

Geologic Map of Wrangell-St. Elias National Park and Preserve

Alaska

National Park Service
U.S. Department of the Interior

Geologic Resources Inventory
Natural Resource Stewardship and Science



Legend

- Geologic Contacts**
- Known or Certain
 - Inferred or Approximate
 - Concealed
 - Water or Shoreline
 - Ice or Glacial
 - Limit of Ice Extent/Margin
- Faults**
- Thrust Fault
 - Normal Fault
 - Right-lateral Fault
 - Left-lateral Fault
 - Unknown Fault
- Map Units**
- See inset Terrane Map for the extent of each terrane and the location of major faults

- Dikes**
- Qwcr - Capital Mountain volcano, central andesite plug and dike swarm (Pleistocene)
 - QTwk - Dikes (Pleistocene, Pliocene, Miocene, or Oligocene)
- Water**
- Water
 - Glaciers and permanent icefields (Holocene)

SURFICIAL DEPOSITS

- Quaternary**
- Qa - Alluvium (Holocene)
 - Qal - Older alluvium (Holocene and Pleistocene)
 - Qch - Slope deposits, undifferentiated (Holocene and Pleistocene)
 - Qcl - Slope deposits, bluff colluvium (Holocene)
 - Qds - Slope deposits, landslide deposits (Holocene and Pleistocene)
 - Qgl - Supraglacial deposits (Holocene)
 - Qgr - Rock glacier deposits (Holocene)
 - Qgs - Drift of glacial till (Holocene)
 - Qou - Outwash deposits (Pleistocene)
 - Qo - Drift of older glaciation (Pleistocene)
 - Qcr - Copper River deposits (Pleistocene)
- Other Unconsolidated Deposits**
- Qf - Fine-grained deposits (Holocene)
 - Qm - Mineral spring deposits (Holocene)
 - Qs - Eolian deposits (Holocene)
 - Qb - Beach and delta deposits (Holocene)

WRANGELL VOLCANIC FIELD

- Individual Volcanic Eruptive Centers**
- Qwcr - Mount Wrangell volcano, shield lavas (Holocene and Pleistocene)
 - Qwma - Mount Wrangell volcano, valley-fill lavas (Holocene and Pleistocene)
 - Qwdr - Mount Drum volcano, lava flows (Pleistocene)
 - Qwdr - Mount Drum volcano, domes (Pleistocene)
 - Qwma - Mount Sanford volcano, lava flows (Pleistocene)
 - Qwma - Mount Sanford volcano, rhyolite dome and flow (Pleistocene)
 - Qwcr - Capital Mountain volcano, shield and intracaldera lavas (Pleistocene)
 - Qwcr - Capital Mountain volcano, central andesite plug and dike swarm (Pleistocene)
 - Qwma - Mount Jarvis volcanoes, shield and intracaldera lavas (Pleistocene)
 - Qwma - Mount Jarvis volcanoes, domes (Pleistocene)
 - Qwma - Tanana Peak volcano, shield and intracaldera lavas (Pleistocene and Pliocene)
- Other Volcanic Deposits**
- Qvcr - Volcaniclastic deposits, volcanic debris flows (Pleistocene)
 - Qvcr - Volcaniclastic deposits, pyroclastic flows (Pleistocene)
 - Qvcr - Cinder cones, flows, and tuffs (Pleistocene)
 - Qvcr - Lava flows and sedimentary rocks (Pleistocene, Pliocene, or Miocene)
 - Qvcr - Lava flows and sedimentary rocks, flows of the Ice Field Plateau (Pleistocene, Pliocene, or Miocene)
 - Qvcr - Domes and intrusive rocks (Pleistocene, Pliocene, or Miocene)
 - Qvcr - Shallow plutons, small stocks, dikes, and sills (Tertiary)
 - Qvcr - Granodiorite (Tertiary)
 - Qvcr - Lava flows and lahars (Miocene or Oligocene)
 - Qvcr - Rhyolite flow (Miocene or Oligocene)
 - Qvcr - Domes (Miocene or Oligocene)

WINDY TERRANE

- Sedimentary Rocks**
- Wm - Conglomerate and sandstone (Early Cretaceous?) and Late Jurassic(?) or older)
 - Wp - Snag pluton (Tertiary)
 - Wu - Undifferentiated plutonic rocks (Cretaceous?)
- Intrusive Rocks**
- Wp - Snag pluton (Tertiary)
 - Wu - Undifferentiated plutonic rocks (Cretaceous?)
- Metamorphic Rocks**
- Wm - Metamorphic complex of Cottonwood Creek of Richter (1976) (Tertiary)
 - Wp - Metamorphic rocks of the Carbon Hills, metamorphic rocks (Permian?, Pennsylvanian, Mississippian, and Devonian?)
 - Wu - Metamorphic rocks of the Carbon Hills, metamorphic rocks (Permian?, Pennsylvanian, Mississippian, and Devonian?)
 - Wd - Limestone (Devonian)
 - Wp - Metasedimentary rocks (Devonian)
 - Wu - Gneiss (Devonian)
 - Wd - Diorite-gabbro (Devonian)
- Ultramafic and Associated Rocks**
- Wm - Alpine-type ultramafic rocks and gabbro (Cretaceous?), Jurassic?, Triassic, Permian, and Pennsylvanian?)
- GRAVINA-NUTZOTIN BELT**
- Sedimentary and Volcanic Rocks**
- Gn - Normarine sedimentary rocks (Late Cretaceous)
 - Gc - Chisana Formation (Early Cretaceous)
 - Gp - Nutzotin Mountains sequence of Berg and others (1972) (Early Cretaceous and Late Jurassic)
- Intrusive Rocks**
- Gp - Mid-Cretaceous plutons (Cretaceous)

This map displays geologic map data compiled by the National Park Service Geologic Resources Inventory. It is not a substitute for site-specific investigations. All GRI products, including the Wrangell-St. Elias National Park and Preserve report, GIS data, and scoping summary, are available at <https://go.nps.gov/gripubs>.

Source Maps:
Richter, D.H., C.C. Peller, K.A. Labay, and N.B. Shew. 2006. Geologic Map of the Wrangell-St. Elias National Park and Preserve, Alaska: U.S. Geological Survey, Scientific Investigations, SIM-2877, scale 1:350,000.
Wilson, F.H., C.P. Hults, C.G. Mull, and S.M. Karl. 2015. Geologic Map of Alaska: U.S. Geological Survey, Scientific Investigations Map, SIM-3340, scale 1:1,584,000.

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WRANGELLIA COMPOSITE TERRANE

PENINSULAR TERRANE (West of Copper River)

Sedimentary, Volcanic, and Ultramafic Rocks

- Wp - Mafic and ultramafic rocks (Middle or Early Jurassic)
- Wp - Talkeetna Formation (Early Jurassic and Late Triassic?)

WRANGELLIA TERRANE (Eastern Alaska Range and Northern Wrangell Mountains)

Metamorphic Rocks

- Intrusive Rocks**
- Wp - Diorite complex, metamorphic part (Permian?) and Pennsylvanian)
 - Wp - Diorite complex, plutonic part (Permian?) and Pennsylvanian)
 - Wp - Ahtai pluton (Pennsylvanian)
- Sedimentary and Volcanic Rocks**
- Wp - Triassic limestone (Late Triassic)
 - Wp - Nikolai Greenstone (Late and/or Middle Triassic)
 - Wp - Markon Group, Eagle Creek Formation (early Permian)
 - Wp - Markon Group, Eagle Creek Formation, limestone (early Permian)
 - Wp - Markon Group, Sana Spur Formation (early Permian and Pennsylvanian)
 - Wp - Tetehe Volcanics (early Permian and Pennsylvanian)

WRANGELLIA TERRANE (Southern Wrangell Mountains and Saint Elias Mountains)

Sedimentary and Volcanic Rocks

- Wp - Marine sedimentary rocks (Early and Late Cretaceous)
- Wp - Shallow marine sedimentary rocks (Early Cretaceous)
- Wp - Sedimentary rocks (Late, Middle, or Early Jurassic)
- Wp - Kotsina Conglomerate (Middle or Late Jurassic?)
- Wp - McCarthy Formation (Early Jurassic and Late Triassic)
- Wp - Christone and Nizna Limestones (Late Triassic)
- Wp - Nikolai Greenstone (Late and/or Middle Triassic)*double entry
- Wp - Skolai Group, undivided (early Permian and Pennsylvanian)
- Wp - Skolai Group, Hasen Creek Formation (early Permian)
- Wp - Skolai Group, Hasen Creek Formation, limestone (early Permian)
- Wp - Skolai Group, Station Creek Formation (early Permian and Pennsylvanian)

Intrusive Rocks

- Wp - Chitina Valley batholith (Late Jurassic)
- Wp - Monzonite-granite complex (Pennsylvanian)
- Wp - Gabbro and orthogneiss (Pennsylvanian)

Metamorphic Rocks

- Wp - Strelina Metamorphics of Pfaffner and others (1989), marble (Permian and Early Pennsylvanian)
- Wp - Strelina Metamorphics of Pfaffner and others (1989) (Jurassic?)
- Wp - Markon Group, undivided (early Permian)
- Wp - Markon Group, undivided (early Permian)

ALEXANDER(?) TERRANE (Saint Elias Mountains)

Metamorphic Rocks

- Wp - Kaskawaksh Group of Kindle (1953) (Pennsylvanian, Mississippian, Devonian?, and older)

SOUTHERN MARGIN COMPOSITE TERRANE

CHUGACH TERRANE

Sedimentary, Volcanic, and Metamorphic rocks

- Wp - Valdez Group, greenschist-facies flysch (Late Cretaceous)
- Wp - Valdez Group, greenschist-facies flysch, metamorphosed basalt and tuff (Late Cretaceous)
- Wp - Valdez Group, amphibolite-facies flysch (Late Cretaceous)
- Wp - Valdez Group, gneiss and schist (Late Cretaceous)
- Wp - Melange units (mid-Cretaceous, Jurassic, and Late Triassic?)
- Wp - Schist of Liberty Creek of Winkler and others (1981) (Jurassic?)
- Wp - Valdez Group, ultramafic rocks (Late Cretaceous)

Intrusive Rocks

- Wp - Granitic plutons (Eocene)

PRINCE WILLIAM TERRANE

Sedimentary and Volcanic Rocks

- Wp - Orca Group, turbidites (early Eocene and late Paleocene)
- Wp - Orca Group, basalt (early Eocene and late Paleocene)
- Wp - Orca Group, melange (Tertiary or Cretaceous)

Intrusive Rocks

- Wp - Granitic plutons (Eocene)
- Wp - Granite and tonalite (Eocene)
- Wp - Mafic and ultramafic plutonic rock (Eocene and Paleocene?)

YAKUTAT TERRANE

Sedimentary, Volcanic, and Metamorphic Rocks

- Wp - Yakutat Formation (Holocene?), Pleistocene, Pliocene, and Miocene)
- Wp - Volcanic and hyaloclastite rocks (Miocene and Oligocene)
- Wp - Pool Creek Formation (early Miocene?), Oligocene, and late Eocene?)
- Wp - Tokun Formation (Eocene)
- Wp - Kultheth Formation (Eocene and early Paleocene?)
- Wp - Schist of Nantahel Spur (Cretaceous)
- Wp - Yakutat Group, flysch (Cretaceous and Jurassic?)
- Wp - Yakutat Group, melange (Cretaceous and Jurassic?)

Intrusive Rocks

- Wp - Rhyolite porphyry and granite (Pliocene?) or Miocene?)
- Wp - Metamorphic rocks of the Brabazon Range (Cretaceous?)

