELTS - DEVONIAN THROUGH EARLY CARBONIFEROUS (MISSISSIPPIAN)(410 to 320 Ma)					
Bayangovi (BG)	Au in shear zone and quartz vein (Bayangovi district)	Southern Mongolia	Replacements in Govi Altai continental-margin turbidite terrane, part of South Mongolia-Khingan collage.	Devonian	Belt interpreted as forming regional metamorphism of the Govi-Altai terrane, part of the South Mongolia-Khingan collage, during collision with the Lake terrane.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Botuobiya - Markha (BM)	Diamond-bearing kimberlite (Mir, Internatsional'naya)	Russia, Central Yakutia	Kimberlite intruding North Asian Craton.	Devonian.	Tectonic environment unknown. Devonian kimberlite pipes intrude mostly Cambrian to Silurian carbonate sedimentary rocks of North Asian Craton.
Daldyn-Olenyok (DO)	Diamond-bearing kimberlite (Aikhal, Udachnaya, Ubileinaya, Sytykanskaya)	Russia, Northeast Yakutia	Kimberlite intruding North Asian Craton.	Devonian	Tectonic environment unknown. Devonian kimberlite pipes intrude mostly Cambrian to Silurian carbonate sedimentary rocks of North Asian Craton.
Deluun-Sagsai (DS)	Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite (Burgedtas); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Nominy Am); Volcanogenic Zn-Pb-Cu massive sulfide (Kuroko, Altai type); Sediment-hosted Cu (Khatuugiin gol); Ag-Pb epithermal vein (Dulaan khar uul) Granitoid related Au vein	Western Mongolia	Granitoids and replacements related to Deluun sedimentary-volcanic-plutonic belt, part of Altai continental margin arc.	Interpreted as Early Devonian to Early Carboniferous	Belt interpreted as forming along an active Andean-type continental margin.
Edrengiin (ED)	Volcanogenic Cu-Zn massive sulfide (Urals type) (Olgii nuruu); Volcanogenic-sedimentary Mn; Volcanogenic-sedimentary Fe (Olgiibulag)	Southwestern Mongolia	Edren Island arc terrane, part of South Mongolia-Khingan collage.	Early Devonian	Belt interpreted as forming in island arc volcanism. Deposits hosted in pillow basalt and siliceous rocks.
Edren-Zoolon (EZ)	Au in shear zone and quartz vein (Edren, Nemegt)	Southern Mongolia	Veins in Edren island arc terrane and Zoolen subduction zone terrane, both part of South Mongolia-Khingan collage.	Late Devonian to Early Carboniferous	Belt interpreted as forming during regional metamorphism and vein emplacement associated with accretion of Beitianshan-Atasbogd and Zhongtianshan terranes.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Hongqiling (HQ)	Mafic-ultramafic related Cu-Ni-PGE (Hongqiling); Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite (Guanma)	Northeastern China	Mafic and ultramafic plutons in Hongqiling plutonic and Guanma volcanic sedimentary complexes that intrude and overlap Zhangguangcailing superterrane and Laoling terrane, part of Bureya-Jiamusi supterterrane.	Mississippian. Isotopic ages of 331 to 350 Ma.	Belt interpreted interpreted as forming during extension that occurred after accretion of the Zhangguangcailing superterrane and Laoling terrane. Belt hosted in Mississipian or possibly Triassic mafic-ultramafic plutons, and in overlap volcanic assemblages an extensional basin that formed after the accretion.
Kizhi-Khem (KZ)	W-Mo-Be greisen, stockwork, and quartz vein (Okunevskoye); Porphyry Cu-Mo (±Au, Ag) (Aksug, Dashkhemskoye); Ta-Nb-REE alkaline metasomatite (Aryskanskoye 1); Granitoid-related Au vein	Russia, Southern-Eastern Siberia (Northeast Tuva area)	Replacements and granitoids related to South-Siberian volcanic-plutonic belt that overlies and intrudes the Khamsara island-arc terrane.	Devonian through Pennsylvanian. Estimated $^{40}Ar/^{39}Ar$ isotopic age for the Aksug Cu-Mo-porphyry deposit is 400 to 380 Ma. Alaskite and alkalic granite hosting W-Mo-Be deposits intrude Silurian-Devonian granite and have K-Ar isotopic ages of 305 to 280 Ma.	Belt interpreted as forming during granitoid magmatism associated with South Siberian volcanic plutonic belt that formed during rifting associated with transpressional faulting.. Deposit-related plutons intrude Early Cambrian volcanic rocks of the Khamsara island-arc terrane and early Paleozoic granites of Tannuola plutonic belt.
Korgon-Kholzun (KK)	Volcanogenic-sedimentary Fe (Kholzunskoye, Inskoye, Beloretskoye); Fe skarn, Mafic-ultramafic related Ti-Fe (±V) (Kharlovskoye); Polymetallic (Pb, Zn, Ag) carbonate-hosted metasomatite (Charyshskoye)	Russia, Southern-Eastern Siberia (Gorny Altai area)	Deposits related to Altai volcanic-plutonic belt that overlap and intrude Altai and Charysh continental margin turbidite terranes.	Devonian to Carboniferous	Belt interpreted as forming along Altay continental margin arc.
Mamsko-Chuiskiy (MC)	Muscovite pegmatite (Vitimskoye, Lugovka, Kolotovka, Bolshoye Severnoye, Komsomolsko-Molodezhnoye, Sogdiondonskoye, and Chuyskoye)	Russia, Northern Transbaikalia	Veins and dikes in Mamsky and Konkudero-Mamakansky complexes intruding Chuja paragneiss terrane, included in Baikal-Patom Craton Margin.	Devonian to Early Carboniferous. Mamsky complex has isotopic age of 350 to 300 Ma.	Interpreted as forming during intrusion of alkaline granitoid of the Mamsky and Konkudero-Mamakansky Complexes into the Chuya paragneiss terrane that formed part of a passive margin. The host granitoids are interpreted as forming during post-accretionary magmatism in transpression zones related to transform micro plate boundaries and within plate (plume) environment.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Muiskiy (MS)	Granitoid-related Au vein; Au in shear zone and quartz vein (Irokindinskoye); Carbonate-hosted Hg-Sb (Kelyanskoye); Porphyry Sn (Mokhovoye)	Russia, Northwestern Transbaikalia	Granitoids and veins related to Barguzin-Vitim granitoid that intrudes Baikal-Muya island arc terrane and Muya metamorphic terrane, both part of Tuva-Mongolia superterrane.	Devonian to Early Carboniferous	Belt interpreted as forming in granitoids and veins generation during Riphean collision of Baikal-Muya terrane with Muya terrane.
Rudny Altai (RA)	Volcanogenic Zn-Pb-Cu massive sulfide (Kuroko, Altai types) (Korbalihinskoye, Stepnoye, Talovskoye, Rubtsovskoye, Zakharovskoye, Jubileinoye); Barite vein (Zarechenskoye, Zmeinogorskoye); Volcanic-hosted metasomatite	Russia, Southern-Eastern Siberia	Rudny Altai island arc, terrane, part of West Siberian collage.	Middle to Late Devonian	Belt interpreted as forming in an island arc. Belt hosted in shallow marine shelf volcanic rocks
Salair (SL)	Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite (Salairskoye); Porphyry Cu-Mo (±Au, Ag) (Kamenushinskoye)	Russia, Southern-Eastern Siberia (Salair Range)	Porphyry intrusions and associated replacements related to Altay volcanic-plutonic belt (Altay arc) that overlies and intrudes the Salair terrane.	Interpreted age of Middle Devonian to Early Carboniferous for deposit-related quartz-porphyry intrusion.	Belt interpreted as forming in an active continental margin arc environment into which mafic dike swarms and small intrusions, and siliceous porphyries were intruded.
Sette-Daban (SD)	Sediment-hosted Cu (Kurpandzha); Basaltic native Cu (Lake Superior type) (Dzhalkan and Rossomakha); REE (±Ta, Nb, Fe) carbonatite (Gornoye Ozero, Povorotnoye); Carbonate-hosted Pb-Zn (Mississippi valley type) (Lugun , Segenyakh)	Russia, Southern Yakutia	Verkhoyansk (North Asian) Craton Margin.	Interpreted as Middle Devonian to Early Carboniferous.	Cu deposits interpreted as forming during Devonian rifting. REE and apatite deposits hosted in alkali-ultramafic and carbonatite plutons are also interpreted as forming during Devonian rifting.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Sorsk (SO)	Porphyry Mo (±W, Bi) (Sorskoye); Polymetallic (Pb, Zn, Ag) carbonate-hosted metasomatite (Karasuk); Zn-Pb (±Ag, Cu) skarn (Julia Svintsovaya)	Russia, Southern-Eastern Siberia (Kuznetsk Alatau Mountains)	Granitoids and associated replacements related to South Siberian volcanic-plutonic belt (South Siberian arc).	Early and Middle Devonian. ^{40}Ar-^{39}Ar isotopic age of deposits is 385 to 400 Ma. K-feldspar and albite metasomatite age is 400 to 380 Ma. Host volcanic rocks with K-Ar age of 396 Ma and Rb-Sr age of 416 Ma.	Belt interpreted as forming during Devonian subalkalic porphyry magmatism related to interplate rifting and transpressional faulting. Deposit-related porphyry intrusions intrude older early Paleozoic granitoid plutons. Skarn and metasomatic polymetallic deposits hosted in Vendian and Cambrian shallow-water marine carbonate rocks.
Teisk (TE)	Fe skarn (Teiskoye, Khaileolovskoye); Mafic-ultramafic related Ti-Fe (±V) (Patynskoye, Kul-Taiga); Volcanogenic-Sedimentary Fe (Chilanskoye)	Russia, Southern-Eastern Siberia (Kuznetsk Alatau Mountains)	Plutonic rocks of South Siberian volcanic-plutonic belt (South Siberian arc).	Early Devonian. K-Ar isotopic ages for syenite-diorite of Malaya Kul-Taiga pluton are 411 and 438 Ma. K-Ar isotopic age of Devonian volcanic rocks is 396 Ma and Rb-Sr isotopic age is 416 Ma.	Belt interpreted as forming during interplate transpression and rifting that formed South Minusa volcanic basin. Deposit-related Early Devonian granosyenite plutons occur along marginal faults of Devonian basins.
Tsagaan-suvarga (TsS)	Porphyry Cu-Mo (±Au, Ag) (Tsagaan suvarga; Oyutolgoi, Oyut, Bor Ovoo); Porphyry Cu (±Au) (Oyu Tolgoi); Porphyry Au; Granitoid-related Au vein (Alagtolgoi)	Southeastern Mongolia	Granitoids related to Gurvansayhan island arc terrane, part of South Mongolia-Khingan collage.	Late Devonian to Early Carboniferous. $^{40}Ar/^{39}Ar$ isotopic age for Tsagaan suvarga porphyry Cu deposit is 364.9± 3.5 Ma.	Belt interpreted as forming in a mature island arc or continental-margin arc.
Udzha (UD)	REE (±Ta, Nb, Fe) carbonatite (Tomtor)	Russia, Northeast Yakutia	North Asian Craton.	Interpreted as Devonian. Host rock Rb-Sr isotopic age is 810 to K-Ar age is 240 Ma.	Belt interpreted as forming during intrusion of alkali-ultramafic rock and carbonatite associated with Devonian rifting.
Ulziit (UZ)	Au in shear zone and quartz vein (Olon Ovoot)	Southern Mongolia	Replacements in Govi Altai continental-margin turbidite terrane, part of South Mongolia-Khingan collage.	Devonian(?)	Belt interpreted as forming regional metamorphism of Govi-Altai terrane during collision with the Idermeg terrane.
Yaroslavka (YA)	Fluorite greisen (Voznesenka-II); Sn-W greisen, stockwork, and quartz vein (Yaroslavskoe)	Russia, Far East	Granitoids intruding Voznesenka passive continental margin terrane, part of Bureya-Jiamusi supterterrane.	Late Cambrian and though Devonian. Granitoids have K-Ar isotopic ages of 440 to 396 Ma.	Belt interpreted as forming in a collisional arc that formed in a fragment of Gondwanaland. Host leucogranite plutons interpreted as forming during early Paleozoic collision of the Voznesenka and Kabarga terranes. Deposit-related granitoids intrude Cambrian clastic rocks and limestone.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
MAJOR METALLOGENIC BELTS - LATE CARBONIFEROUS (PENNSYLVANIAN) THROUGH MIDDLE TRIASSIC (320 to 230Ma)					
Angara-Ilim (AI)	Fe skarn (Korshunovskoye); REE (±Ta, Nb, Fe) carbonatite (Chuktukonskoye); Weathering crust carbonatite REE-Zr-Nb-Li (Chuktukonskoye)	Russia, Eastern Siberia	Replacements related to Tungus plateau basalt, sills, dikes, and intrusions that intrude North Asian Craton.	Late Permian to Early Triassic(?). Isotopic age of related igneous rock ranges from 260 to 200 Ma.	Belt interpreted as related to widespread development of trapp magmatism on North Asian Craton. Fe skarn deposits associated with Triassic explosive and intrusive basaltic trapp complexes in diatremes. REE-Ta-Nb carbonatite deposits associated with alkali-ultramafic intrusions.
Altay (AT)	REE-Li pegmatite; Muscovite pegmatite (Keketuohai, Ayoubulake)	Northwestern Mongolia; Northwestern China	Veins, dikes, and replacements related to granitoids in Altai volcanic-plutonic belt that intrudes Altai continental margin turbidite terrane.	Late Carboniferrous. Calc-alkaline anatectic granite with K-Ar isotopic age of 219 Ma.	Belt interpreted as forming in during intrusion of collisional granite that formed during collision of Kazakhstan and North Asian Cratons. Belt interpreted as forming during high-grade metamorphism with crustal melting and generation of anatectic granite.
Battsengel-Uyanga-Erdenedalai (BUE)	Granitoid-related Au vein (Mongot, Battsengel, Uyanga groups, Sharga Ovoo, Tsagaan Ovoo)	Central Mongolia	Small stitching plutons that formed in early stage of intrusion of Hangay plutonic belt that intrudes Hangay-Dauria and Onon subduction zone terranes, part of Mongol-Okhotsk collage. Plutonic rocks related to Selenga sedimentary-volcanic plutonic belt (Selenga arc).	Late Carboniferous to Permian.	Belt interpreted as forming along Selenga continental margin arc along the margin of the Mongol-Okhotsk Ocean. Belt hosted in gabbro, diorite, and granodiorite stocks and dikes.
Buteeliin nuruu (BU)	Peralkaline granitoid-related Nb-Zr-REE (Bayangol); REE-Li pegmatite (Bayangol 1); W-Mo-Be greisen, stockwork, and quartz vein	Northern Mongolia	Granitoids related to Selenga sedimentary-volcanic plutonic belt (Selenga arc) intruding West Stanovoy terrane.	Early Permian(?) or Mesozoic(?). Interpreted as early Permian according to Pb-Pb zircon age of 275 Ma for strongly foliated granite-gneiss. K-Ar isotopic ages of 89 to 129 Ma for migmatite, gneissic granite, leucogranite, aplite, and pegmatite.	Belt interpreted as related to an Early Permian core complex that consists of granitoids that intrude granite-gneiss and mylonite in the West Stanovoy terrane. Alternatively belt may be related collisional granitoids generated during Mesozoic closure of Mongol-Okhotsk Ocean.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Central Mongolia (CM)	Fe-Zn skarn; Sn skarn, Zn-Pb (±Ag, Cu) skarn; W±Mo±Be skarn; Cu (±Fe, Au, Ag, Mo) skarn (Erdenekhairkhan); Porphyry Cu-Mo (±Au, Ag) (Zos Uul) Porphyry Mo (±W, Bi); Au skarn (Buutsagaan); Granitoid related Au vein; W-Mo-Be greisen, stockwork, and quartz vein; Basaltic native Cu (Lake Superior type)	Central Mongolia	Replacements and granitoids related to Selenga sedimentary-volcanic plutonic belt (Selenga arc).	Interpreted as Early to Late Permian.	Belt interpreted as forming along Selenga continental margin arc along the northern margin of the Mongol-Okhotsk Ocean.
Duobaoshan (DB)	Porphyry Cu-Mo (±Au, Ag) **(**Duobaoshan)	Northeastern China	Granitoids related to Nora-Sukhotin-Duobaoshan island arc, terrane, part of South Mongolia-Khingan collage.	Pennsylvanian. K-Ar isotopic age for host batholith is 292 Ma.	Belt interpreted as forming in an island arc. Belt hosted subduction-related granodiorite porphyry.
Harmagtai-Hongoot-Oyut (HH)	Porphyry Cu-Mo (±Au, Ag) (Nariinhudag, Hongoot, Harmagtai); Porphyry Au; Granitoid-related Au vein (Uhaa hudag and Harmagtai, Shine, Hatsar); Au-Ag epithermal Vein Deposits (Shuteen)	Southern Mongolia	Granitoids related to South-Mongolian volcanic-plutonic belt (South Mongolian arc) that intrude Mandalovoo-Onor island arc terrane and Mandah subduction zone terranes, both part of South Mongolia-Khingan collage.	Middle Carboniferous to Early Permian	Belt interpreted as forming in South Mongolian continental-margin arc.
Hitachi (Hit)	Volcanogenic Zn-Pb-Cu massive sulfide (Kuroko, Altai types) (Hitachi)	Japan	South Kitakami island arc terrane, part of Bureya-Jiamusi supterterrane.	Permian	Belt interpreted as forming in an island arc.
Kalatongke (KL)	Mafic-ultramafic related Cu-Ni-PGE (Kalatongke); Granitoid-related Au vein (Alatasi)	Northwestern China	Waizunger-Baaran island arc terrane, part of Atasbogd collage.	Pennsylvanian	Belt interpreted as forming in an island arc.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Kureisko-Tungsk (KT)	Fe skarn (Suringdakonskoye); Mafic-ultramafic related Cu-Ni-PGE (Bilchany River); Metamorphic graphite (Noginskoye)	Russia, Northern-Eastern Siberia	Replacements and plutons related to Tungus plateau basalt, sills, dikes, and intrusions that intrude North Asian Craton.	Permian to Triassic	Belt interpreted as related to mantle superplume magmatism that resulted in widespread development of trapp magmatism on North Asian Craton along the long-lived West-Siberian rift system and Yenisei sublongitudinal major fault.
Maimecha-Kotuisk (MK)	Fe-Ti (±Ta, Nb, Fe, Cu, apatite) carbonatite (Magan I, Bor-Uryach); REE (±Ta, Nb, Fe) carbonatite (Gulinskoye I); Phlogopite carbonatite (Odikhimcha)	Russia, Northeast Siberia	Alkali-ultramafic-carbonatite intrusions related to Tungus plateau basalt that intrude North Asian Craton.	Late Permian to Early Triassic. According to the $^{40}Ar/^{39}Ar$ isotopic data, age of deposit-related intrusions ranges from 249 to 253 Ma.	Belt interpreted as related to mantle superplume magmatism that resulted in widespread development of trapp magmatism on North Asian Craton. Magmatic rocks include tholeiite, diabase, trachybasalt, melanonephelinite volcanic rocks and intrusive rocks, and ijolite-carbonatite and kimberlite complexes.
Mino-Tamba-Chugoku (MTC)	Volcanogenic-sedimentary Mn (Hamayokokawa); Podiform chromite (Wakamatsu); Besshi Cu-Zn-Ag massive sulfide (Yanahara)	Japan	Mino Tamba Chichibu subduction zone terrane, part of Honshu-Sikhote-Alin collage.	Interpreted as Permian (or older) to Jurassic.	Belt is hosted in an subduction zone complex composed of marine sedimentary and volcanic rock, and fragments of oceanic crust with ultramafic rock. Besshi deposits are interpreted as forming along a spreading ridge. The belt contains fragments of oceanic crust with podiform chromite deposits hosted in ultramafic rocks, and chert-hosted Mn deposits. Deposits and host rocks were subsequently incorporated into an subduction zone.
Norilsk (NR)	Mafic-ultramafic related Cu-Ni-PGE (Norilsk I, II, Oktyabrskoye 3); Basaltic native Cu (Lake Superior type) (Arylakhskoye) Porphyry Cu-Mo (±Au, Ag) (Bolgochtonskoye)	Russia, Northern-Eastern Siberia	Tungus plateau basalt, sills, dikes, and intrusions that intrude North Asian Craton.	Early Triassic. $^{40}Ar/^{39}Ar$ isotopic ages for mafic-ultramafic rocks in Norilsk district is 241.0 to 245.3 Ma. Isotopic age for Cu-Mo deposits is 223.3 Ma	Belt interpreted as related to mantle-derived superplume magmatism that resulted in widespread development of trapp magmatism on North Asian Craton.
Orhon-Selenge (OS)	Porphyry Cu-Mo (±Au, Ag) (Erdenetiin Ovoo, Central, Oyut; Shand; Zuiliin gol)	Central Mongolia	Granitoids in Selenga sedimentary-volcanic plutonic belt (Selenga arc).	Triassic. Quartz-sericite metasomatite of the Erdenetiin Ovoo deposit has K-Ar isotopic age 210 to 190 Ma. Explosive breccia has age if 210 Ma. K-Ar age of deposit-related granite ranges from 185 Ma to 240 to 250 Ma. $^{40}Ar/^{39}Ar$ isochron isotopic age of 207± 2 Ma for white mica from highest grade part of Erdenet mine.	Belt interpreted as forming during oblique subduction of oceanic crust of the Mongol-Okhotsk Ocean plate under the southern margin of the Siberian continent. Basaltic Cu hosted in basalt and trachybasalt in mafic volcanic rock in the Permian Khanui Series.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Shanxi (SX)	Sedimentary bauxite (Ke'er)	Northern China	Stratiform units in the upper part of Sino-Korean platform overlapping Sino-Korean Craton and West Liaoning-Hebei-Shanxi terrane.	Pennsylvanian	Belt formed during weathering of metamorphic rocks of the Northern China Platform. Bauxite deposits hosted in karst and lagoonal basins in a littoral-shallow sea.
METALLOGENIC BELTS - LATE TRIASSIC THROUGH EARLY JURASSIC (230 to 175 Ma)					
Central Hentii (CH)	Sn-W greisen, stockwork and quartz vein (Modot, Tsagaan dabaa); REE-Li pegmatite; Ta-Nb-REE alkaline metasomatite (Janchivlan); W±Mo±Be skarn; Peralkaline peralkaline granitoid-related Nb-Zr-REE (Avdrant)	Mongolia	Replacements and granitoids related to Mongol-Transbaikalia volcanic-plutonic belt that intrudes and overlaps Hangay-Dauria terrane, part of Mongol-Okhotsk collage, and adjacent units.	Late Triassic to Early Jurassic. Deposit-related granite with Rb-Sr isotopic age of 190.49 Ma and K-Ar age of 188 to 225 Ma.	Belt interpreted as forming during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of Mongol-Transbaikal arc. Small plutons hosting REE deposits intruded in a continental post-collisional event.
Delgerhaan (DE)	Porphyry Cu (±Au); Granitoid-related Au vein (Bayan Uul, Unegt)	Central Mongolia	Granitoids in the Mongol-Transbaikalia volcanic-plutonic belt that intrudes Hangay-Dauria and, Ononsky terranes, part of Mongol-Okhotsk collage, and Gobi-Khankaisk-Daxinganling volcanic-plutonic belt and arc.	Late Triassic. $^{40}Ar/^{39}Ar$ isochron isotopic ages for plagioclase-biotite porphyry, and biotite granodiorite from Bayan Uul ore-field are 220 to 223 Ma.	Belt interpreted as forming during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of Mongol-Transbaikal arc.
Govi-Ugtaal-Baruun-Urt (GB)	Fe-Zn skarn (Tomortiin Ovoo); Cu (±Fe, Au, Ag, Mo) skarn; Zn-Pb (±Ag, Cu) skarn; Sn skarn (Oortsog ovoo); Fe Skarn; Porphyry Mo (Aryn nuur**)**	Central and Eastern Mongolia	Replacements related to Mongol-Transbaikalia volcanic-plutonic belt that intrudes and overlies Argun-Idermeg superterrane and Gobi-Khankaisk-Daxinganling volcanic-plutonic belt and arc.	Interpreted as Late Triassic to Early Jurassic.	Belt interpreted as forming during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of Mongol-Transbaikal arc. Belt hosted in Late Triassic to Early Jurassic alaskite, granite, and alkaline granite.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Harmorit-Hanbogd-Lugiingol (HL)	Sn-W greisen, stockwork, and quartz vein (Khar morit); Ta-Nb-REE Alkaline Metasomatite (Khan Bogd); REE (±Ta, Nb, Fe) carbonatite (Lugiin Gol); Peralkaline granitoid-related Nb-Zr-REE; REE-Li pegmatite	Mongolia	Replacements and granitoids related to South Mongolian volcanic-plutonic belt that intrudes and overlaps the Hutaguul-Xilinhot and Gurvansayhan terranes and Lugyngol overlap volcanic-sedimentary basin, both part of South Mongolia-Khingan and adjacent collages.	Middle Triassic to Early Jurassic. Rb-Sr whole-rock isochron age for Lugiin gol nepheline syenite pluton is 244 Ma and whole rock-mineral isochron ages are 222 Ma and 180 to 199 Ma. K-Ar age is 228 to 242 Ma. Khanbogd REE-Nb-Zr deposit is associated with late Paleozoic alkaline granite pluton with Rb-Sr age isotopic of 277 Ma and K-Ar age of 293 Ma.	Belt interpreted as forming during late Paleozoic and early Mesozoic South Mongolian continental margin arc.
Kalgutinsk (KG)	W-Mo-Be greisen, stockwork, and quartz vein (Kalgutinskoye, (Urzarsaiskoye); Ta-Nb-REE alkaline metasomatite (Akalakhinskoye); Sn-W greisen, stockwork, and quartz vein (Baliktigkhem)	Russia, Southern-Eastern Siberia (Gorny Altai Mountains)	Granitoids and replacements related to Belokurikha plutonic belt that intrudes Altai and West Sayan terranes, both part of Altai collage.	Early Jurassic. Rb-Sr isotopic age for Chindagatui pluton is 201.0 Ma and 204.0 for Kalguta pluton. U-Pb isotopic ages for Ta spodumene granite in Alakha stock are 183 and 188 Ma and Rb-Sr age is 195 Ma. Rb-Sr age of Li-F granite-porphyry in the Dzulaly stock is 188.0 Ma	Belt interpreted as forming during generation of REE granitoids along transpression zones (Hovd regional fault zone and companion faults) related to transform micro plate boundaries and within plate (plume) environment.
Mongol Altai (MA)	W-Mo-Be greisen, stockwork, and quartz vein (Ulaan Uul, Tsunheg)	Western Mongolia	Small bodies of leucogranite that intrude Altai and Hovd Hovd terranes, both part of Altai collage.	Interpreted as Late Triassic to Early Jurassic.	Belt interpreted as forming during Mesozoic intraplate rifting related to magmatism along transextension zones (Hovd regional fault zone and companion faults) along transform micro plate boundaries and within plate (plume) environment.
North Hentii (NH)	Granitoid-related Au vein; Au in shear zone and quartz vein (Boroo, Sujigt, Narantolgoi)	Northern Mongolia	Granitoids related to Mongol-Transbaikalia volcanic-plutonic belt.	Middle Triassic to Middle Jurassic. K-Ar isotopic ages of 166 to 235 Ma for deposit-related Yoroogol gabbro-granite.	Belt interpreted as forming during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of Mongol-Transbaikal arc. Belt formed during granitoid intrusion related to extensional margin of the Khentii collisional uplift.
North Kitakami (NK)	Volcanogenic-sedimentary Mn (Nodatamagawa); Volcanogenic Zn-Pb-Cu massive sulfide (Kuroko, Altai types) (Taro)	Japan	Mino Tamba Chichibu subduction zone terrane, part of Honshu-Sikhote-Alin collage.	Interpreted Triassic to Early Cretaceous.	Mn deposits formed in syngenetic setting on the ocean floor. Kuroko deposits formed in an island arc. Deposits were subsequently incorporated into subduction zone.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
North Taimyr (NT)	W-Mo-Be greisen, stockwork, and quartz vein (Kolomeitseva River); W±Mo±Be skarn (Morzhovoye); Porphyry Cu-Mo (±Au, Ag) (Mamont River)	Russia, Northern-Eastern Siberia (Taimyr Peminsula)	Replacements associated with granitoids intruding Permian-Triassic volcanic and sedimentary rocks of Lenivaya-Chelyuskin sedimentary assemblage, Central Taimyr superterrane, Kara superterrane.	Middle and Late Triassic. Age of deposit-related granitoids is about 223 to 233 Ma.	Belt interpreted as forming during generation of granitoids during and after collision between the North Asian Craton and Kara superterrane. Belt hosted in intrusions in tectonic blocks bounded by post-orogenic faults.
Sambagawa -Chichibu-Shimanto (SCS)	Besshi Cu-Zn-Ag massive sulfide (Besshi); Volcanogenic-sedimentary Mn (Ananai); Cyprus Cu-Zn massive sulfide (Okuki)	Japan	Shimanto subduction zone terrane, part of Sakhalin-Hokkaido collage, Mino Tamba Chichibu subduction zone terrane, part of Honshu-Sikhote-Alin collage, and Sambagawa metamorphic terrane, part of Honshu-Sikhote-Alin collage.	Interpreted as Early Jurassic and to Campanian. Age of submarine basaltic volcanism and related Besshi-type deposits interpreted to occur between 200 and 140 Ma.	Mn deposits formed in syngenetic setting on the ocean floor. Besshi and Cyprus deposits formed during submarine volcanism related to spreading ridge. Deposits were subsequently incorporated into an subduction zone.
Wulashan-Zhangbei (WZ)	Alkaline complex-hosted Au; (Dongping); Au potassium metasomatite (Hadamen); Granitoid-related Au vein	Northwestern and North-Central China	Granitoids related to Alashan-Yinshan Triassic plutonic belt (too small to show at 15 M scale) intruding Sino-Korean Craton - Erduosi terrane, Solon terrane, and adjacent units.	Middle Jurassic or later. ^{40}Ar-^{39}Ar isotopic ages is 327 Ma and 157 to 177 Ma for intrusion and deposit potassic feldspar, respectively.	Belt interpreted as forming during granitoids generated above a mantle plume in an extensional tectonic setting. Belt related to Late Triassic to Early Jurassic alkaline to subalkaline granite.
MAJOR METALLOGENIC BELTS - MIDDLE JURASSIC THROUGH EARLY CRETACEOUS (175 to 96 Ma)					
Allakh-Yun' (AY)	Au in shear zone and quartz vein (Yur, Nekur, Bular); Cu (±Fe, Au, Ag, Mo) skarn (Muromets); Au in black shale (Svetly)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins in Verkhoyansk (North Asian) Craton Margin.	Interpreted as Late Jurassic.	Belt interpreted as forming during accretion of the Okhotsk terrane to the North Asian Craton Margin. Belt occurs in Minorsk-Kiderikinsk zone of highly deformed Late Carboniferous and Permian rocks in western South Verkhoyansk synclinorium. Au quartz veins are slightly older than large anatectic granitic plutons of the South Verkhoyansk synclinorium.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Ariadny (AR)	Zoned mafic-ultramafic Cr-PGE (Katenskoe); Mafic-ultramafic related Ti-Fe (±V) (Ariadnoe, Koksharovskoe)	Russia, Far East	Plutons intruding Samarka subduction zone terrane, part of Honshu-Sikhote-Alin collage.	Middle Jurassic and Early Cretaceous. K-Ar isotopic ages of about 160 Ma age	Belt interpreted as forming during generation of ultramafic and gabbroic plutons during underthrusting of the Kula oceanic ridge and formation of bimodal igneous rocks along a transform continental margin.
Bindong (BD)	Zn-Pb (±Ag, Cu) skarn (Ergu-Xishan); W±Mo±Be skarn (Wudaoling); Fe skarn (Chuihongshan)	Northeastern China	Replacements related to small granitoids in the Mesozoic Jihei volcanic and plutonic belt that intrudes and overlies Zhangguangcailing superterrane, Zhangguangcailing sedimentary overlap assemblage, and adjacent units.	Late Jurassic to Early Cretaceous. K-Ar isotopic age of 157.8 Ma for Wudaoling quartz porphyry.	Belt is interpreted as forming during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc. Belt interpreted as forming during interplate extensional tectonism and generation of sub-alkaline to alkaline volcanism and related sedimentation along northeast and east-west regional faults.
Chara-Aldan (CA)	Au potassium metasomatite (Kuranakh); Au skarn (Klin); U-Au (El'kon group); Au in shear zone and quartz vein (Krutoy); Charoite metasomatite (Murunskoye)	Russia, Southern Yakutia	Replacements and granitoids related to South Yakutian subalkaline and alkaline igneous belt, part of Stanovoy plutonic belt that intrudes North Asian Craton and Central Aldan superterrane.	Interpreted as Jurassic to Early Cretaceous.	Belt interpreted as forming in back-arc part of Uda-Stanovoy continental-margin arc that was related to subduction and closure of the Mongol-Okhotsk Ocean beneath the North Asian Craton to the north. Belt hosted in subalkaline and alkaline plutonic rocks, including plutons, stocks, and sills of syenite, monzonite, granosyenite, alkali gabbro, and volcanic analogues, as well as zoned alkali-ultramafic plutons.
Chybaga-lakh (CH)	Cassiterite-sulfide-silicate vein and stockwork (Kere-Yuryakh); Sn-B (Fe) skarn (ludwigite) (Titovskoe); Granitoid-related Au vein (Chuguluk, Nenneli)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements in Main granite belt that intrudes southern margin of Kolyma-Omolon superterrane.	Interpreted as late Late Jurassic to Early Neocomian.	Belt interpreted as forming during collision of the Kolyma-Omolon superterrane and the North Asian Craton and associated regional metamorphism and generation of anatectic high-alumina granitoids.
Djeltu-laksky (DL)	Granitoid-related Au vein (Zolotaya Gora)	Russia, Far East	Granitoids related to Stanovoy granite belt intruding Tynda terrane (Stanovoy block) and Dzugdzur anorthositic belt, both part of North Asian Craton.	Early Cretaceous	Belt interpreted as forming in Uda-Stanovoy continental-margin arc that was related to subduction and closure of the Mongol-Okhotsk Ocean beneath the North Asian Craton to the north.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Daxinganling (DX)	Zn-Pb (±Ag, Cu) skarn (Baiyinnuoer); Sn skarn; Cassiterite-sulfide-silicate vein and stockwork (Maodeng); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Meng'entaolegai, Aonaodaba); Peralkaline granitoid-related Nb-Zr-REE (Baerzhe); Au-Ag epithermal vein (Guandi)	Northeastern China (Great Xingan Mountains)	Veins, replacements, and granitoids related to to Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt.	Late Jurassic and Early Cretaceous. Alubaogeshan granite porphyry intrusion with isotopic age of 149 Ma. Duerji granite complex is with U-Pb zircon age of 150 Ma. Rb-Sr age of 125 Ma for Baerzhe. Rb-Sr whole-rock isochron age of 148.31 Ma for Aobaodaba granite porphyry.	Belt is interpreted as forming during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc. The extension is interpreted as occurring during Late Jurassic in a back-arc setting with formation a series of volcanic and sedimentary basins and sub-alkaline to alkaline granite. The basins and granitoids are controlled by northeast-north-northeast and east-west striking regional faults that to certain degree reflect the pre-Mesozoic structures.
Dzid-Selenginskiy (DS)	W-Mo-Be greisen, stockwork, and quartz vein (Dzhida, Bulagtai); Granitoid-related Au vein; Au skarn (Tavt, Teshig 1) Porphyry Mo (±W, Bi); Fluorspar vein (Naranskoye); Magmatic and metasomatic apatite (Oshurkovskoye)	Russia, Western Transbaikalia; Northern Mongolia	Veins, replacements, and plutons related to Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that overlies and intrudes Dzhid, Hamar-Davaa, and Orhon-Ikatsky terranes, all part of Yenisey-Transbaikal collage, Selenga sedimentary-volcanic plutonic belt, Barguzin-Vitim granitoid belt, and adjacent units.	Interpreted as Middle Jurassic to Early Cretaceous. Isotopic ages of 180 to 170 Ma and 145 to 140 Ma for Gudjir complex granitoids.	Interpreted as forming during subalkaline and alkaline granitoid magmatism associated with transform-continental margin faulting (Mongok-Okhotsk and related faults) and associated Trans-Baikalian-Daxinganling transpressional arc during late-stage of closing and after closing of Mongol-Okhotsk Ocean.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
East Mongolian-Priargun-skiy-Deerbugan (EM)	Polymetallic (Pb, Zn, Ag) carbonate-hosted metasomatite (Klichkinskoye, Vozdvizhenskoye); Zn-Pb (±Ag, Cu, W) skarn; Au skarn (Savinskoye-5, Bayandun); Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite (Tsav, Jiawula); Volcanic-hosted Au-base-metal metasomatite (Novo-Shirokinskoye); W-Mo-Be greisen, stockwork, and quartz vein (Tumentsogt); Porphyry Cu-Mo (±Au, Ag) (Wunugetushan); Porphyry Mo (±W, Bi) (Shakhtaminskoye); Granitoid-related Au vein (Urliin Ovoo); Carbonate-hosted As-Au metasomatite (Zapokrovskoye); Au-Ag epithermal vein (Noni, Tsagaanchuluut khudag II, Erentaolegai); Sedimentary siderite Fe; Sn-W greisen, stockwork, and quartz vein (Baga Gazar); Carbonate-hosted Hg-Sb; Fluorspar vein (Solonechnoye); Volcanic-hosted U	Russia, Eastern Transbaikalia; Central and Eastern Mongolia; Northeastern China	Veins, volcanic complexes, replacements, and granitoids related to Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that overlies and intrudes Argun-Idermeg superterrane, and Gobi-Khankaisk-Daxinganling volcanic-plutonic belt and adjacent units.	Interpreted as Middle Jurassic to Early Cretaceous. Gold deposits and occurrences with several ages of 190 to 180 Ma and 165 to 175 Ma. K-Ar isotopic age of sericite at Ulaan Ag-Pb-Zn deposit of 161 Ma. K-Ar isotopic age of mica at Dornot uranium deposit is 141, 142, and 143 Ma, K-Ar isotopic age of the granodioritic porphyry is 164 Ma.	Belt interpreted as forming during Middle Jurassic to Early Cretaceous extensional tectonism associated with generation of the Trans-Baikalian-Daxinganling transpressional arc. The metallogenic belt is controlled by major, regional northeast-and northwest-trending faults. The northeast-striking faults (Byrkinsky-Urovsky, Gazimur-Urjumkan, Argunsky) control the magmatic and hydrothermal activity and internal structure of the belt.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Govi-Tamsag (GT)	Sediment-hosted U (Haraat); Evaporite sedimentary gypsum (Shiree Uul, Taragt-2); Sedimentary celestite (Horgo uul); Volcanic-hosted zeolite (Tsagaantsav)	Southern Mongolia	Stratiform units in Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that overlies and intrudes Dzhida, Govi Altai, Mandalovoo-Onor terranes, parts of South Mongolia-Khingan and Yenisey-Transbaikal collages.	Interpreted as Late Jurassic to Early Cretaceous.	Belt is related to Aptian-Albian (Late Cretaceous) and local Paleogene sedimentary rocks deposited in grabens and depressions that overlap the Mesozoic Eastern-Mongolian-Preargune continental rift belt that developed on the Idermeg passive continental margin, Govi-Altai turbidite, and Mandal-Ovoo island arc terranes. Units and structures part of the Trans-Baikalian-Daxinganling transpressional arc. The sedimentary U deposits and occurrences formed in the latest stage of a late Mesozoic continental rift. The gypsum deposits and occurrences formed in continental evaporite basins.
Hartolgoi-Sulinheer (HS)	Au-Ag epithermal vein (Biluut, Khoit Barjin); Ag-Pb epithermal vein (Biluut); Porphyry Mo; W±Mo±Be skarn (Qiyishan); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Harmorit, Khartolgoi); Carbonate-Hosted Ag-Pb (Hartolgoi); Carbonate-hosted Hg-Sb (Zuun Togoo Uul); Silica-carbonate (Listvenite) Hg	Southern Mongolia; Northwestern China	Veins and replacements related to latite and lamporphyre dikes in Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that intrudes and overlies Tsagaan Uul-Guoershan, part of Atasbogd collage, and Solon terranes, part of Solon collage, and adjacent units.	Interpreted as Late Jurassic to Early Cretaceous.	Belt is interpreted as forming during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc.
Jiliaolu (JLL)	Zn-Pb (±Ag, Cu) skarn (Huanren); Cu (±Fe, Au, Ag, Mo) skarn (Huatong); Granitoid-related Au vein (Jiaojia); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Ermi); Volcanic-hosted Au-base metal metasomatite (Liujiapuzhi)	Northeastern China	Replacements and granitoids related to Jilin-Liaoning-East Shandong volcanic-plutonic belt that overlies and intrudes Sino-Korean Craton - Jilin-Liaoning-East Shandong terrane.	Middle Jurassic to Early Cretaceous	Belt interpreted as forming during interplate magmatism associated with extensional tectonism related to oblique subduction of the Pacific Oceanic plate beneath Eurasian continental plate. Belt occurs in about twenty relatively large volcanic basins. belt contains more than 200 granitoid-related vein Au deposits in a district of 23,000 km^2, some large and superlarge, that comprise one quarter of proven Au reserve in China.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Kitakami (KK)	Cu (±Fe, Au, Ag, Mo) skarn (Kamaishi); Granitoid-related Au vein (Oya)	Japan	Replacements in Early Cretaceous Hiroshima granitic belt intruding South Kitakami, part of Bureya-Jiamusi supterterranek, and Mino-Tamba-Chichibu terranes, part of Honshu-Sikhote-Alin collage.	Early Cretaceous (Aptian through Albian). K-Ar isotopic ages of 120 Ma to 110 Ma for deposit-related granitic rocks in the Kitakami Mountains.	Belt interpreted as forming during intrusion of granitoids associated with a continental-margin arc and siliceous magmatism.
Kondyor-Feklistov (KD)	Zoned mafic-ultramafic Cr-PGE (Kondyor)	Russia, Far East	Mafic-ultramafic intrusions intruded along major fault cutting the North Asian Craton and northeastern part of Tukuringra-Dzhagdy terrane, part of Mongol-Okhotsk collage.	Early Cretaceous. K-Ar isotopic ages for the zoned mafic-ultramafic intrusions in the Kondyor metallogenic belt range from 110 to 160 Ma. ^{40}Ar-^{39}Ar isotopic age of 127 Ma recently obtained for the alkalic mafic and ultramafic igneous rocks at Ingagli.	Belt interpreted as forming during intrusion of mafic-ultramafic plutons along a deep-seated fault that formed along the North Asian Craton margin during collision and accretion of outboard terranes.
Kular (KU)	Au in shear zone and quartz vein (Emelyanovskoye); Granitoid-related Au Vein (Novoe); Sn-W greisen, stockwork, and quartz vein (Tirekhtyak district)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins in Kular-Nera terrane, part of Verkhoyansk-Kolyma collage.	Interpreted as late Late Jurassic to Early Neocomian. Deposit-related granite with ^{40}Ar-^{39}Ar isotopic age of 103 Ma.	Belt interpreted as forming during collision of the Kolyma-Omolon superterrane and the North Asian Craton and associated regional metamorphism. Belt occurs in a complex fold and thrust structure with refolded recumbent isoclines. Host rocks metamorphosed at the greenschist facies.
Nerchinsky (NC)	Granitoid-related Au vein (Darasunskoye); W-Mo-Be greisen, stockwork, and quartz vein (Muoklakanskoye); Fluorspar vein (Usuglinskoye)	Russia, Eastern Transbaikalia	Granitoids and replacements related to Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that intrudes and overlaps West Stanovoy terrane, Barguzin-Vitim granitoid belt, and Selenga sedimentary-volcanic plutonic belt.	Interpreted as Middle Jurassic to Early Cretaceous.	Belt is interpreted as related to magmatism along transextension zones along transform micro plate boundaries and within plate (plume) environment. The belt is related to granitoids in the Trans-Baikalian-Daxinganling transpressional arc.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
North Bureya (NB)	Au-Ag epithermal vein (Pioneer); Granitoid-related Au vein (Pokrovskoe)	Russia, Far East	Veins and granitoids related to Umlekam-Ogodzhin volcanic-plutonic belt that intrudes and overlaps Malokhingansk and, Turan terranes, parts of the Bureya superterrane, Gonzha terrane, Nora-Sukhotin-Duobaoshan terrane, part of the South Mongolia-Khingan collage, and Tukuringra-Dzhagdy terrane, part of the Mongol-Okhotsk collage.	Early Cretaceous	Belt interpreted as forming during formation of Umlekan-Ogodzhin continental-margin arc that formed during subduction of part of ancestral Pacific Ocean plate that is now preserved as tectonically interwoven fragments of the Badzhal, Khabarovsk, and Samarka terranes.
North Jilin (NJ)	Zn-Pb (±Ag, Cu) skarn (Tianbaoshan); Granitoid-related Au vein; Porphyry Cu (±Au) (Xiaoxinancha); Porphyry Mo (±W, Bi) (Daheishan); Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite (Sanmen); Au-Ag epithermal vein (Ciweigou); Fluorspar vein	Northeastern China	Replacements and granitoids intruding North Marginal Plutonic belt that overlies North China Platform, Laoling terrane, part of Wundurmiao collage, and Zhangguangcailing superterrane.	Middle Jurassic to Early Cretaceous. Siliceous and mafic volcanic rocks at Ciweigou Au-Ag epithermal deposit are Late Jurassic and have Rb-Sr isochron age of 147.5 Ma.	Belt interpreted as related to magmatism along transpression zones along transform micro plate boundaries and within plate (plume) environment.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
North Bureya (NB)	Au-Ag epithermal vein (Pioneer); Granitoid-related Au vein (Pokrovskoe)	Russia, Far East	Veins and granitoids related to Umlekam-Ogodzhin volcanic-plutonic belt that intrudes and overlaps Malokhingansk terrane, Turan terrane of the Bureya-Jiamusi superterrane, Gonzha terrane, Nora-Sukhotin-Duobaoshan terrane, part of South Mongolia-Khingan collage, and Tukuringra-Dzhagdy terrane, part of Mongol-Okhotsk collage.	Early Cretaceous	Belt interpreted as forming during formation of Umlekan-Ogodzhin continental-margin arc that formed during subduction of part of Ancestral Pacific Ocean plate that is now preserved as tectonically interwoven fragments of the Badzhal, Khabarovsk, and Samarka terranes.
North Stanovoy (NS)	Granitoid-related Au vein (Bamskoe); Au-Ag epithermal vein (Burindinskoe)	Russia, Far East	Granitoids related to Stanovoy granite belt intruding Tynda terrane, part of North Asian Craton.	Early Cretaceous	Belt interpreted as forming in Uda-Stanovoy continental-margin arc that was related to subduction and closure of the Mongol-Okhotsk Ocean beneath the North Asian Craton to the north.
Onon-Turinskiy (OT)	Granitoid-related Au vein (Lubavinskoye); Porphyry Au (Ara-Ilinskoe); Cassiterite-sulfide-silicate vein and stockwork (Khapcheranga, Tarbaldzheiskoe)	Russia, Central Transbaikalia; Northern Mongolia	Veins, volcanic complexes, and replacements related to Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that overlies and intrudes Selenga sedimentary-volcanic plutonic belt, and Ononsky terrane, part of Mongol-Okhotsk collage.	Interpreted as Middle Jurassic to Early Cretaceous.	Belt is interpreted as forming during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc. Belt and related host rocks occurs along sub-meridional Onon-Tura fault.
Polousny (PO)	Cassiterite-sulfide-silicate vein and stockwork deposits (Ulakhan-Sala); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork deposits (Aragochan, Dalnee)	Russia, East-Central Yakutia (Verkhoyansk area)	Granitoids related to Northern granite belt that intrudes Kolyma-Omolon superterrane and adjacent units.	Interpreted as Middle Cretaceous (Neocomian to Aptian). ^{40}Ar-^{39}Ar isotopic age of 120 to 130 Ma.	Belt interpreted as forming during collision of the Kolyma-Omolon superterrane and the North Asian Craton and associated regional metamorphism and generation of anatectic granitoids.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Samarka (SM)	Porphyry Cu-Mo (±Au, Ag) (Malakhitovoe); Porphyry Mo (±W, Sn, Bi); W±Mo±Be skarn (Vostok-2, Lermontovsky)	Russia, Far East	Replacements and granitoids in Khungari-Tatibi granite belt that intrudes Samarka terrane, part of Honshu-Sikhote-Alin collage.	Early to mid-Cretaceous. K-Ar isotopic ages of 110 to 115 Ma for host granitoids.	Belt interpreted as forming during generation of S-type grantitoid plutons during underthrusting of the Kula oceanic ridge and formation of bimodal igneous rocks along a transform continental margin.
Shilkinsko-Tukuringrskiy (ST)	Granitoid-related Au vein (Ukonikskoe); Porphyry Au; Au skarn; Au-Ag epithermal vein; Porphyry Mo (±W, Bi) (Zhirekenskoye) W-Mo-Be greisen, stockwork, and quartz vein; Cassiterite-sulfide-silicate vein and stockwork; Ta-Nb-REE alkaline metasomatite; Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Berezitovoe); Au-Ag epithermal vein (Baleyskoe); Fluorite vein (Kalanguyskoye)	Russia, Eastern Transbaikalia	Granitoids, volcanic rocks, and replacements related to Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt.	Interpreted as Middle Jurassic to Early Cretaceous.	Belt is interpreted as related to magmatism along transtension zones the Trans-Baikalian-Daxinganling transpressional arc. Belt occurs in basins with continental sedimentary rocks and alkaline magmatic plutonic and volcanic rocks that occur along the Mongol-Okhotsk suture that separates various terranes and the North Asian Craton and the Sino-Korean Craton.
South Verkho-yansk (SV)	Au in shear zone and quartz vein (Nezhdaninka); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Upper Menkeche); Granitoid-related Au vein; W-Mo-Be greisen, stockwork, and quartz vein; Au-Ag epithermal vein	Russia, East-Central Yakutia (Verkhoyansk area)	Veins related to Late Cretaceous granitoids in South Verkhoyansk granite belt intruding Verkhoyansk (North Asian) Craton Margin.	Interpreted as Aptian to Late Cretaceous.	Belt interpreted as forming during accretion of the Okhotsk terrane to the North Asian Craton and resultant deformation of South Verkhoyansk belt. Au quartz veins are relatively older than large granitic plutons intruding the South Verkhoyansk synclinorium that have ^{40}Ar-^{39}Ar isotopic ages of 120 to 123 Ma.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Taebaegsan (TB)	Fe skarn (Kangwon, Dongnam, Susuk); Fe-Zn skarn (Yomisan); Zn-Pb (Ag, Cu, W) skarn; W±Mo±Be skarn (Wondong, Sangdong); REE-Li pegmatite; Au in shear zone and quartz vein (Seojom); polygenic REE-Fe-Nb (Bayan-Obo type) (Hongcheon-Jaun)	South Korea	Replacements and dikes related to Middle Jurassic through Early Cretaceous granitoids in Daebo Granite intruding Yeongnam Metamorphic Complex and Great Limestone Group, both part of Sino-Korean Craton.	Interpreted as Middle Jurassic through Early Cretaceous.	Belt interpreted as forming during intrusion of granitoids along a continental-margin arc that was linked to subduction of the Ancestral Pacific Ocean plate. Granite consists of biotite granite, feldspar porphyry, and granite porphyry that intrude Precambrian metasedimentary rocks. Deposits formed during contact metasomatism of calcareous layers in metasedimentary rock.
Tompo (TO)	W±Mo±Be skarn (Agylky); Sn-W greisen, stockwork, and quartz vein (Erikag, Dzhuptagan)	Russia, East-Central Yakutia (Verkhoyansk area)	Replacements in Northern and Transverse granite belt along northwestern margin of Kolyma-Omolon superterrane.	Interpreted as Neocomian.	Belt interpreted as forming during collision of the Kolyma-Omolon superterrane and the North Asian Craton and associated regional metamorphism and generation of anatectic granitoids. Belt occurs along sublatitudinal high-angle, probable strike-slip faults that cut Permian to Middle Jurassic sandstone and shale.
Verkhne-Ingodinsky (VI)	Cassiterite-sulfide-silicate vein and stockwork (Ingodinskoye, Levo-Ingodinskoye)	Russia, Central Transbaikalia	Veins, volcanic complexes, and replacements related to Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt.	Interpreted as Middle Jurassic to Early Cretaceous.	Belt interpreted as related to magmatism that occurred transpression zones related to the Trans-Baikalian-Daxinganling transpressional arc.
Verkho-yansk (VK)	Au in shear zone and quartz vein (Djandi, Nikolaevskoe, Otkrytoe); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork; Sn-W greisen, stockwork, and quartz vein (Imtandzha); Au in black shale (Mangazeika 2)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements in Verkhoyansk (North Asian) Craton Margin.	Interpreted as late Late Jurassic to Early Neocomian.	Belt interpreted as forming during collision of the Kolyma-Omolon superterrane and the North Asian Craton and associated regional metamorphism.
Yana-Adycha (YA)	Cassiterite-sulfide-silicate vein and stockwork (Ege-Khaya, Ilin-Tas, Burgochan); Sn-W greisen, stockwork, and quartz vein (Kester)	Russia, East-Central Yakutia (Verkhoyansk area)	Replacements in Transverse granite belt along the northwestern margin of the Kolyma-Omolon superterrane.	Interpreted as mid-Cretaceous.	Belt interpreted as forming during collision of the Kolyma-Omolon superterrane and the North Asian Craton and associated regional metamorphism and generation of anatectic granitoids.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Yanshan (YS)	Cu (±Fe, Au, Ag, Mo) skarn (Shouwangfen); W±Mo±Be skarn (Yangjiazhangzi); Porphyry Mo (±W, Bi) (Dazhuangke); Granitoid-related Au vein (Jinchanggouliang) Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Caijiaying); Au-Ag epithermal vein (Niujuan)	Northeastern and Northern China	Veins, replacements, and granitoids related to Yanliao volcanic and sedimentary basin and plutonic belt that overlies and intrudes the Sino-Korean Craton, including theWest Liaoning-Hebei-Shanxi terrane, and adjacent units.	Middle Jurassic to Early Cretaceous. K-Ar isotopic age of Hongluoshan granite is of 178 to 186 Ma. K-Ar age for related dike at Jinchanggouliang deposit is about 120 Ma. Quartz diorite and quartz monzonite at Dazhuangke deposit has K-Ar isotopic age of 146 to 168 Ma.	Belt interpreted as forming during interplate magmatism associated with extensional tectonism related to oblique subduction of the Pacific Oceanic Plate beneath Eurasian Plate.
MAJOR METALLOGENIC BELTS - CENOMANIAN THROUGH CAMPANIAN (96 to 72 Ma)					
Badzhal-Komso-molsk (BK)	Sn-W greisen, stockwork, and quartz vein (Pravourmiyskoe, Solnechnoe, Sobolinoye); Cassiterite-sulfide-silicate vein and stockwork; Cu (±Fe, Au, Ag, Mo) skarn; Porphyry Mo (±W, Sn, Bi)	Russia, Far East	Veins and replacements related to Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous. K-Ar isotopic ages of 75 to 86 Ma. Rb-Sr age of 95 to 83 Ma.	Belt interpreted as forming during generation of granitoids along the Khingan transform continental-margin arc consisting of the Khingan-Okhotsk volcanic-plutonic belt that related to oblique subduction of ancestral Pacific Ocean Plate.
Chelasin (CL)	Sn-B (Fe) skarn (ludwigite); Granitoid-related Au vein; Cu (±Fe, Au, Ag, Mo) skarn; Porphyry Cu (±Au (Chelasin)	Russia, Far East	Replacements and granitoids related to Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies North Asian Craton and Uda volcanic-plutonic belt.	Late Cretaceous to Paleocene	Belt interpreted as forming during generation of granitoids in Okhotsk-Chukotka continental margin arc related to subduction of Ancestral Pacific Ocean plate.
Central Polousny (CP)	Cassiterite-sulfide-silicate vein and stockwork (Ukachilkan); Sn-W greisen, stockwork, and quartz vein (Deputatskoe ; Takalkan)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements in Northern granite belt along the northwestern margin of the Kolyma-Omolon superterrane.	Interpreted as Aptian to Late Cretaceous. Deputatskiy stock has K-Ar isotopic age of 108 Ma.	Belt interpreted as forming during extension related to initiation of opening of Eurasia Basin in Arctic Ocean. Belt associated with REE and subalkali granitoids that occur in small stocks.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Chokhchur-Chekur-dakh (CC)	Cassiterite-sulfide-silicate vein and stockwork (Churpunya, Chokurdakh)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements in Svyatoi Nos volcanic belt that occurs along southern margin of Kolyma-Omolon superterrane.	Interpreted as Aptian to Late Cretaceous. The granitoids are dated by ^{40}Ar-^{39}Ar at 105 to 106 Ma.	Belt interpreted as forming during extension related to initiation of opening of Eurasia Basin in Arctic Ocean. Belt occurs along the Yana fault. Belt hosted in granodiorite, amphibole-biotite granite, and subalkali granite that form part of Svyatoy Nos magmatic arc.
Eckyuchu-Billyakh (EB)	Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Prognoz); Clastic-sediment-hosted Sb-Au; Hg-Sb-W vein and stockwork (Zvyozdochka); Ag-Sb vein vein; Au-Ag epithermal vein	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements related to Transverse granite belt that intrudes Verkhoyansk (North Asian) Craton Margin.	Interpreted as Aptian to Late Cretaceous. Granitoid stocks and dikes of various composition are have ^{40}Ar-^{39}Ar isotopic ages of older than 120 Ma. Khoboyatu-Echiy granite pluton has ^{40}Ar-^{39}Ar age of 97 Ma.	Belt interpreted as forming during extension related to initiation of opening of Eurasia Basinin Arctic Ocean. Belt hosted in granitoid stocks and dikes that occur at the terminations of the Transverse granitoid belt.
Ezop-Yam-Alin (EY)	W-Mo-Be greisen, stockwork, and quartz vein (Lednikovy-Sarmaka); Sn-W greisen, stockwork, and quartz vein; Cassiterite-sulfide-silicate vein and stockwork; Porphyry Mo (±W, Sn, Bi) (Ippatinskoe, Olgakanskoe, Shirotnoe)	Russia, Far East	Veins and replacements related to Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous. Sn granite with isotoics ages of 75 to 100 Ma.	Belt interpreted as forming during generation of granitoids along along the Khingan transform continental-margin arc consisting of the Khingan-Okhotsk volcanic-plutonic belt that is related to oblique subduction of Ancestral Pacific Ocean plate.
Gyeongnam (GN)	Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork; Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite (Gwymyeong, Mulkum, Kuryong); Fe skarn Ulsan); W-Mo-Be greisen, stockwork, and quartz vein; Porphyry Mo (±W, Sn, Bi); Cu-Ag vein (Goseong, Tongyoung) Au in shear zone and quartz vein (Cheolma)	South Korea	Veins and replacements related to Cretaceous Bulgugsa granite (biotite and feldspar porphyry) that intrudes Sino-Korean Craton - Yeongnam terrane.	Interpreted as Cenomanian through Campanian (96-75 Ma).	Belt interpreted as forming in a continental-margin arc during subduction of the Ancestral Pacific Ocean Plate. Deposits occur along the fissures and shear zones.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Gyeongpuk (GP)	Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Darak, Chilgok); W-Mo-Be greisen, stockwork, and quartz vein (Kyeongju); Sn-W greisen, stockwork, and quartz vein (Wangpiri); Fe skarn; Polymetallic Ni vein (Samkwang).	South Korea	Veins and replacements related to Cretaceous Bulgugsa granite (biotite granite and granodiorite) that intrudes Sino-Korean Craton - Yeongnam terrane.	Interpreted as Cenomanian through Campanian.	Belt interpreted as forming in a continental-margin arc during subduction of the Ancestral Pacific Ocean Plate.
Hidaka (HD)	Cyprus Cu-Zn massive sulfide (Shimokawa)	Japan, Hokkaido	Stratiform units in Shimanto subduction zone terrane, part of the East Sakhalin collage.	Middle Cretaceous to Eocene	Belt interpreted as forming in basalt generated along the Kula-Pacific ridge. Subsequent structural incorporatation of host rocks and deposits into an subduction zone.
Inner Zone Southwest Japan (ISJ)	Zn-Pb (±Ag, Cu) skarn (Kamioka Tochibara); W-Mo-Be greisen, stockwork, and quartz vein (Otani); W±Mo±Be skarn; Cu (±Fe, Au, Ag, Mo) skarn (Bandojima); Porphyry Mo (±W, Sn, Bi); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Ikuno); Fluorspar vein; Metamorphic graphite	Japan	Veins and replacements in Nohi rhyolite volcanic belt and Hiroshima granitic belt that overlie and intrude a large portion of central and southern Japan.	Cretaceous to Paleogene. Cretaceous age of deposit-related granitic rocks in Ryoke and Sanyo belts are. Paleogene age mostly for Sanin belt.	Belt interpreted as forming during generation of granitoids along a East Asia continental margin arc related to subduction of Kula and Pacific Ocean plates. East Asia arc is interpreted as the southern extension of the East Sikhote-Alin arc.
Khandyga (KA)	Ag-Sb vein; Carbonate-hosted As-Au metasomatite; Clastic-sediment-hosted Sb-Au (Senduchen); Clastic sediment-hosted Hg±Sb (Seikimyan)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements in Verkhoyansk (North Asian) Craton Margin.	Interpreted as Aptian to Late Cretaceous.	Belt interpreted as forming during post-accretionary extension related to initiation of opening of Eurasia Basin. Belt occurs in veins and replacements in the southern Verkhoyansk fold and thrust alon the Sette-Daban tectonic zone.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Kukhtuy-Uliya (KU)	Au-Ag epithermal vein (Khakandzha, Yurievka); Porphyry Mo (±W, Sn, Bi); Porphyry Sn Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite	Russia, Far East	Veins related to Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies Okhotsk terrane.	Late Cretaceous and to Paleocene	Belt interpreted as forming during generation of granitoids along Okhotsk-Chukotka continental margin arc related to subduction of Ancestral Pacific Ocean plate.
Luzhkinsky (LZ)	Sn-W greisen, stockwork, and quartz vein (Tigrinoe, Zimnee, Arsenyevsky); Cassiterite-sulfide-silicate vein and stockwork (Vysokogorskoe); W-Mo-Be greisen, stockwork, and quartz vein; Porphyry Sn (Yantarnoe); Porphyry Cu (±Au), Porphyry Cu-Mo (±Au, Ag); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork	Russia, Far East	Veins, replacements, and granitoids related to East Sikhote-Alin volcanic-plutonic belt that overlies and intrudes Zhuravlevsk-Amur River terrane, part of the Honshu-Sikhote-Alin collage.	Mid-Cretaceous and early Tertiary between 100 and 50 Ma.	Belt interpreted as forming during generation of granitoids in back-arc of the East-Sikhote-Aline continental-margin arc related to oblique subduction of ancestral Pacific Ocean Plate.
Malo-Khingan (MK)	Porphyry Sn (Khinganskoe); Rhyolite-hosted Sn	Russia, Far East	Granitoids related to Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous. Probable deposit-related to subalkaline potassium granite with K-Ar ages of 80 to 90 Ma and Rb-Sr whole-rock isochron age of 78 Ma.	Belt interpreted as forming during generation of granitoids along the Khingan transform continental-margin arc consisting of the Khingan-Okhotsk volcanic-plutonic belt that is related to oblique subduction of ancestral Pacific Ocean Plate.
Pilda-Limuri (PL)	Sn-W greisen, stockwork, and quartz vein; W-Mo-Be greisen, stockwork, and quartz vein; Ag-Sb vein (Dyappe); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Uchaminskoye); Granitoid-related Au vein (Agnie-Afanasievskoye)	Russia, Far East	Veins, replacements, and granitoids related to Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous	Belt interpreted as forming during generation of granitoids along along the Khingan transform continental-margin consisting of the Khingan-Okhotsk volcanic-plutonic belt that is related to oblique subduction of Ancestral Pacific Ocean plate.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Preddzhug-dzhursky (PD)	Porphyry Cu-Mo (±Au, Ag_; Porphyry Cu (±Au); Au-Ag epithermal vein (Avlayakan); Granitoid-related Au vein; Cu (±Fe, Au, Ag, Mo) skarn	Russia, Far East	Granitoids related to Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies the East Aldan superterrane – and adjacent units.	Late Cretaceous to Paleocene	Belt interpreted as forming during generation of granitoids along Okhotsk-Chukotka continental margin arc related to oblique subduction of ancestral Pacific Ocean Plate.
Selennyakh (SE)	Carbonate-hosted Hg-Sb (Gal Khaya, Pologoye, Arbat); Volcanic-hosted Hg (Dogdo); Ag-Sb vein (Kysylga)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements in Uyandina-Yasachnaya volcanic belt along southern margin of Kolyma-Omolon superterrane.	Interpreted as Aptian to Late Cretaceous.	Belt interpreted as forming during post-accretionary extension related to initiation of opening of Eurasia Basin.
Sergeevka-Taukha (ST)	Granitoid-related Au vein (Progress, Askold); Boron (datolite) skarn (Dalnegorsk); Zn-Pb (±Ag, Cu) skarn (Nikolaevskoe, Partizanskoe); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork; Porphyry Sn; Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite (Krasnogorskoye); Au-Ag epithermal vein; Porphyry Cu (±Au)	Russia, Far East	Veins and granitoids related to East Sikhote-Alin volcanic-plutonic belt that overlies and intrudes Sergeevka, Samarka, and Taukha terranes.	Late Cretaceous and early Tertiary. K-Ar ages of deposits range between 60 and 80 Ma.	Belt interpreted as forming during generation of granitoids along the East-Sikhote-Aline continental-margin arc related to subduction of ancestral Pacific Ocean Plate.
Tumnin-Anyuy (TA)	Porphyry Sn (Mopau); Cassiterite-sulfide-silicate vein and stockwork; Au-Ag epithermal vein (Tumninskoye)	Russia, Far East	Veins and granitoids related to East Sikhote-Alin volcanic-plutonic belt that overlies and intrudes Kema, Luzhkinsky, and Samarka terranes.	Late Cretaceous to Paleocene	Belt interpreted as forming during generation of granitoids along the East-Sikhote-Aline continental-margin arc related to oblique subduction of Ancestral Pacific Ocean plate.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Upper Uydoma (UY)	Cassiterite-sulfide-silicate vein and stockwork (Khoron); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork; Sn-W greisen, stockwork, and quartz vein; Porphyry Mo (±W, Sn, Bi)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements related to Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies Verkhoyansk (North Asian) Craton Margin.	Interpreted as Late Cretaceous.	Belt interpreted as forming during generation of granitoids along Okhotsk-Chukotka continental margin arc related to oblique subduction of ancestral Pacific Ocean Plate.
MAJOR METALLOGENIC BELTS - MAASTRICHTIAN THROUGH OLIGOCENE (72 to 24 Ma)					
Kema (KM)	Ag-Au epithermal vein (Glinyanoe, Tayozhnoe 1); Porphyry Cu-Mo (±Au, Ag) Sukhoi Creek; Porphyry Cu (±Au) Verkhnezolotoe); Porphyry Mo (±W, Sn, Bi)	Russia, Far East	Veins related to East Sikhote-Alin volcanic-plutonic belt that intrudes and overlies the Kema terrane, part of Honshu-Sikhote-Alin collage.	Early Tertiary	Belt interpreted as forming during generation of granitoids along the East-Sikhote-Aline continental-margin arc that is related to subduction of Ancestral Pacific Ocean Plate.
Lower Amur (LA)	Au-Ag epithermal vein (Mnogovershinnoe); Epithermal quartz-alunite (Iskinskoe); Porphyry Au; Porphyry Cu (±Au); Sn-W greisen, stockwork, and quartz vein	Russia, Far East	Veins and granitoids related to East Sikhote-Alin volcanic-plutonic belt that intrudes and overlies Amur River and Kiselyovka-Manoma subduction zone terranes (both part of Honshu-Sikhote-Alin collage).	Late Cretaceous and Paleocene. K-Ar isotopic deposit ages of 49 to 69 Ma	Belt interpreted as forming during generation of granitoids along the East-Sikhote-Aline continental-margin arc that is related to subduction of Ancestral Pacific Ocean Plate.
Popigay (PP)	Impact diamond (Popigay)	Russia, Northern Yakutia	Astrobleme formed on North Asian Craton.	Eocene. Tagamite and impact glasses have ^{40}Ar-^{39}Ar isotopic ages of 35.7 Ma.	Belt hosted in Popigay ring structure is interpreted as resulting from meteoritic impact with formation of pseudotachylites, high-grade shock metamorphic minerals, and allogenic breccia.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
MAJOR METALLOGENIC BELTS - MIOCENE THROUGH QUATERNARY (24 to 0 Ma)					
Hokuriku-Sanin (HS)	Au-Ag epithermal vein (Omori); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Taishu); Ag-Sb vein; Clastic-sediment-hosted U	Japan	Veins and replacements related to Neogene Japan sedimentary basin that overlies and intrudes Hiroshima granitic plutonic belt, and Akiyoshi-Maizuru and Mino-Tamba-Chichibu terranes, both part of Honshu-Sikhote-Alin collage.	Miocene to Pleistocene	Belt interpreted as forming along an island arc during back-arc rifting or axial part of the Japan arc that is tectonically related to subduction of Philippine Sea Plate beneath the East Asia continental margin.
Kyushu (KY)	Au-Ag epithermal vein (Hishikari, Kushikino, Taio)	Japan	Veins and replacements related to Quaternary Japan volcanic belt and Neogene Japan sedimentary basin that overlie and intrude Akiyoshi-Maizuru, Shimanto, and Mino-Tamba-Chichibu terranes, both part of Honshu-Sikhote-Alin collage.	Pliocene to Quaternary	Belt is interpreted as forming during hydrothermal activitiy along the Japan arc in either back-arc rifting or the axial part of the arc. Arc is tectonically related to subduction of the Pacific Ocean and Philippine Sea Plates beneath the East Asia continental margin.
Northeast Hokkaido (NH)	Au-Ag epithermal vein (Konomai); Volcanic-hosted Hg (Itomuka); Hg-Sb-W vein and stockwork (Ryushoden); Clastic sediment-hosted Hg±Sb	Japan	Veins and replacements in Quaternary Japan volcanic belt and Neogene Japan sedimentary basin that overlies and intrudes Hidaka zone of the Shimanto accretionarry wedge terrane, part of Honshu-Sikhote-Alin collage.	Miocene to Quaternary. Two ages of deposits: early stage (14.4 to 11.2 Ma); and late stage (8.1 to 0.3 Ma).	Belt interpreted as forming along the Japan arc that is tectonically related to subduction of the Pacific Ocean and Philippine Sea Plates beneath the East Asia continental margin.

Name (Symbol)	Mineral Deposit Types (Major Deposits)	Country, Region	Unit or Structure Related to Origin of Belt	Age Range of Metallogenic Belt	Tectonic Event for Origin of Metallogenic Belt. Comments
Northeast Japan (NJ)	Volcanogenic Zn-Pb-Cu massive sulfide (Kuroko, Altai types) (Kosaka, Shakanai); Au-Ag epithermal vein (Sado, Hosokura, Toyoha); Polymetallic (Pb, Zn±Cu, Ba, Ag, Au) volcanic-hosted metasomatite; Sulfur-sulfide (S, FeS_2) (Horobetsu); Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork (Ashio); Mn vein; Volcanogenic-sedimentary Mn (Kinjo); Chemical-sedimentary Fe-Mn; Limonite from spring water (Gumma)	Japan	Layers and veins in Quaternary Japan volcanic belt and Neogene Japan sedimentary basin that overlie and intrude Hiroshima granitic plutonic belt, and Mino-Tamba-Chichibu and South Kitakami terranes, both part of Honshu-Sikhote-Alin collage.	Miocene to Quaternary. Many Kuroko-type deposits were formed in middle Miocene, at about 13 Ma. K-Ar ages of vein deposits suggest two stages of formation: early stage (15 to 10 Ma), and late stage (8 to 2 Ma). Sulfur-sulfide (S, FeS2) and limonite deposits formed on Quaternary volcanoes.	Volcanogenic massive sulfide deposits interpreted as forming in back-arc and axial regions of the Japan arc that is tectonically related to subduction of the Pacific Ocean and Philippine Sea Plates beneath the East Asia continental margin.
Outer Zone Southwest Japan (OS)	Sn skarn; Sn-W greisen, stockwork, and quartz vein; Polymetallic Pb-Zn ± Cu (±Ag, Au) vein and stockwork; Clastic-sediment-hosted Sb-Au; Au-Ag epithermal vein (Kishu); Volcanic-hosted Hg; Ag-Sb vein; Zn-Pb (±Ag, Cu, W) skarn (Chichibu); W-Mo-Be greisen, stockwork, and quartz vein; Hg-Sb-W vein and stockwork (Yamatosuigin); Cassiterite-sulfide-silicate vein and stockwork (Obira); Clastic-sediment-hosted Sb-Au	Japan	Veins and replacements related to Neogene Japan sedimentary basin that overlies and intrudes Hiroshima granitic plutonic belt, and Sambagawa, Shimanto, and Mino-Tamba-Chichibu terranes, both all of Honshu-Sikhote-Alin collage.	Middle Miocene. Isotopic age of 15.5 Ma to 13 Ma age for host siliceous igneous rocks.	Belt interpreted as forming in back-arc rifting or axial part of Japan arc that is tectonically related to subduction of Pacific Ocean and Philippine Sea Plates beneath the East Asia continental margin.