Metallogenesis and Tectonics of Northeast Asia
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Appendix C

Summary of Major Metallogenic Belts in Northeast Asia (the Russian Far East, Yakutia, Siberia, Transbaikalia, Northern China, Mongolia, South Korea, and Japan)

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Appendix C. Summary of Major Metallogenic Belts in Northeast Asia (the Russian Far East, Yakutia, Siberia, Transbaikalia, Northern China, Mongolia, South Korea, and Japan).

[Note: For each time span, metallogenic belts are listed from west to east, progressing from north to south. Adapted from detailed descriptions of metallogenic belts in Nokleberg and others (2004), Rodionov and others (2004), and Naumova and others (2006); detailed descriptions of major deposits adapted from Ariunbileg and others (2003)]

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
			Major Metallogenic Belts - Archean (> 2.5 Ga)		
Jidong (JD)	Banded iron formation (Shuichang, Sijiaying); Au in shear zone and quartz vein (Jinchangyu)	Northern China	Sino-Korean craton - West Liaoning-Hebei-Shanxi granulite-orthogneiss terrane.	Archean and Proterozoic. Archean deposits have Rb-Sr isotopic age greater than 3,500 Ma. Proterozoic or younger age for Au deposits in shear and retrograde metamorphic zones with isotopic ages of 2.5-2.6 Ga., 1.7-1.8 Ga., or younger.	Banded iron formation deposits are interpreted as having formed in a volcanic and sedimentation basin along an unstable proto-continental margin, or in a fragment of Archean craton. Au deposits are interpreted as having formed during retrograde metamorphism to greenschist facies.
Liaoji (LJ)	Banded iron formation (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 the banded iron formation deposits is 2.5-2.6 Ga. Isotopic age of the banded iron formation deposits units is probably older than 2.8 Ga. U-Pb zircon isotopic age for trondhjemite (mylonite) is 3,804 Ma.	Host greenstone belt in the Northern Liaoning (Hunbei) area is interpreted as having formed in an active continental margin whereasthe greenstone belts in the Anshan-Benxi and Jiapigou areas are interpreted as having formed in oceanic rifts along a continental margin. Au deposits are interpreted as having formed 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; Talc (magnesite) replacement (Sosnov□ Baits, Baikalskoye, Savinskoye)	Russia, southern-eastern Siberia (East Sayan)	Sharizhalgay terrane (tonalite-trondhjemite gneiss, included in the North Asian craton) and Onot granite-greenstone terrane, derived from the North Asian craton).	Archean. Sharyzhalgay series has U-Pb, Rb-Sr, Sm-Nd isotopic ages of 2.42-3.12 Ga. Sedimentary rocks in the Onot terrane are Paleoproterozoic.	Some deposits (Kitoy group and the Baikalskoye deposit) are hosted in Archean sequences; others (Onot group – Sosnovy Baits deposits) are Proterozoic age. Layering in ferruginous quartzite and occurrence in two-pyroxene schists are interpreted as derived from ferruginous volcanic and sedimentary rock sequences.
Sutam (ST)	Banded iron formation (Olimpiyskoe)	Russia, southern Yakutia	Central Aldan superterrane (included in the North Asian craton).	Archean. Gneiss in the Sutam block has isotopic age of 2.5-3.0 Ga.	Two rock groups with banded iron formation deposits occur in the belt. (1) Magnetite-hypersthene and magnetite-pyroxene gneiss interlayered with amphibole-pyroxene and magnetite-pyroxene-plagioclase schist, which which the banded iron formation deposits consist of magnetite and hypersthene-magnetite quartzite occur in the 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 (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 in the North Asian craton).	Archean through Paleoproterozoic. Metavolcanic and sedimentary rocks interlayered with banded iron formation deposits have isotopic ages of 2.7-3.2 Ga. Age of Au occurrences is Late Archean to Paleoproterozoic.	Belt is interpreted as having formed in a back-arc basin and (or) island arc. Au occurrences are mainly in shear zones cutting metabasalt, amphibolite, and ultramafic rock. Shear zones formed during amalgamation of terranes or during later tectonic events. Banded iron formation deposits (magnetite quartzite) form stratiform layers and lenses in metabasalt and amphibolite, and local siliceous metavolcanic rock and schist.
Wutai (WT)	Banded iron formation (Baizhiyan)	Northern China	Sino-Korean craton - West Liaoning-Hebei-Shanxi terrane (Granulite-orthogneiss)	Archean. Isotopic ages of >2.5 Ga.	Wutai greenstone belt and contained banded iron formation deposits deposits are interpreted as having formed in a non-mature to mature island arc.

Major Metallogenic Belts, Paleoproterozoic (2.5-1.6Ga)

Baydrag (BD)	Banded iron formation (Baydragiin Gol)	Central Mongolia	Baydrag cratonal terrane (part of the Tuva-Mongolia superterrane).	Paleoproterozoic. K-Ar phlogopite isotopic age for skarn is 1,900 Ma. U-Pb isochron and Pb-Pb zircon isochron ages range from 2.65-2.8 Ga for tonalite gneiss in the Baydrag metamorphic complex, and 2.4 Ga for charnokite in the Bombogor intrusive Complex	Banded iron formation deposits are hosted in Paleoproterozoic gneiss, amphibolite, schist, marble and quartzite derived from a volcanic and clastic sedimentary rock basin. Host rocks are intruded by Bombogor intrusive complex that is interpreted as a continental margin arc.
Jiliaojiao (JLJ)	Sedimentary-metamorphic borate (Wengquangou); Sedimentary-metamorphic magnesite (Xiafangshen); Talc (magnesite) replacement (Fanjiapuzi); Banded iron formation (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 the Sino-Korean craton.	Late Paleoproterozoic. Metamorphism and intense deformation occurred at 1.9 Ga. Paleoproterozoic Dashiqiao Formation is with isotopic age of 1.7-1.5 Ga. Marble in the Proterozoic Liaohe group has isotopic age of 1.8 Ga.	Belt is interpreted as having formed 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. Metallogenic belt is composite and includes several mineral deposit types.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Paleoproterozoic (2.5-1.6Ga)					
Kalar-Stanovoy (KS)	Au in shear zone and quartz vein (Ledyanoe, Namark, Pravokabaktanskoe)	Russia, southern Yakutia	Veins in the Kalar tectonic melange zone (included in the North Asian craton).	Paleoproterozoic (about 2.0 Ga)	Belt is interpreted as having formed during the collision between the Tynda and West Aldan terranes in the 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 hear zones that cut metamorphosed mafic and ultramafic and plutonic rock.
Luliangshan (LL)	Banded iron formation (Yuanjiachun); Au in shear zone and quartz vein (Hulishan)	Northern China	Hutuo rift basin or foreland basin	Early Paleoproterozoic. Pb-Pb isotopic age of 2.23 Ga. U-Pb zircon isotopic age of 2.37 Ga.	Banded iron formation deposits iron and shear zone Au deposits are interpreted as having formed 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 in the North Asian craton).	Paleoproterozoic. Carbonatite pluton with isotopic age of 1.9 Ga.	Carbonatite is interpreted as having formed 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 a carbonatite in asymmetric stocks.
Qinglong (QL)	Banded iron formation (Zhalanzhangzhi); Clastic-sediment-hosted Sb-Au (Qinglonghe)	Northern China	Sino-Korean craton -West Liaoning-Hebei-Shanxi terrane.	Paleoproterozoic.	Banded iron formation deposits are hosted in marine volcaniclastic and clastic sedimentary rocks with minor conglomerate that are metamorphosed to amphibolite and greenschist facies. Belt is interpreted as having formed in a passive continental margin or aulacogen that was subsequently regionally metamorphosed and thrusted.
Tyrkanda-Stanovoy (TS)	Au in shear zone and quartz vein (Kolchedannyi Utyos)	Russia, southern Yakutia	Veins in the Tyrkanda tectonic melange zone (included in the North Asian craton).	Paleoproterozoic (about 2.0 Ga).	Belt is interpreted as having formed during collision between the Tynda composite terrane and the Central Aldan and East Aldan superterranes. The reason for collision is unclear. Au shear zone deposits cut metamorphosed mafic and utramafic bodies and plutonic rocks.
Uguy-Udokanskiy (UU)	Zoned mafic-ultramafic Cu-PGE (Chineyskoye;); Sediment-hosted Cu (Udokanskoye); Ta-Nb-REE alkaline metasomatite (Pravo-Ingamakit, Sakinskoye, Sulbanskoye, Katuginskoye)	Russia, southern Yakutia	West Aldan terrane (included in the North Asian craton).	Paleoproterozoic. Age of Cu sandstone in the Udokan deposit is 2.2-1.8 Ga. Ta, Nb, REE alkaline metasomatite deposits have an isotopic age of 2.0-1.6 Ga.	Cu and PGE deposits in zoned mafic-ultramafic plutons and Cu in the sedimentary rocks are interpreted as having formed along a passive continental-margin rift. Ta-Nb-REE alkaline metasomatite deposits are interpreted as having formed during later collision and formation of anatectic granite.

Major Metallogenic Belts, Mesoproterozoic (1.6-1.0 Ga)

Darvi (DR)	Sedimentary bauxite (Alag Uul); Sedimentary Fe-V	Mongolia	Baydrag cratonal terrane (part of the Tuva-Mongolia superterrane).	Mesoproterozoic.	Belt is interpreted as having formed during bauxite sedimentation in a 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 the Zhangbei-Bayan Obo-Langshan rift-related metasedimentary and metavolcanic units deposited on the Sino-Korean craton.	Mesoproterozoic. Sm-Nd isochron ages for monazite, bastnaesite, and riebeckite are 1.2-1.3 Ga. Th-Pb and Sm-Nd ages of Ba-REE-F carbonates and aeschynite are 474-402 Ma.	Bayan Obo deposit is interpreted as a SEDEX deposit related to a carbonatite magma and associated hydrothermal activity. Belt is hosted in a 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 the Jixian Group is 1.4-1.1 Ga.	Belt is interpreted as having formed in a shallow marine basin on the Sino-Korean craton.

Major Metallogenic Belts, Neoproterozoic (1,000-540 Ma)

Angara-Pit (AP)	Sedimentary hematite Fe (Nizhne-Angarskoye); Volcanogenic-sedimentary Fe	Russia, eastern Siberia (Yenisei Ridge)	North Asian craton margin, East Angara fold and thrust belt.	Upper Riphean.	Belt is interpreted as having formed during pre-orogenic subsidence of the North Asian craton margin in a back-arc (interland) sedimentary basin.
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 the Circum-Siberia collage), and Muya metamorphic terrane (part of the Tuva-Mongolia superterrane), and Olokit-Delunuran craton-margin rift terrane.	Neoproterozoic.	Various deposits in the belt are interpreted as having formed in the Baikal-Muya island arc or during Riphean accretion of terrane with Muya metamorphic terrane and Olokit-Delunuran continental-margin rift terrane.
Bodaibinskiy (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 the Neoproterozoic with subsequent enrichment in the Devonian to Early Carboniferous. Age of gold from the Sukhoy Log deposit is about 320 Ma.	Initial gold deposition occurred during sedimentation and later metamorphism and hydrothermal activity. Subsequent Neoproterozoic postcollisional magmatic and hydrothermal activity formed economic deposits. Subsequent deposition of Au-Ag sulfosalt deposits during magmatic and hydrothermal activity in the middle and late Paleozoic.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Neoproterozoic (1,000-540 Ma)					
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 the Belaya-Kitoy metamorphic, Hug subduction zone, and Tunka island arc terranes, the Tannuola plutonic belt, and Huvsgol-Bokson sedimentary overlap assemblage (all part of the Yenisey-Transbaikal collage).	Neoproterozoic through Silurian. Neoproterozoic sedimentary rocks with Cambrian through Silurian metamorphism, hydrothermal alternation, and plutonic intrusion. Younger of part of Sumsunur tonalite complex has U-Pb and Rb-Sr isotopics ages of 790 Ma.	Belt is 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 the Central Siberia collage).	Late Neoproterozoic. K-Ar isotopic age for late-stage hydromica metasomatites in the Sb-Au deposit is 605 Ma-664 Ma. Rb-Sr isotopic age for the Tatarsk granitoid is 601 Ma.	Gold deposits are interpreted as having formed during collisional development of the late Riphean continental margin of the North Asian craton. Gold initially forming in black shale was subsequently concentrated and remobilized during collision-related metamorphism, granitoid intrusion, and hydrothermal activity.
Hovsgol (HO)	Sedimentary phosphate (Hubsugul); Volcanogenic-sedimentary Mn (Saihangol); Sedimentary Fe-V (Hitagiin gol)	Northern Mongolia	Huvsgol-Bokson sedimentary overlap assemblage deposited on the Tuva-Mongolia superterrane.	Vendian and Early Cambrian.	Belt is interpreted as having formed during sedimentation in a carbonate-dominated basin along a continental shelf.
Jixi (JX)	Banded iron formation (Shuangyashan); Homestake Au (Dongfengshan); Metamorphic graphite; (Liumao); Metamorphic sillimanite	Northeastern China	Jiamusi terrane (Metamorphic) terrane and Zhangguangcailing (Continental margin arc) superterrane	Neoproterozoic through 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 is interpreted as having formed 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 the Yenisey-Transbaikal collage).	Late Neoproterozoic. Khantayshir ophiolite has an U-Pb zircon isotopic age of 568 Ma. Dariv ophiolite has an U-Pb zircon isotopic age of 573 Ma.	Various deposits in the belt are interpreted as having formed 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 the Paleoproterozoic Akitkan volcanic-plutonic belt and the Verkhoyansk (North Asian) craton margin.	Riphean.	Belt is interpreted as having formed along shear zones and faults that occur between an ancient active continental margin along the North Asian craton margin.
Prisayan-skiy (PR)	REE (±Ta, Nb, Fe) carbonatite (Beloziminskoye); Mafic-ultramafic related Ti-Fe (±V)	Russia, southern-eastern Siberia (East Sayan)	Various units in the 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 the enderbite-gneiss, tonalite-trondjemite, anorthosite-paragneiss units in terranes that are fragments of Precambrian craton crystalline basement. Host terranes are uplifted parts of the 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 the Central Siberia collage).	Early Neoproterozoic. Model Pb-Pb isotopic age for Gorevskoye deposit is 834-852 Ma. Pb isotopic age of Moryanikhinskoye deposit is 740-849 Ma. Host rocks have an isotopic age of 950 Ma.	SEDEX deposits are interpreted as having formed along transcrustal block-bounding faults in the margin of the platform. Carbonate-hosted Pb-Zn deposits were hosted in the reefs. Fe skarn deposits formed during contact metasomatism of marine volcanic and sedimentary rocks.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Cambrian Through Silurian (540-410 Ma)					
Bedobinsk (BE)	Sediment-hosted Cu (Bedobinsk, Kurishskoye)	Russia, eastern Siberia (Yenisey Ridge area)	North Asian craton.	Middle and Late Cambrian.	Belt is interpreted as having formed 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 the Hangay-Dauria subduction-zone terrane, Orhon-Ikatsky continental margin arc terrane, and Zag-Haraa turbidite basin (all part of the Yenisey-Transbaikal collage).	Late Ordovician. K-Ar metamorphic isotopic ages of foliated and metamorphosed host mudstone (Vendian to Early Cambrian Olziitgol Formation in the Orhon terrane) are 447 and 453.9 Ma.	Belt is interpreted as having formed during regional metamorphism associated with accretion of the Bayanhongor and Baydrag terranes.
East Liaoning (EL**)**	Diamond-bearing kimberlite (Fuxian)	Northeastern China	Kimberlites intruding the Sino-Korean craton - Jilin-Liaoning-East Shandong tonalite-trondhjemite-gneiss terrane.	Ordovician(?). Isotopic age of kimberlite is about 340-455 Ma. Isotopic age of kimberlite on Shandong Peninsula is 460-490 Ma.	Kimberlite and associated intrusions occur along the 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 the South Mongolia-Khingan collage).	Middle Cambrian through Early Ordovician.	Belt is interpreted as having formed 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 the Turgen granitoid complex that intrudes the Hovd continental-margin turbidite terrane (part of the Altai collage).	Ordovician through Late Silurian. K-Ar isotopic age of the Hovd complex is 426-456 Ma.	Belt is interpreted as having formed during subduction related granitic magmatism along a continental-margin arc.
Hunjiang-Taizihe (HT)	Evaporite sedimentary gypsum (Rouguan)	Northeastern China.	Platform sedimentary cover on the Sino-Korean craton.	Cambrian and Ordovician.	Gypsum is interpreted as having formed in a supertidal sabkha sedimentary environment.
Jinzhong (JZ)	Evaporite sedimentary gypsum (Taiyuan)	Northern China	Sino-Korean platform sedimentary cover	Cambrian and Ordovician.	Gypsum is interpreted as having formed in a large epicontinental marine basin.
Jixi (JX)			Started in the Neoproterozoic (1000-540 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 the Tannuola plutonic belt (part of the Yenisey-Transbaikal collage).	Early Ordovician through Early Silurian. $^{40}Ar/^{39}Ar$ host-rock isotopic age is 480-420 Ma.	Belt is related to early Paleozoic collisional granitoids that intrude a 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 the Tannuola plutonic belt (part of the Yenisey-Transbaikal collage).	Cambrian and Ordovician. K-Ar isotopic age for deposit-related gabbro, diorite, and granodiorite plutons in the Irbinskoye district is 430 Ma.	Deposits are hosted in gabbro, diorite, and granodiorite in the collisional Tannuola plutonic belt, and in the volcanogenic-sedimentary rocks of the Kizir-Kazir island-arc terrane, part of the Yenisey-Transbaikal collage.
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 the Tannuola plutonic belt (part of the Yenisey-Transbaikal collage).	Late Ordovician and Early Silurian. $^{40}Ar/^{39}Ar$ isotopic age of 480-460 Ma for the Martaiginsk complex; K-Ar age of 445-427 Ma for the Lebed complex; Rb-Sr ages of 472 Ma, 458 Ma, 444 Ma, and 433 Ma for gangue minerals and metasomatite for the Gavrilovskoye, Centralnoye, Komsomolskoye, Sarala deposits.	Belt is 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 along fault and shear zones that are branches of the Kuznetsk Alatau fault.
Ozerninsky (OZ)	Volcanogenic-hydrothermal-sedimentary (metasomatic) massive sulfide Pb-Zn (±Cu); (Ozernoye); Volcanogenic-sedimentary Fe (Arishinskoye)	Russia, western Transbaikalia	Eravna island arc terrane (part of Yenisey-Transbaikal collage).	Cambrian through Silurian. Isotopic age of younger granitoids intruding terrane is 320-400 Ma.	Belt is interpreted as having formed in an island arc that was subsequently intruded by the Barguzin-Vitim batholith.
South Khingan (SK)	Banded iron formation (Yuzhno-Khingan, Kimkanskoe, Kostenginskoe)	Russia, Far East	Malokhingansk subduction-zone terrane, included in the Sino-Korean craton.	Neoproterozoic through Cambrian. Banded iron formation deposits intruded by granitic plutons with K-Ar isotopic ages of 604 and 301 Ma.	Belt is interpreted as having formed in a volcanic and sedimentation basin along an unstable proto-continental margin, or in a fragment of an 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 the Mongol-Okhotsk collage).	Early Paleozoic.	Belt is interpreted as having formed 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 having formed in limestone caps that formed in two stages on accreted seamounts, atolls, and guyots. Units and deposits were subsequently incorporated into a subduction zone.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Devonian through Early Carboniferous (Mississippian)(410-320 Ma)					
Bayangovi (BG)	Au in shear zone and quartz vein (Bayangovi district)	Southern Mongolia	Replacements in the Govi Altai continental-margin turbidite terrane (part of the South Mongolia-Khingan collage).	Devonian.	Belt is interpreted as having formed regional metamorphism of the Govi-Altai terrane, part of the South Mongolia-Khingan collage, during collision with the Lake terrane.
Botuobiya - Markha (BM)	Diamond-bearing kimberlite (Mir, Internatsional'naya)	Russia, Central Yakutia	Kimberlite intruding the North Asian craton.	Devonian.	Tectonic environment unknown. Devonian kimberlite pipes intrude mostly Cambrian to Silurian carbonate sedimentary rocks of the North Asian craton.
Daldyn-Olenyok (DO)	Diamond-bearing kimberlite (Aikhal, Udachnaya, Ubileinaya, Sytykanskaya)	Russia, Northeast Yakutia	Kimberlite intruding the North Asian craton.	Devonian.	Tectonic environment unknown. Devonian kimberlite pipes intrude mostly Cambrian to Silurian carbonate sedimentary rocks of the 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 the Deluun sedimentary-volcanic-plutonic belt (part of the Altai continental margin arc).	Early Devonian through Early Carboniferous.	Belt is interpreted as having formed 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 the South Mongolia-Khingan collage).	Early Devonian.	Belt is interpreted as having formed during island arc volcanism. Deposits are hosted in pillow basalt and siliceous rocks.
Edren-Zoolon (EZ)	Au in shear zone and quartz vein (Edren, Nemegt)	Southern Mongolia	Veins in the Edren island arc terrane and Zoolen subduction-zone terrane (both part of the South Mongolia-Khingan collage).	Late Devonian through Early Carboniferous.	Belt is interpreted as having formed during regional metamorphism and vein emplacement associated with accretion of the Beitianshan-Atasbogd and Zhongtianshan terranes.

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 the Hongqiling plutonic and the Guanma volcanic sedimentary complexes that intrude and overlap the Zhangguangcailing superterrane and the Laoling terrane (part of the Bureya-Jiamusi supterterrane).	Mississippian. Isotopic ages of 331-350 Ma.	Belt is interpreted as having formed during extension after accretion of the Zhangguangcailing superterrane and Laoling terrane. Belt is hosted in Mississipian or possibly Triassic mafic-ultramafic plutons, and in overlap volcanic assemblages in 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 the 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 400-380 Ma. Alaskite and alkalic granite hosting W-Mo-Be deposits intrude Silurian-Devonian granite and have K-Ar isotopic ages of 305-280 Ma.	Belt is interpreted as having formed during granitoid magmatism associated with the 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 the 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 the Altai volcanic-plutonic belt that overlap and intrude the Altai and Charysh continental margin turbidite terranes.	Devonian and Carboniferous.	Belt is interpreted as having formed along the 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 the Mamsky and Konkudero-Mamakansky complexes intruding the Chuja paragneiss terrane (included in the Baikal-Patom craton margin).	Devonian and Early Carboniferous. Mamsky complex has an isotopic age of 350-300 Ma.	Interpreted as having formed during intrusion of alkaline granitoid of the Mamsky and Konkudero-Mamakansky Complexes into the Chuya paragneiss terrane that were part of a passive margin. The host granitoids are interpreted as having formed during post-accretionary magmatism in transpression zones related to transform microplate 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	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Devonian through Early Carboniferous (Mississippian)(410-320 Ma)					
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 the Barguzin-Vitim granitoid that intrudes the Baikal-Muya island arc terrane and Muya metamorphic terrane (both part of the Tuva-Mongolia superterrane).	Devonian and Early Carboniferous.	Belt is interpreted as having formed in granitoids and veins generation during Riphean collision of the Baikal-Muya terrane with the 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 the West Siberian collage).	Middle and Late Devonian.	Belt is interpreted as having formed in an island arc. Belt is 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 the Altay volcanic-plutonic belt (Altay arc) that overlies and intrudes the Salair terrane.	Middle Devonian through Early Carboniferous for deposit-related quartz-porphyry intrusion.	Belt is interpreted as having formed 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.	Middle Devonian through Early Carboniferous.	Cu deposits interpreted as having formed during Devonian rifting. REE and apatite deposits are hosted in alkali-ultramafic and carbonatite plutons are also interpreted as having formed during Devonian rifting.
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 the South Siberian volcanic-plutonic belt (South Siberian arc).	Early and Middle Devonian. ^{40}Ar-^{39}Ar isotopic age of deposits is 385-400 Ma. K-feldspar and albite metasomatite age is 400-380 Ma. Host volcanic rocks with K-Ar age of 396 Ma and Rb-Sr age of 416 Ma.	Belt is interpreted as having formed 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 are 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 the South Siberian volcanic-plutonic belt (South Siberian arc).	Early Devonian. K-Ar isotopic ages for syenite-diorite of the 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 is interpreted as having formed during interplate transpression and rifting that formed the South Minusa volcanic basin. Deposit is related to Early Devonian granosyenite plutons that 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 the Gurvansayhan island arc terrane (part of the South Mongolia-Khingan collage).	Late Devonian and Early Carboniferous. $^{40}Ar/^{39}Ar$ isotopic age for the Tsagaan suvarga porphyry Cu deposit is 364.9± 3.5 Ma.	Belt is interpreted as having formed in a mature island arc or continental-margin arc.
Udzha (UD)	REE (±Ta, Nb, Fe) carbonatite (Tomtor)	Russia, Northeast Yakutia	North Asian craton.	Devonian. Host rock Rb-Sr isotopic age is 810 Ma; K-Ar age is 240 Ma.	Belt is interpreted as having formed 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 the Govi Altai continental-margin turbidite terrane (part of the South Mongolia-Khingan collage).	Devonian(?).	Belt is interpreted as having formed regional metamorphism of the 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 the Voznesenka passive continental margin terrane (part of the Bureya-Jiamusi supterterrane).	Late Cambrian though Devonian. Granitoids have K-Ar isotopic ages of 440-396 Ma.	Belt is interpreted as having formed in a collisional arc that formed in a fragment of Gondwanaland. Host leucogranite plutons are interpreted as having formed during early Paleozoic collision of the Voznesenka and Kabarga terranes. Deposit-related granitoids intrude Cambrian clastic rocks and limestone.

Major Metallogenic Belts, Late Carboniferous (Pennsylvanian) through Middle Triassic (320-230Ma)

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 the Tungus plateau basalt, sills, dikes, and intrusions that intrude the North Asian craton.	Late Permian and Early Triassic(?). Isotopic ages of related igneous rock range from 260-200 Ma.	Belt is interpreted as related to widespread development of Trapp magmatism on the North Asian craton. Fe skarn deposits associated with Triassic explosive and intrusive basaltic complexes in diatremes. REE-Ta-Nb carbonatite deposits are 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 the Altai volcanic-plutonic belt that intrudes the Altai continental margin turbidite terrane.	Late Carboniferrous. Calc-alkaline anatectic granite with K-Ar isotopic age of 219 Ma.	Belt is interpreted as having formed during intrusion of collisional granite that formed during collision of Kazakhstan and North Asian cratons. Belt is interpreted as having formed 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 the early stage of intrusion of the Hangay plutonic belt that	Late Carboniferous and Permian.	Belt is interpreted as having formed along the Selenga continental margin arc that was adjacent to the Mongol-Okhotsk Ocean. Belt is hosted in gabbro, diorite, and granodiorite stocks and dikes.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Late Carboniferous (Pennsylvanian) through Middle Triassic (320-230Ma)					
			intrudes the Hangay-Dauria and Onon subduction-zone terranes (part of the Mongol-Okhotsk collage). Plutonic rocks are related to the Selenga sedimentary-volcanic plutonic belt (part of the Selenga arc).		
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 the Selenga sedimentary-volcanic plutonic belt (Selenga arc) intruding the West Stanovoy terrane.	Early Permian(?) or Mesozoic(?). Early Permian according to a Pb-Pb zircon age of 275 Ma for strongly foliated granite-gneiss. K-Ar isotopic ages of 89-129 Ma for migmatite, gneissic granite, leucogranite, aplite, and pegmatite.	Belt is 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, the belt may be related collisional granitoids generated during Mesozoic closure of the Mongol-Okhotsk Ocean.
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 the Selenga sedimentary-volcanic plutonic belt (part of the Selenga arc).	Early and Late Permian.	Belt is interpreted as having formed along the 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 the Nora-Sukhotin-Duobaoshan island arc, terrane (part of the South Mongolia-Khingan collage).	Pennsylvanian. K-Ar isotopic age for host batholith is 292 Ma.	Belt is interpreted as having formed in an island arc. Belt is hosted in a subduction-related granodiorite porphyry.
Harmagtai-Hongoot-Oyut (HH)	Porphyry Cu-Mo (±Au, Ag) (Nariinhudag, Hongoot, Kharmagtai); Porphyry Au; Granitoid-related Au vein (Uhaa hudag and Kharmagtai, Shine, Hatsar); Au-Ag	Southern Mongolia	Granitoids related to the South-Mongolian volcanic-plutonic belt (South Mongolian arc) that intrude the Mandalovoo-Onor island	Middle Carboniferous through Early Permian.	Belt is interpreted as having formed in the South Mongolian continental-margin arc.

	epithermal Vein Deposits (Shuteen)		arc terrane and Mandah subduction-zone terranes (both part of the South Mongolia-Khingan collage).		
Hitachi (Hit)	Volcanogenic Zn-Pb-Cu massive sulfide (Kuroko, Altai types) (Hitachi)	Japan	South Kitakami island arc terrane (part of the Bureya-Jiamusi supterterrane).	Permian.	Belt is interpreted as having formed 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 the Atasbogd collage).	Pennsylvanian.	Belt is interpreted as having formed in an island arc.
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 the Tungus plateau basalt, sills, dikes, and intrusions that intrude North Asian craton.	Permian and Triassic.	Belt is interpreted as related to mantle superplume magmatism that resulted in widespread development of Trapp magmatism on the North Asian craton along the long-lived West-Siberian rift system and the 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 the Tungus plateau basalt that intrude the North Asian craton.	Late Permian and Early Triassic. $^{40}Ar/^{39}Ar$ isotopic ages of deposit-related intrusions range from 249-253 Ma.	Belt is 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 the Honshu-Sikhote-Alin collage).	Permian (or older) through Jurassic.	Belt is hosted in a subduction zone complex composed of marine sedimentary and volcanic rock, and fragments of oceanic crust with ultramafic rock. Besshi deposits are interpreted as having formed along a spreading ridge. Belt contains fragments of oceanic crust with podiform chromite deposits are hosted in ultramafic rocks, and chert-hosted Mn deposits. Deposits and host rocks were subsequently incorporated into a 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 the North Asian craton.	Early Triassic. $^{40}Ar/^{39}Ar$ isotopic ages for mafic-ultramafic rocks in the Norilsk district are 241.0-245.3 Ma. Isotopic age for Cu-Mo deposits is 223.3 Ma	Belt is interpreted as related to mantle-derived superplume magmatism that resulted in widespread development of Trapp magmatism on the North Asian craton.
Orhon-Selenge (OS)	Porphyry Cu-Mo (±Au, Ag) (Erdenetiin Ovoo, Central, Oyut; Shand; Zuiliin gol)	Central Mongolia	Granitoids in the Selenga sedimentary-volcanic plutonic belt (Selenga arc).	Triassic. Quartz-sericite metasomatite of the Erdenetiin Ovoo deposit has K-Ar isotopic ages 210-190 Ma. Explosive breccia has age of 210 Ma. K-Ar ages of deposit-related granite	Belt is interpreted as having formed 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	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Late Carboniferous (Pennsylvanian) through Middle Triassic (320-230Ma)					
				range from 185-240-250 Ma. $^{40}Ar/^{39}Ar$ isochron isotopic age of 207± 2 Ma for white mica from highest-grade part of the Erdenet mine.	
Shanxi (SX)	Sedimentary bauxite (Ke'er)	Northern China	Stratiform units in the upper part of the Sino-Korean Platform overlapping the Sino-Korean craton and the West Liaoning-Hebei-Shanxi terrane.	Pennsylvanian.	Belt formed during weathering of metamorphic rocks of the Northern China Platform. Bauxite deposits are hosted in karst and lagoonal basins in a littoral-shallow sea.
Major Metallogenic Belts, Late Triassic through Early Jurassic (230-175 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 the Mongol-Transbaikalia volcanic-plutonic belt that intrudes and overlaps the Hangay-Dauria terrane (part of the Mongol-Okhotsk collage, and adjacent units).	Late Triassic and Early Jurassic. Deposit-related granite with Rb-Sr isotopic age of 190.49 Ma and K-Ar age of 188-225 Ma.	Belt is interpreted as having formed during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of the Mongol-Transbaikal arc. Small plutons hosting REE deposits intruded in a continental postcollisional 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 the Hangay-Dauria and, Ononsky terranes (part of the Mongol-Okhotsk collage and Gobi-Khankaisk-Daxinganling volcanic-plutonic belt and associated arc).	Late Triassic. $^{40}Ar/^{39}Ar$ isochron isotopic ages for plagioclase-biotite porphyry and biotite granodiorite from Bayan Uul ore-field are 220-223 Ma.	Belt is interpreted as having formed during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of the 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 the Mongol-Transbaikalia volcanic-plutonic belt that intrudes and overlies the Argun-Idermeg superterrane and the Gobi-Khankaisk-Daxinganling volcanic-plutonic belt and associated arc.	Late Triassic and Early Jurassic.	Belt is interpreted as having formed during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of the Mongol-Transbaikal arc. Belt is hosted in Late Triassic through Early Jurassic alaskite, granite, and alkaline granite.

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 the South Mongolian volcanic-plutonic belt that intrudes and overlaps the Hutaguul-Xilinhot and Gurvansayhan terranes and the Lugyngol overlap volcanic-sedimentary basin (both part of the South Mongolia-Khingan and adjacent collages).	Middle Triassic through Early Jurassic. Rb-Sr whole-rock isochron age for the Lugiin gol nepheline syenite pluton is 244 Ma and whole rock-mineral isochron ages are 222 Ma and 180-199 Ma. K-Ar age is 228-242 Ma. The Khanbogd REE-Nb-Zr deposit is associated with late Paleozoic alkaline granite pluton with a Rb-Sr age isotopic of 277 Ma and a K-Ar age of 293 Ma.	Belt is interpreted as having formed in the 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 the Belokurikha plutonic belt that intrudes the Altai and West Sayan terranes (both part of the Altai collage).	Early Jurassic. Rb-Sr isotopic age for the Chindagatui pluton is 201.0 Ma and 204.0 for Kalguta pluton. U-Pb isotopic ages for Ta spodumene granite in the Alakha stock are 183 and 188 Ma and a Rb-Sr age is 195 Ma. Rb-Sr age of Li-F granite-porphyry in the the Dzulaly stock is 188.0 Ma	Belt is interpreted as having formed during generation of REE granitoids along transpression zones (Hovd regional fault zone and companion faults) related to transform microplate 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 the Altai and Hovd Hovd terranes (both part of the Altai collage).	Late Triassic and Early Jurassic.	Belt is interpreted as having formed during Mesozoic intraplate rifting related to magmatism along transtensional zones (Hovd regional fault zone and companion faults) along transform microplate 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 the Mongol-Transbaikalia volcanic-plutonic belt.	Middle Triassic through Middle Jurassic. K-Ar isotopic ages of 166-235 Ma for deposit-related Yoroogol gabbro-granite.	Belt is interpreted as having formed during generation of collisional granitoids during final closure of the Mongol-Okhotsk Ocean and formation of the Mongol-Transbaikal arc. Belt is interpreted as having 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 the Honshu-Sikhote-Alin collage).	Triassic and Early Cretaceous.	Mn deposits are interpreted as having formed in a syngenetic setting on the ocean floor. Kuroko deposits are interpreted as having formed in an island arc. Deposits were subsequently incorporated into a subduction zone.
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 the Lenivaya-Chelyuskin sedimentary assemblage, Central Taimyr superterrane, Kara superterrane.	Middle and Late Triassic. Age of deposit-related granitoids is about 223-233 Ma.	Belt is interpreted as having formed during generation of granitoids during and after collision between the North Asian craton and the Kara superterrane. Belt is hosted in intrusions in tectonic blocks which are bounded by post-orogenic faults.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Late Triassic through Early Jurassic (230-175 Ma)					
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 the Sakhalin-Hokkaido collage), Mino Tamba Chichibu subduction-zone terrane (part of the Honshu-Sikhote-Alin collage), and Sambagawa metamorphic terrane (part of the Honshu-Sikhote-Alin collage).	Early Jurassic through Campanian. Age of submarine basaltic volcanism and related Besshi-type deposits is interpreted as between 200 and 140 Ma.	Mn deposits are interpreted as having formed in syngenetic setting on the ocean floor. Besshi and Cyprus deposits are interpreted as having formed during submarine volcanism related to spreading ridge. Deposits were subsequently incorporated into a 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 the Alashan-Yinshan Triassic plutonic belt (too small to show at 15 M scale) that intrudes the Sino-Korean craton - Erduosi terrane, Solon terrane, and adjacent units	Middle Jurassic or younger. ^{40}Ar-^{39}Ar isotopic ages of 327 Ma and 157-177 Ma for intrusion and deposit potassic feldspar, respectively.	Belt is interpreted as having formed in granitoids generated above a mantle plume in an extensional tectonic setting. Belt is related to Late Triassic through Early Jurassic alkaline to subalkaline granite.
Major Metallogenic Belts, Middle Jurassic through Early Cretaceous (175-96 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 the Verkhoyansk (North Asian) craton margin.	Late Jurassic through Early Cretaceous.	Belt is interpreted as having formed during accretion of the Okhotsk terrane to the North Asian craton margin. Belt occurs in the Minorsk-Kiderikinsk zone of highly deformed Late Carboniferous and Permian rocks in the western South Verkhoyansk synclinorium. Au quartz veins are slightly older than large anatectic granitic plutons of the South Verkhoyansk synclinorium.
Ariadny (AR)	Zoned mafic-ultramafic Cr-PGE (Katenskoe); Mafic-ultramafic related Ti-Fe (±V) (Ariadnoe, Koksharovskoe)	Russia, Far East	Plutons intruding the Samarka subduction-zone terrane (part of the Honshu-Sikhote-Alin collage).	Middle Jurassic through Early Cretaceous. K-Ar isotopic ages of about 160 Ma age	Belt is interpreted as having formed 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 the Zhangguangcailing superterrane, Zhangguangcailing sedimentary overlap assemblage, and adjacent units.	Late Jurassic and Early Cretaceous. K-Ar isotopic age of 157.8 Ma for the Wudaoling quartz porphyry.	Belt is interpreted as having formed during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc with generation of sub-alkaline to alkaline volcanism and related sedimentation.

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 the South Yakutian subalkaline and alkaline igneous belt (part of the Stanovoy plutonic belt) that intrudes the North Asian craton and the Central Aldan superterrane.	Jurassic and Early Cretaceous.	Belt is interpreted as having formed in the back-arc part of the 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 is 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.
Chybagalakh (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 the Main granite belt that intrudes the southern margin of Kolyma-Omolon superterrane.	Late Jurassic through early Neocomian.	Belt is interpreted as having formed during collision of the Kolyma-Omolon superterrane and the North Asian craton with associated regional metamorphism and generation of anatectic high-alumina granitoids.
Djeltulaksky (DL)	Granitoid-related Au vein (Zolotaya Gora)	Russia, Far East	Granitoids related to the Stanovoy granite belt that intrudes the Tynda terrane (Stanovoy block) and Dzugdzur anorthositic belt (both part of the North Asian craton).	Early Cretaceous.	Belt is interpreted as having formed in the 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.
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 the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt.	Late Jurassic and Early Cretaceous. Alubaogeshan granite porphyry has isotopic age of 149 Ma. Duerji granite complex has a U-Pb zircon age of 150 Ma. Rb-Sr age of 125 Ma for the Baerzhe pluton. Rb-Sr whole-rock isochron age of 148.31 Ma for the Aobaodaba granite porphyry.	Belt is interpreted as having formed during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc. The extension is interpreted as occurring during the 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 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 the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that overlies and intrudes the Dzhid, Hamar-Davaa and the Orhon-Ikatsky terranes (both part of the Yenisey-Transbaikal collage).	Middle Jurassic through Early Cretaceous. Isotopic ages of 180-170 Ma and 145-140 Ma for Gudjir complex granitoids.	Interpreted as having formed 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 the Mongol-Okhotsk Ocean.
East Mongolian-Priargunskiy-Deerbugan (EM)	Polymetallic (Pb, Zn, Ag) carbonate-hosted metasomatite (Klichkinskoye, Vozdvizhenskoye); Zn-Pb (±Ag, Cu, W) skarn; Au skarn (Savinskoye-5, Bayandun);	Russia, eastern Transbaikalia; Central and eastern Mongolia; Northeastern China	Veins, volcanic complexes, replacements, and granitoids related to the Trans-Baikalian-Daxinganling sedimentary-volcanic-	Middle Jurassic through Early Cretaceous. Gold deposits and occurrences with isotopic ages of 190-180 Ma and 165-175 Ma. K-Ar isotopic age for sericite at Ulaan Ag-Pb-Zn deposit is 161	Belt is interpreted as having formed during Middle Jurassic to Early Cretaceous extensional tectonism associated with generation of the Trans-Baikalian-Daxinganling transpressional arc. Belt is controlled by major, regional northeast-and northwest-trending faults.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Middle Jurassic through Early Cretaceous (175-96 Ma)					
	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		plutonic belt that overlies and intrudes Argun-Idermeg superterrane, and Gobi-Khankaisk-Daxinganling volcanic-plutonic belt and adjacent units.	Ma. K-Ar isotopic ages of mica at Dornot uranium deposit range from 141-143 Ma. K-Ar isotopic age of the granodioritic porphyry is 164 Ma.	
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 the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that overlies and intrudes the Dzhida, Govi Altai, Mandalovoo-Onor terranes (parts of the South Mongolia-Khingan and Yenisey-Transbaikal collages).	Late Jurassic and Early Cretaceous.	Belt is interpreted as having formed in Early Cretaceous (Aptian-Albian) 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);	Southern Mongolia; Northwestern China	Veins and replacements related to latite and lamprophyre dikes in the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that intrudes and overlies the Tsagaan	Late Jurassic and Early Cretaceous.	Belt is interpreted as having formed during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc.

	Carbonate-Hosted Ag-Pb (Hartolgoi); Carbonate-hosted Hg-Sb (Zuun Togoo Uul); Silica-carbonate (Listvenite) Hg		Uul-Guoershan (part of Atasbogd collage), and Solon terrane (part of Solon collage).		
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 the Jilin-Liaoning-East Shandong volcanic-plutonic belt that overlies and intrudes Sino-Korean craton - Jilin-Liaoning-East Shandong terrane	Middle Jurassic and Early Cretaceous.	Belt is interpreted as having formed during interplate magmatism associated with extensional tectonism related to oblique subduction of the Pacific Oceanic plate beneath the Eurasian continental plate. Belt is hosted in 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 the proven Au reserve in China.
Kitakami (KK)	Cu (±Fe, Au, Ag, Mo) skarn (Kamaishi); Granitoid-related Au vein (Oya)	Japan	Replacements in the Early Cretaceous Hiroshima granitic belt intruding the South Kitakami terrane (part of the Bureya-Jiamusi supterterrane), and the Mino-Tamba-Chichibu terranes (part of the Honshu-Sikhote-Alin collage).	Early Cretaceous (Aptian through Albian). K-Ar isotopic ages of 120-110 Ma for deposit-related granitic rocks in the Kitakami Mountains.	Belt is interpreted as having formed 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 a major fault cutting the North Asian craton and northeastern part of the Tukuringra-Dzhagdy terrane (part of the Mongol-Okhotsk collage).	Early Cretaceous. K-Ar isotopic ages for the zoned mafic-ultramafic intrusions in the Kondyor metallogenic belt range from 110-160 Ma. ^{40}Ar-^{39}Ar isotopic age of 127 Ma for the alkalic mafic and ultramafic igneous rocks at Ingagli.	Belt is interpreted as having formed 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 the Kular-Nera terrane (part of the Verkhoyansk-Kolyma collage).	Late Jurassic through Early Neocomian. Deposit-related granite has a ^{40}Ar-^{39}Ar isotopic age of 103 Ma.	Belt is interpreted as having formed 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 are metamorphosed to 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 the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that intrudes and overlaps the West Stanovoy terrane, Barguzin-Vitim granitoid belt, and Selenga sedimentary-volcanic plutonic belt.	Middle Jurassic thorugh Early Cretaceous.	Belt is interpreted as related to magmatism along transtensional zones along transform microplate boundaries and within-plate (plume) environment. 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	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Middle Jurassic through Early Cretaceous (175-96 Ma)					
			plutonic belt that intrudes and overlaps the West Stanovoy terrane, Barguzin-Vitim granitoid belt, and Selenga sedimentary-volcanic plutonic belt.		
North Bureya (NB)	Au-Ag epithermal vein (Pioneer); Granitoid-related Au vein (Pokrovskoe)	Russia, Far East	Veins and granitoids related to the Umlekam-Ogodzhin volcanic-plutonic belt that intrudes and overlaps the Malokhingansk and, Turan terranes (part of the Bureya superterrane), Gonzha terrane, and Nora-Sukhotin-Duobaoshan terrane (part of the South Mongolia-Khingan collage), and Tukuringra-Dzhagdy terrane (part of the Mongol-Okhotsk collage).	Early Cretaceous.	Belt is interpreted as having formed with the Umlekan-Ogodzhin continental-margin arc that formed during subduction of part of the 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 related to Late Jurassic and Early granitoids intruding the North Margin plutonic belt that overlies the North China Platform and Laoling terrane (part of the Wundurmiao collage) and Zhangguangcailing superterrane.	Middle Jurassic through Early Cretaceous. Siliceous and mafic volcanic rocks at Ciweigou Au-Ag epithermal deposit have a Rb-Sr isochron age of 147.5 Ma.	Belt is interpreted as related to magmatism along transpression zones along transform microplate boundaries and within-plate (plume) environments.
North Bureya (NB)	Au-Ag epithermal vein (Pioneer); Granitoid-related Au vein (Pokrovskoe)	Russia, Far East	Veins and granitoids related to the Umlekam-Ogodzhin volcanic-plutonic belt that intrudes and overlaps the Malokhingansk terrane, the Turan terrane of the Bureya-Jiamusi superterrane, the Gonzha	Early Cretaceous.	Belt is interpreted as having formed with the Umlekan-Ogodzhin continental-margin arc during subduction of part of the ancestral Pacific Ocean plate that is now preserved as tectonically interwoven fragments of the Badzhal, Khabarovsk, and Samarka terranes.

			terrane, the Nora-Sukhotin-Duobaoshan terrane (part of the South Mongolia-Khingan collage), and the Tukuringra-Dzhagdy terrane (part of the Mongol-Okhotsk collage).		
North Stanovoy (NS)	Granitoid-related Au vein (Bamskoe); Au-Ag epithermal vein (Burindinskoe)	Russia, Far East	Granitoids related to the Stanovoy granite belt intruding the Tynda terrane (part of the North Asian craton).	Early Cretaceous.	Belt is interpreted as having formed in the Uda-Stanovoy continental-margin arc during subduction and closure of the Mongol-Okhotsk Ocean beneath the North Asian craton to the north.
Onon-Turinskiy (OT)	Granitoid-related Au vein (Lubavinskoye); □orphyry Au (Ara-Ilinskoe); Cassiterite-sulfide-silicate vein and stockwork (Khapcheranga, Tarbaldzheiskoe)	Russia, Central Transbaikalia; northern Mongolia	Veins, volcanic complexes, and replacements related to the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt that overlies and intrudes the Selenga sedimentary-volcanic plutonic belt, and the Ononsky terrane (part of the Mongol-Okhotsk collage).	Middle Jurassic through Early Cretaceous.	Belt is interpreted as having formed during interplate extensional tectonism along the Trans-Baikalian-Daxinganling transpressional arc. Belt and related host rocks occurs along the 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 the Northern granite belt that intrudes the Kolyma-Omolon superterrane and adjacent units.	Middle Cretaceous (Neocomian to Aptian). ^{40}Ar-^{39}Ar isotopic age of 120-130 Ma.	Belt is interpreted as having formed during collision of the Kolyma-Omolon superterrane and the North Asian craton and associated regional metamorphism and generation of anatectic granitoids.
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 the Khungari-Tatibi granite belt that intrudes the Samarka terrane (part of the Honshu-Sikhote-Alin collage).	Early and mid-Cretaceous. K-Ar isotopic ages of 110-115 Ma for host granitoids.	Belt is interpreted as having formed 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,	Russia, eastern Transbaikalia	Granitoids, volcanic rocks, and replacements related to the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt.	Middle Jurassic through 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 and the Sino-Korean cratons.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Middle Jurassic through Early Cretaceous (175-96 Ma)					
	Au) vein and stockwork (Berezitovoe); Au-Ag epithermal vein (Baleyskoe); Fluorite vein (Kalanguyskoye)				
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 mid-Cretaceous granitoids in the South Verkhoyansk granite belt intruding the Verkhoyansk (North Asian) craton margin	Aptian through Late Cretaceous.	Belt is interpreted as having formed 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 120-123 Ma.
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 the Daebo Granite intruding the Yeongnam Metamorphic Complex and Great Limestone Group (both part of the Sino-Korean craton).	Middle Jurassic through Early Cretaceous.	Belt is interpreted as having formed 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 the Northern and Transverse granite belt along the northwestern margin of the Kolyma-Omolon superterrane.	Neocomian.	Belt is interpreted as having formed during collision of the Kolyma-Omolon superterrane and the North Asian craton with associated regional metamorphism and generation of anatectic granitoids. Belt occurs along sublatitudinal high-angle, probable strike-slip faults that cut Permian through 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 the Trans-Baikalian-Daxinganling sedimentary-volcanic-plutonic belt.	Middle Jurassic through Early Cretaceous.	Belt is interpreted as related to magmatism in 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 the Verkhoyansk (North Asian) craton margin.	Late Jurassic through early Neocomian.	Belt is interpreted as having formed 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 the Transverse granite belt along the northwestern margin of the Kolyma-Omolon superterrane.	Mid-Cretaceous.	Belt is interpreted as having formed during collision of the Kolyma-Omolon superterrane and the North Asian craton and associated regional metamorphism and generation of anatectic granitoids.
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 the Yanliao volcanic and sedimentary basin and plutonic belt that overlies and intrudes the northeastern Sino-Korean craton.	Middle Jurassic through 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 have a K-Ar isotopic age of 146-168 Ma.	Belt is interpreted as having formed during interplate magmatism associated with extensional tectonism related to oblique subduction of the Pacific Oceanic plate beneath the Eurasian plate.
			Major Metallogenic Belts, Cenomanian through Campanian (96-72 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 the Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous. K-Ar isotopic ages of 75-86 Ma. Rb-Sr age of 95-83 Ma.	Belt is interpreted as having formed 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 the 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 the Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies the North Asian craton and the Uda volcanic-plutonic belt.	Late Cretaceous and Paleocene.	Belt is interpreted as having formed during generation of granitoids in the Okhotsk-Chukotka continental margin arc that is related to subduction of the 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 the Northern granite belt along the northwestern margin of the Kolyma-Omolon superterrane.	Aptian through Late Cretaceous. Deputatskiy stock has a K-Ar isotopic age of 108 Ma.	Belt is interpreted as having formed during extension related to initiation of opening of Eurasia Basin in the Arctic Ocean. Belt associated with REE and subalkali granitoids that occur in small stocks.
Chokhchur-Chekur-dakh (CC)	Cassiterite-sulfide-silicate vein and stockwork (Churpunya, Chokurdakh)	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements in the Svyatoi Nos volcanic belt that occurs along the southern margin of the Kolyma-Omolon superterrane.	Aptian through Late Cretaceous. Granitoids have ^{40}Ar-^{39}Ar isotopic ages of 105-106 Ma.	Belt is interpreted as having formed during extension related to initiation of opening of the Eurasia Basin in the Arctic Ocean. Belt occurs along the Yana fault. Belt is 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	Russia, East-Central Yakutia (Verkhoyansk area)	Veins and replacements related to the Transverse granite belt that intrudes the Verkhoyansk (North	Aptian through Late Cretaceous. Granitoid stocks and dikes of various composition have ^{40}Ar-^{39}Ar isotopic ages of older than	Belt is interpreted as having formed during extension related to initiation of opening of the Eurasia Basin in the Arctic Ocean. Belt is hosted in granitoid stocks and dikes that occur at the terminations of the Transverse

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Cenomanian through Campanian (96-72 Ma)					
	and stockwork (Zvyozdochka); Ag-Sb vein vein; Au-Ag epithermal vein		Asian) craton margin.	120 Ma. Khoboyatu-Echiy granite pluton has a ^{40}Ar-^{39}Ar age of 97 Ma.	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 the Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous. Sn granite has isotopic ages of 75-100 Ma.	Belt is interpreted as having formed during generation of granitoids along along the Khingan transform continental-margin arc that contains the Khingan-Okhotsk volcanic-plutonic belt and 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 the Cretaceous Bulgugsa granite (biotite and feldspar porphyry) that intrudes Sino-Korean craton - Yeongnam terrane.	Cenomanian through Campanian (96-75 Ma).	Belt is interpreted as having formed in a continental-margin arc during subduction of the ancestral Pacific Ocean plate. Deposits occur along the fissures and shear zones.
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 the Cretaceous Bulgugsa granite (biotite granite and granodiorite) that intrudes the Sino-Korean craton - Yeongnam terrane.	Cenomanian through Campanian.	Belt is interpreted as having formed 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 the Shimanto subduction-zone terrane (part of the East Sakhalin collage).	Middle Cretaceous through Eocene.	Belt is interpreted as having formed in basalt generated along the Kula-Pacific ridge. Subsequent structural incorporatation of host rocks and deposits into a 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)	Japan	Veins and replacements in the Nohi rhyolite volcanic belt and the Hiroshima granitic belt that overlie and intrude a large portion	Cretaceous and Paleogene. Cretaceous age of deposit-related granitic rocks in the Ryoke and Sanyo belts. Mainly a Paleogene age for Sanin belt.	Belt is interpreted as having formed during generation of granitoids along the East Asia continental margin arc related to subduction of the Kula and Pacific Ocean plates. East Asia arc is interpreted as the southern extension of the East Sikhote-Alin arc.

	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		and intrude a large portion of central and southern Japan.	age for Sanin belt.	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 the Verkhoyansk (North Asian) craton margin.	Aptian through Late Cretaceous.	Belt is interpreted as having formed during post-accretionary extension related to initiation of opening of the Eurasia Basin. Belt occurs in veins and replacements in the southern Verkhoyansk fold and thrust along the Sette-Daban tectonic zone.
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 the Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies the Okhotsk terrane.	Late Cretaceous and Paleocene.	Belt is interpreted as having formed during generation of granitoids along the Okhotsk-Chukotka continental margin arc related to subduction of the 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 the East Sikhote-Alin volcanic-plutonic belt that overlies and intrudes the Zhuravlevsk-Amur River terrane (part of the Honshu-Sikhote-Alin collage).	Mid-Cretaceous through early Tertiary isotopic ages that range form 100 to 50 Ma.	Belt is interpreted as having formed during generation of granitoids in the back-arc of the East-Sikhote-Alin continental-margin arc related to oblique subduction of the ancestral Pacific Ocean plate.
Malo-Khingan (MK)	Porphyry Sn (Khinganskoe); Rhyolite-hosted Sn	Russia, Far East	Granitoids related to the Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous. Probable deposit-related to subalkaline potassium granite has K-Ar ages of 80-90 Ma and a Rb-Sr whole-rock isochron age of 78 Ma.	Belt is interpreted as having formed during generation of granitoids along the Khingan transform continental-margin arc that contained the Khingan-Okhotsk volcanic-plutonic belt. Arc is related to oblique subduction of the 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 the Khingan-Okhotsk volcanic-plutonic belt.	Late Cretaceous.	Belt is interpreted as having formed during generation of granitoids along the Khingan transform continental-margin arc that contained the Khingan-Okhotsk volcanic-plutonic belt. Arc is related to oblique subduction of the ancestral Pacific Ocean plate.
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 the Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies the East Aldan superterrane and adjacent units.	Late Cretaceous and Paleocene.	Belt is interpreted as having formed during generation of granitoids along Okhotsk-Chukotka continental margin arc related to oblique subduction of the ancestral Pacific Ocean plate.

Name (symbol)	Mineral deposit types (major deposits)	Country, region	Unit or structure related to origin of belt	Age range	Tectonic event for origin of metallogenic belt
Major Metallogenic Belts, Cenomanian through Campanian (96-72 Ma)					
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 the Uyandina-Yasachnaya volcanic belt along the southern margin of Kolyma-Omolon superterrane.	Aptian through Late Cretaceous.	Belt is interpreted as having formed during post-accretionary extension related to initiation of opening of the 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 the East Sikhote-Alin volcanic-plutonic belt that overlies and intrudes the Sergeevka, Samarka, and Taukha terranes.	Late Cretaceous and early Tertiary. K-Ar ages of deposits range between 60 and 80 Ma.	Belt is interpreted as having formed during generation of granitoids along the East-Sikhote-Alin continental-margin arc related to subduction of the ancestral Pacific Ocean plate.
Tumnin-Anyui (TA)	Porphyry Sn (Mopau); Cassiterite-sulfide-silicate vein and stockwork; Au-Ag epithermal vein (Tumninskoye)	Russia, Far East	Veins and granitoids related to the East Sikhote-Alin volcanic-plutonic belt that overlies and intrudes the Kema, Luzhkinsky, and Samarka terranes.	Late Cretaceous and Paleocene.	Belt is interpreted as having formed during generation of granitoids along the East-Sikhote-Alin continental-margin arc related to oblique subduction of the ancestral Pacific Ocean plate.
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 the Okhotsk-Chukotka volcanic-plutonic belt that intrudes and overlies the Verkhoyansk (North Asian) craton margin.	Late Cretaceous.	Belt is interpreted as having formed during generation of granitoids along the Okhotsk-Chukotka continental margin arc that was related to oblique subduction of the 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 the East Sikhote-Alin volcanic-plutonic belt that intrudes and overlies the Kema terrane (part of the Honshu-Sikhote-Alin collage).	Early Tertiary.	Belt is interpreted as having formed during generation of granitoids along the East-Sikhote-Alin 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 the 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 are 49-69 Ma.	Belt is interpreted as having formed during generation of granitoids along the East-Sikhote-Alin 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 is hosted in the Popigay ring structure that is interpreted as resulting from meteoritic impact with formation of pseudotachylites, high-grade shock metamorphic minerals, and allogenic breccia.
			Major Metallogenic Belts, Miocene through Quaternary (24-0 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 the Neogene Japan sedimentary basin that overlies and intrudes the Hiroshima granitic plutonic belt, and the Akiyoshi-Maizuru and Mino-Tamba-Chichibu terranes (both part of the Honshu-Sikhote-Alin collage).	Miocene and Pleistocene.	Belt is interpreted as having formed 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 the Quaternary Japan volcanic belt and the Neogene Japan sedimentary basin that overlie and intrude the Akiyoshi-Maizuru, Shimanto, and Mino-Tamba-Chichibu terranes (both part of the Honshu-Sikhote-Alin collage).	Pliocene through Quaternary.	Belt is interpreted as having formed 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 the Quaternary Japan volcanic belt and the Neogene Japan sedimentary basin that overlies and intrudes the Hidaka zone of the Shimanto accretionarry wedge terrane (part of the Honshu-Sikhote-Alin collage).	Miocene through Quaternary. Two ages of deposits: early stage (14.4-11.2 Ma); and late stage (8.1-0.3 Ma).	Belt is interpreted as having formed 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	Tectonic event for origin of metallogenic belt
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 the Quaternary Japan volcanic belt and Neogene Japan sedimentary basin that overlie and intrude the Hiroshima granitic plutonic belt, and the Mino-Tamba-Chichibu and South Kitakami terranes (both part of the Honshu-Sikhote-Alin collage).	Miocene through Quaternary. Many Kuroko-type deposits were formed in the middle Miocene, at about 13 Ma. K-Ar ages of vein deposits suggest two stages of formation: early stage (15-10 Ma); and late stage (8-2 Ma). Sulfur-sulfide (S, FeS_2) and limonite deposits formed on flanks of Quaternary volcanoes.	Volcanogenic massive sulfide deposits are interpreted as having formed in the 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 the Neogene Japan sedimentary basin that overlies and intrudes the Hiroshima granitic plutonic belt, and Sambagawa, Shimanto, and Mino-Tamba-Chichibu terranes (both part of the Honshu-Sikhote-Alin collage).	Middle Miocene. Isotopic age of 15.5 Ma-13 Ma age for host siliceous igneous rocks.	Belt is interpreted as having formed in the back-arc rifting or axial part of the Japan arc that is tectonically related to subduction of the Pacific Ocean and Philippine Sea plates beneath the East Asia continental margin.

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