

## LEGEND

### MESOZOIC AND CENOZOIC COMPLEXES OF THE CENTRAL TIEN SHAN

- Sharpyldak Group, Upper Pliocene– Lower Pleistocene (N<sub>2</sub>–Q<sub>1</sub> šr). Grey conglomerate, gritstone, sandstone
- Chu Group, Lower Pliocene (N<sub>1-2</sub> ču) Motley mudstone, and grey sandstone, gritstone
- Kyrgyz Redstone Supergroup, Upper Cretaceous –Miocene (K<sub>2</sub>–N<sub>1</sub> kg). Interbedding of carbonate, clay, sandstone and conglomerate
- Group of Lower Jurassic deposits (j<sub>1</sub>). Conglomerate, gritstone, sandstone and siltstone with clayey lenses and coal beds

### PERMIAN – TRIASSIC POST–COLLISION COMPLEX OF THE CENTRAL TIEN SHAN

- Achiktash Formation, Permian (yP a). Granite, leucocratic granite, granite–porphyry
- Adyrtor Formation, Permian (yšlyPa). Granosyenite leucocratic granite, alaskite
- Surteke Formation, Early Permian (šP<sub>1s</sub>). Syenite, quartz syenite
- Inylchek Formation, phase 2, Early Permian (ly<sub>2</sub>P<sub>1i</sub>). Granite, leucocratic granite
- Inylchek Formation, phase 1, Early Permian (y<sub>1</sub>P<sub>1i</sub>). Porphyric granite, xenoliths of quartz diorite and quartz monzonite
- Akshiyrak Formation, phase 4, Early Permian (ely<sub>4</sub>P<sub>1a</sub>). Leucocratic amphibole–biotite, subalkaline granite, granite–porphyry
- Akshiyrak Formation, phase 3, Early Permian (ey<sub>3</sub>P<sub>1a</sub>). Amphibole–biotite subalkaline granite
- Akshiyrak Formation, phase 2, Early Permian (yš<sub>2</sub>P<sub>1a</sub>). Subalkaline granite, granosyenite with rapakivi structure
- Akshiyrak Formation, phase 1, Early Permian (yš<sub>1</sub>P<sub>1a</sub>). Gneissic granodiorite
- Terekty Formation, phase phase 3, Early Permian (y<sub>3</sub> P<sub>1t</sub>). Granite fine–crystalline
- Terekty Formation, phase phase 2, Early Permian (yš<sub>2</sub> P<sub>1t</sub>). Granodiorite, granite, leucocratic granite
- Terekty Formation, phase phase 1, Early Permian (š, qš<sub>1</sub> P<sub>1t</sub>). Diorite, quartz–diorite
- Eastsonkul Formation, phase 3, Early Permian (y<sub>3</sub>P<sub>1es</sub>). Granosyenite, granite, granite–porphyrie
- Eastsonkul Formation, phase 1, Early Permian (μ<sub>1</sub>P<sub>1es</sub>) Monzogabbro, monzonite, granosyenite
- Differentiated Sills Formation, Early Permian (vP<sub>1</sub>). Pyroxenite, gabbro, gabbro–dolerite

### – OVERLAPPING LATE PALEOZOIC BASINS –

### CHU – SARYSU BASIN

- Tekes Formation, Upper part, Upper Carboniferous – Permian (C<sub>2</sub>–P tk<sub>2</sub>). Reddish sandstone, siltstone
- Tekes Formation, Lower part, Upper Carboniferous – Permian (C<sub>2</sub>–P tk<sub>1</sub>). Conglomerate, gritstone, reddish sandstone, siltstone
- Chaarkuduk Formation, Upper Carboniferous (C<sub>2</sub>čr). Gypsum, marl, siltstone
- Tyup Formation, Upper Carboniferous (C<sub>2</sub>tp). Conglomerate, sandstone, limestone

### NORTH TIEN SHAN BASIN

- Kokjar Formation, Lower–Upper Carboniferous (C<sub>1</sub>–zkk). Limestone
- Kungey Formation, Lower Carboniferous (C<sub>1</sub>kn). Limestone
- Kokpak Formation, Lower Carboniferous (C<sub>1</sub>kkp). Sandstone, siltstone, limestone
- Karakyr Formation, Early Carboniferous (C<sub>1</sub> krk).Motley sandstone, siltstone, shale
- Kopyl Formation, Lower Carboniferous (C<sub>1</sub>kp). Conglomerate, sandstone, siltstone
- Kyzyljar Formation, Lower Carboniferous (C<sub>1</sub>kz). Conglomerate, gritstone

### DEVONIAN VOLCANIC BELT

- Donarcha Formation, Upper Devonian (μšD<sub>3d</sub>). Monzonite, quartz monzonite diorite, granosyenite
- Aral Formation, Upper Devonian (D<sub>3</sub>ar). Basalt, andesite–basalt and tuffs
- Joldusai Formation. Middle Devonian ? (yšD<sub>2</sub>žj). Quartz monzonite, granodiorite
- Bazunbai Formation. Early–Middle Devonian (lyD<sub>1-2</sub>b).Granite, subalkaline granite, leucocratic granite
- Alama Formation, 3 phase, Early–Middle Devonian (ly<sub>3</sub>D<sub>1-2a</sub>). Leucocratic granite, granite porphyrie
- Alama Formation, 2 phase, Early–Middle Devonian (ely<sub>2</sub>D<sub>1-2a</sub>). Subalkaline leucocratic granite
- Aksu Formation, Intrusive phase, Early – Middle Devonian (γπD<sub>1-2a</sub>). Rhyolite–dacite, porphyrie, granite porphyrie, granodiorite porphyrie
- Aksu Formation, Lower – Middle Devonian (D<sub>1-2</sub> as). Rhyolite, dacites lava and tuffs
- Sauruksai Formation. Early Devonian (šyD<sub>1s</sub>). Quartz syenites, quartz monzonite, granosyenite, subalkaline granite, leucocratic granite
- Barkol Formation, Intrusive phase, Lower Devonian (šπD<sub>1b</sub>). Diorite porphyrie, microdiorite
- Barkol Formation, Lower Devonian (D<sub>1</sub>br). Andesite–basalt, andesite, tuffs and conglomerate

### SONKUL – TURUK BASIN

- Echkelitash Formation, Early Carboniferous (C<sub>1</sub> eč). Limestone, clay limestone, calcarenite, shale
- Ayusay Formation, Early Carboniferous (C<sub>1</sub> as). Organic–detritic limestone, carbonate silt, conglomerate
- Kensu Formation, Lower Carboniferous (C<sub>1</sub>kns). Sandstone, siltstone, limestone
- Turuk Formation, Lower Carboniferous (C<sub>1</sub>tr). Siltstone, sandstone, conglomerate
- Sarykoinou Formation, Early Carboniferous (yš C<sub>1s</sub>). Granodiorite, quartz monzonite, granite–gneiss

### KARATAU–NARYN CARBONATE PLATFORM

- Kyzylbulak Formation, Late Carboniferous (C<sub>2</sub> kb). Conglomerate, sandstone, siltstone, limestone
- Karashilbiy Group, Early–Late Carboniferous (C<sub>1-2</sub>kr). Limestone, dolomitic limestone, chert lenses
- Tuyukkan Group, Early Carboniferous (C<sub>1</sub> tk). Detritic limestone, cherts lenses
- Arpatakyr Formation, Late Devonian – Early Carboniferous (D<sub>3</sub> –C<sub>1</sub> ar). Basalt, clastic lava and tuffs
- Jalbakan Formation, Late Devonian (D<sub>3</sub> dš). Sandstone, siltstone, shale, marl and limestone
- Tyulkubash Formation, Middle–Late Devonian (D<sub>2-3</sub> tl). Red–colored arcos sandstone, siltstone, gritstone, conglomerate

### – SOUTH TIEN SHAN GEOLOGICAL PROVINCE –

### PALEOZOIC STRUCTURAL COMPLEX

- Sauktor Formation, Early Permian (P<sub>1</sub>sk). Calcareous siltstone, sandstone, gritstone, conglomerate
- Kipchak Formation, Late Carboniferous–Early Permian (C<sub>2</sub>–P<sub>1</sub>kp). Clayey shale, sandstone, siltstone, limestone interlayers
- Atbashi Formation, Early–Late Carboniferous (g C<sub>1-2</sub> at). Crystalline schist, gneiss

- Jangart Group, Devonian–Early Permian (D–P<sub>1</sub>j<sub>n</sub>). Limestone, dolomite with interlayers of marl, gypsum, siltstone and sandstone
- Jetkait Formation, Late part, Late Carboniferous–Early Permian (C<sub>2</sub>–P<sub>1</sub>dt<sub>2</sub>). Limestone with interlayers of siltstone, sandstone, marl, gypsum
- Jetkait Formation, Early part, Late Carboniferous–Early Permian (C<sub>2</sub>–P<sub>1</sub>dt<sub>1</sub>). Dolomite, limestone, rhyolite tuff
- Uchchat Formation. Early–Late Carboniferous (C<sub>1-2</sub>uč). Limestone, dolomite, shale, calcareous siltstone, sandstone
- Kumar Formation, Late Carboniferous (C<sub>2</sub>km). Limestone with interlayers of clayey shale, sandstone, siltstone
- Kattaashutor Formation, Early Carboniferous (C<sub>1</sub> ktt). Limestone, carbonaceous limestone, siltstone, slate
- Oblaitor Formation, Late part, Devonian–Early Carboniferous (D–C<sub>1</sub> ob<sub>2</sub>). Limestone
- Oblaitor Formation , Early part, Devonian–Early Carboniferous (D–C<sub>1</sub> ob<sub>1</sub>). Dolomite, limestone with interlayers of quartz sandstone
- Kaichi Formation, Late Devonian–Early Carboniferous (D<sub>3</sub>–C<sub>1</sub>kč). Shale, siltstone, sandstone
- Maibulak Formation, Middle Devonian–Early Carboniferous (D<sub>2</sub> – C<sub>1</sub>mb). Shale, quartz sandstone, siltstone, horizons of calcarenite
- Airytor Formation, Late–Middle Devonian (D<sub>2-3</sub>at). Calcareous siltstone, shale, siltstone, sandstone
- Jamansu Formation, Late Silurian – Early Devonian (S<sub>2</sub>–D<sub>1</sub> jm). Sandstone, gritstone, conglomerate, limestone, trachyrhyolite and tuff
- Atjailau Group, Early Silurian–Early Carboniferous (S<sub>1</sub>–C<sub>1</sub>at). Light marble limestone
- Chirmash Formation, Early–Middle Devonian (D<sub>1-2</sub>čr). Tentakulite calcarenite, clayey limestone
- Kargantash Formation, Late Silurian–Early Devonian (S<sub>2</sub>–D<sub>1</sub>krq). Crinoid and coral limestone
- Belkarasu Formation, Late–Early Silurian (S<sub>1</sub>–zbl). Coral and crinoid–detrital limestone, clayey and calcareous shale
- Shirikty Formation, Late Silurian–Early Devonian (S<sub>2</sub>–D<sub>1</sub>šr). Shale, limestone, interlayers of sandstone, siltstone
- Kaindy Group, Late Silurian–Early Carboniferous (S<sub>2</sub>–C<sub>1</sub>kn). Basalt, hyaloclastite, andesite, chert, shale, siltstone
- Dolerite Group, Early Paleozoic (yβ, β PZ<sub>1</sub>st). Metabasalt, spilite, gabbro–dolerite, dolerite
- Ultrabasite–Gabbro Group, Early Paleozoic (Σ, γ PZ<sub>1</sub> st). Serpentinite, peridotite, gabbro, norite, troctolite

### SINIAN – ORDOVICIAN STRUCTURAL COMPLEX

- Chultag Formation, Cambrian–Ordovician (ε –Očl). Dolomitic and algal limestone, dolomite, clayey shale, chert
- Karamoinak Formation, Vendian (Vkr). Sandstone, siltstone, dolomitic limestone, claystone
- Airansu Formation, Late Riphean–Vendian (R<sub>3</sub>- Var). Basalt, clastic lava, rhyodacite and its tuff, chert, jasper and limestone

### PRE–SINIAN STRUCTURAL COMPLEX

- Choloktor Formation, Early Proterozoic (gPR<sub>1</sub>čk). Crystalline schist, gneiss, marble

### – MIDDLE TIEN SHAN GEOLOGICAL PROVINCE –

### LATE ORDOVICIAN STRUCTURAL COMPLEX

- Tez Formation, Late Ordovician (O<sub>3</sub> tz). Conglomerates, gritstones, sandstones, siltstones, limestones

### SYNIY – MIDDLE ORDOVICIAN STRUCTURAL COMPLEX

- Eastsaryjaz Formation, Early–Middle Ordovician (O<sub>1-2</sub> es). Grading sandstone, siltstone, shale
- Oljobai Formation, Early Ordovician (O<sub>1</sub> ol). Chert, shale, siltstone, limestone lenses
- Shortor Group, Cambrian– Early Ordovician (ε–O<sub>1</sub>šr). Siltstone, shale, carbonaceous–graphitic–siliceous shale, phtanites chert, limestone, marl
- Jakbolot Formation, Vendian (V jb). Shale, tillite–lake conglomerate, sandstone, siltstone, limestone
- Jetymtau Formation, Vendian (V jt). Diamictite, gritstone, sandstone, siltstone
- Kichitaldysu Formation, Late Riphean–Vendian (R<sub>3</sub> kt). Arkos siltstone, gritstone, diamictite conglomerate, trachybasalt, tuff

### PRE–SINIAN STRUCTURAL COMPLEX

- Saryjaz Formation, phase 2, Late Riphean (y<sub>2</sub>R<sub>3s</sub>). Granite, aplite
- Saryjaz Formation, phase 1, Late Riphean (yš<sub>1</sub>R<sub>3s</sub>). Granodiorite, granite
- Kuilyu Formation, Archaean– Early Proterozoic (aAR–PR<sub>1</sub>kl). Amphibolite, schist, gneiss, migmatite, marble, quartzite

### – NORTH TIEN SHAN GEOLOGICAL PROVINCE –

### LATE ORDOVICIAN–SILURIAN STRUCTURAL COMPLEX

- Aktash Formation, 3 phase, Later Ordovician–Early Silurian (y<sub>3</sub>O<sub>3</sub>–S<sub>1a</sub>). Granite
- Aktash Formation, 2 phase Later Ordovician–Early Silurian (yš<sub>2</sub>O<sub>3</sub>–S<sub>1a</sub>). Quartz diorite, quartz monzonite, granodiorite
- Aktash Formation, 1 phase, Later Ordovician–Early Silurian (μš<sub>1</sub>O<sub>3</sub>–S<sub>1a</sub>). Monzogabbro, monzodiorite, monzonite
- Suusamyr Formation, 2 phase, Later Ordovician – Early Silurian (y<sub>2</sub> O<sub>3</sub>–S<sub>1s</sub>). Granite
- Suusamyr Formation, 1 phase, Later Ordovician – Early Siluria (šy<sub>1</sub> O<sub>3</sub>–S<sub>1s</sub>). Granodiorite, granite

### CAMBRIAN – MIDDLE ORDOVICIAN STRUCTURAL COMPLEX

- Almalysai Formation, 2 phase, Middle Ordovician (šy<sub>2</sub>O<sub>2a</sub>). Granodiorite, granite
- Almalysai Formation, 1 phase, Middle Ordovician (qš<sub>1</sub>O<sub>2a</sub>). Diorite, quartz–diorite
- Sulusai Formation, Early–Middle Ordovician (O<sub>1-2</sub> sl). Grading sandstone, siltstone, shale, carbonaceous limestone
- Ashutor Formation, Early–Middle Ordovician (O<sub>1-2</sub> aš ). Grading sandstone, siltstone, limestone
- Kokchukur Formation, Early Ordovician (O<sub>1</sub> kk). Sandstone, quartzit, siltstone, motley shale
- Tashtambektor Formation, Late Cambrian– Early Ordovician (ε<sub>3</sub>–O<sub>1</sub> tš). Basalt and andesite tuffs, tuffite, jasper
- Bayankol Formation, Late Cambrian– Early Ordovician (ε<sub>3</sub> bn). Marbling limestone, calcarenite, carbonaceous shale, siltstone
- Ashuairyk Formation, Late Cambrian ? (ε<sub>3</sub>? aš). Marbling limestone, graphitic shale, siltstone
- Koichi Formation, Middle Cambrian (ε<sub>2</sub> kč). Arkose and quartz sandstone, siltstone, shale
- Turgenaksu Formation, Cambrian – Early Ordovician (ε–O<sub>1</sub> tr). Basalt, andesite, lava breccia and tuffs
- Jolkolot Formation, Middle Cambrian ? (ε<sub>2</sub>? dk). Arkose sandstone, siltstone, shale, conglomerate
- Central Turuk Formation, Early Cambrian – Lower Ordovician (qš<sub>1</sub>ε<sub>1</sub>ct). Quartz–diorite
- Accretion complex, Vendian ? – Early Cambrian (acV?-ε<sub>1</sub>). Tectonic units of basalt, ophiolite, tuffs, limestone

### PRE–CAMBRIAN STRUCTURAL COMPLEX

- Chonashu Formation, Late Riphean ? (a, gR<sub>3</sub>?čn). Amphibolite, gneiss, schiste and metasomatic syenite
- Sarytor Formation, Middle Riphean ? (gR<sub>2</sub>sr). Marble, schiste, granite–gneiss, gneiss