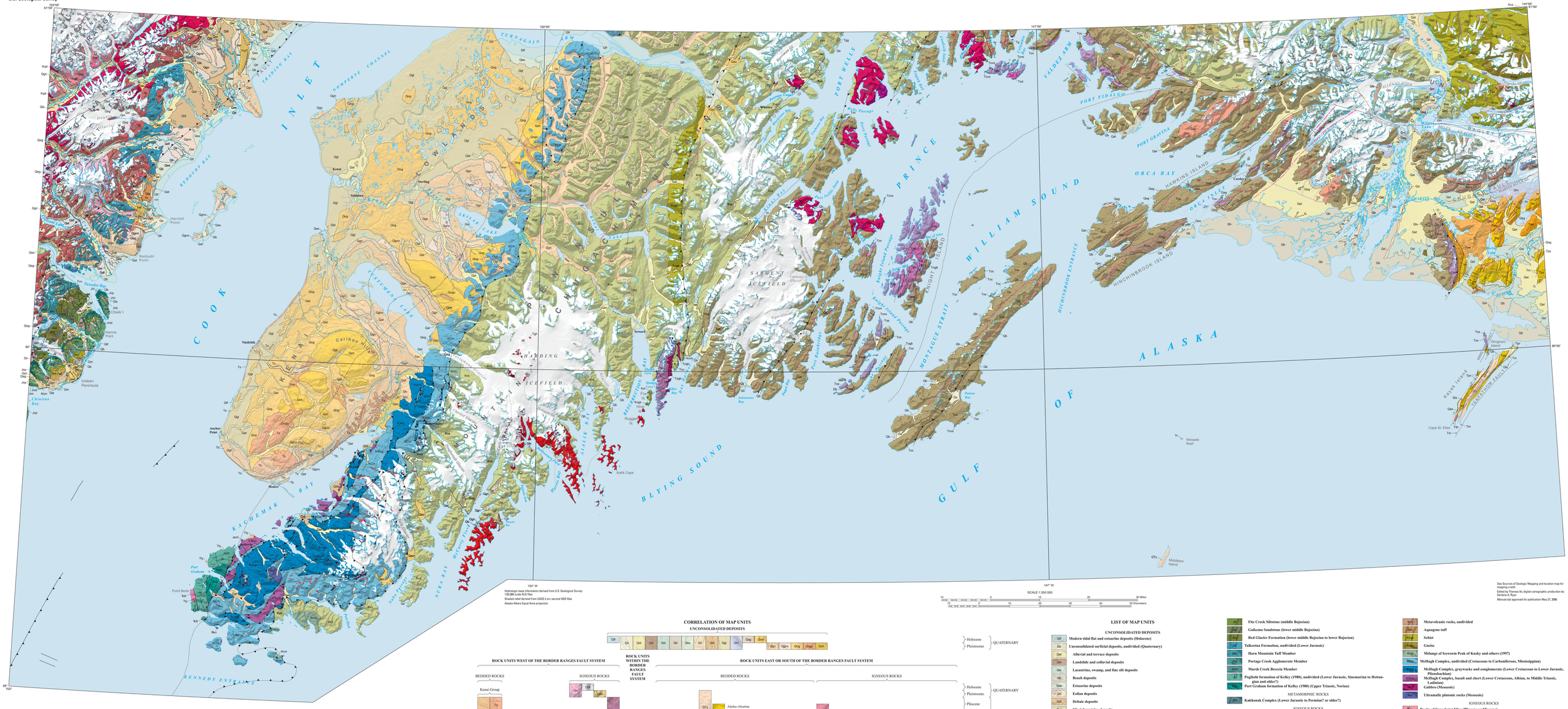
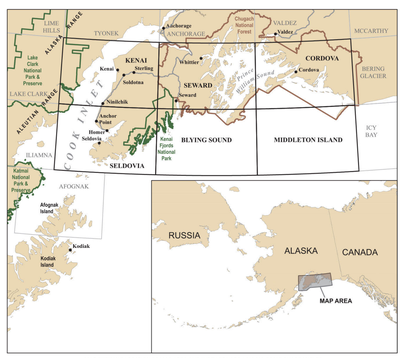
U.S. Department of the Interior
U.S. Geological Survey

Scientific Investigations Map 3110
Pamphlet accompanies map





MAP SHOWING LOCATION OF MAP AREA AND INDEX OF USGS 1:250,000-SCALE QUADRANGLES, GEOGRAPHIC FEATURES, TOWNS, AND SELECT POLITICAL BOUNDARIES.

SOURCES OF GEOLOGIC MAPPING

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Winkler and Plafker, 1993

LIST OF MAP UNITS

UNCONSOLIDATED DEPOSITS

- Qff — Modern tidal flat and estuarine deposits (Holocene)
- Qu — Unconsolidated surficial deposits, undivided (Quaternary)
- Qal — Alluvial and terrace deposits
- Qls — Landslide and colluvial deposits
- Qsl — Lacustrine, swamp, and fine silt deposits
- Qb — Beach deposits
- Qea — Estuarine deposits
- Qd — Eolian deposits
- Qdf — Debris deposits
- Qgl — Glaciolacustrine deposits
- Qgd — Glacial deposits, undivided
- Qeg — Drift of Neoglacial age (Holocene)
- Qao — Outwash of the Neoglacial age (Holocene)
- Qgn — Glacial deposits of the Naptowne and Brooks Lake Glaciations (Pleistocene)
- Qgno — Outwash and valley train deposits (Pleistocene)
- Qog — Older glacial deposits (Pleistocene)
- Qiogo — Outwash associated with older glacial deposits (Pleistocene)
- Qoh — Moraine of the Cariboo Hills Glaciation (Pleistocene)

ROCK UNITS WEST OF THE BORDER RANGES FAULT SYSTEM

BEDDED ROCKS

- Tkn — Kenai Group, undivided (Pliocene to Oligocene)
- Ts — Sterling Formation (Pliocene and Miocene)
- Tb — Beluga Formation (Miocene)
- Ttyu — Tyonek Formation (Miocene and Oligocene)
- Th — Hemlock Conglomerate (Oligocene)
- Tsf — West Foreland Formation (Eocene and Paleocene)
- Ksm — Saddle Mountain section of Magoon and others (1980) (Upper Cretaceous, Maastrichtian)

Naknek Formation (Upper Jurassic; Tithonian to Oxfordian)
- Jnp — Pomeroy Arkose Member (Kimmeridgian and Oxfordian?)
- Jsh — Snug Harbor Siltstone Member (Kimmeridgian and Oxfordian)
- Jn — Northeast Creek Sandstone Member (Oxfordian)
- Jch — Chinik Conglomerate Member

Chinitna Formation (Middle Jurassic, Callovian)
- Jpv — Pavlroff Siltstone Member
- Jto — Tonsie Siltstone Member

Tuxedni Group (Middle Jurassic, Bathonian to Aalenian)
- Jtwy — Bowser Formation (Bathonian)
- Jtt — Twist Creek Siltstone (Bajocian)
- Jtc — Cynthia Falls Sandstone (Bajocian?)
- Jtf — Fitz Creek Siltstone (middle Bajocian)
- Jtg — Gaikema Sandstone (lower middle Bajocian)
- Jtr — Red Glacier Formation (lower middle Bajocian to lower Bajocian)

Talkeetna Formation, undivided (Lower Jurassic)
- Jth — Horn Mountain Tuff Member
- Jtp — Portage Creek Agglomerate Member
- Jtm — Marsh Creek Breccia Member

Pogibshi formation of Kelley (1980), undivided (Lower Jurassic, Sinemurian to Hettangian and older?)
- TRpt — Port Graham formation of Kelley (1980) (Upper Triassic, Norian)

METAMORPHIC ROCKS
- Ꝑzk — Kakhonak Complex (Lower Jurassic to Permian? or older?)

IGNEOUS ROCKS
- Qv — Volcanic rocks, undivided (Quaternary)
- Qvd — Debris-flow deposits (Holocene)
- Qvad — Andesite and dacite domes (Pleistocene)
- Qvl — Lava flows (middle? to late? Tertiary)
- TKgd — Granodiorite (Tertiary and (or) Cretaceous)
- Ꝑgd — Quartz diorite (Cretaceous)
- Ꝑqg — Quartz monzodiorite (Cretaceous? and (or) Jurassic?)
- Ꝑab — Alaska-Aleutian Range batholith (Jurassic phase)
- TRtd — Trondhjemite (Late Jurassic)
- TRqd — Quartz diorite, tonalite, and diorite (Jurassic)
- TRtt — Quartz diorite and tonalite (Late Triassic)

ROCK UNITS WITHIN THE BORDER RANGES FAULT SYSTEM

METAMORPHIC ROCKS
- JSZm — Seldovia metamorphic complex (Early Jurassic)

ROCK UNITS EAST OR SOUTH OF THE BORDER RANGES FAULT SYSTEM

BEDDED ROCKS
- Ttu — Yakataga Formation (Pleistocene to Miocene)
- Tyg — Redwood Formation (Pliocene to Oligocene?)
- Tpg — Poul Creek Formation (lower Miocene to late Eocene)
  - Tpgs — Sedimentary rocks
  - Tpgv — Volcanic rocks
- Tkn — Tokun Formation (Eocene)
- Tkl — Kulthieth Formation (Eocene)
- Tsw — Stillwater Formation (Eocene)

Orca Group (lower middle Eocene to late Paleocene)
- Tco — Sedimentary rocks, undivided
- Tcc — Conglomerate

Valdez Group (Upper Cretaceous)
- Kvs — Metasedimentary rocks, undivided
- Kvi — Interbedded metavolcanic and metasedimentary rocks
- Kvv — Metavolcanic rocks, undivided
- Kvt — Aquagene tuff
- Kvs — Schist
- Kvg — Gneiss
- Kvm — Mélange of Iceworm Peak of Kasky and others (1997)
- KMm — McHugh Complex, undivided (Cretaceous to Carboniferous, Mississippian)
- KMmg — McHugh Complex, graywacke and conglomerate (Lower Cretaceous to Lower Jurassic, Pliensbachian)
- KJmb — McHugh Complex, basalt and chert (Lower Cretaceous, Albian, to Middle Triassic, Ladinian)
- Jmz — Gabbro (Mesozoic)
- Jmu — Ultramafic plutonic rocks (Mesozoic)

IGNEOUS ROCKS
- Ꝑdc — Dacite of Cape Saint Elias (Pliocene or Miocene)
- Ꝑmf — Mafic plugs (Oligocene?)
- Ꝑg — Granitic rocks (Oligocene? and latest Eocene)
- Ꝑgb — Gabbro and diorite (Oligocene and older)
- Tgg — Granite and granodiorite (Eocene)
- Tgh — Granitic rocks of Harding Icefield region (Eocene and Paleocene)

Ophiolitic rocks of Prince William Sound
- Tpv — Volcanic rocks, undivided (Eocene)
  - Tpvp — Pillow basalt
  - Tpvs — Volcanic and sedimentary rocks
- Tpd — Sheeted basalt dikes
- Tpg — Gabbro
- Tpu — Ultramafic rocks
- Tpm — Mafic and ultramafic plutonic rocks (Eocene and Paleocene?)
- TKd — Dikes (early Tertiary to Early Cretaceous)

EXPLANATION OF MAP SYMBOLS

- Contact—Dashed where approximate and inferred, dotted where concealed
- Fault—Dashed where approximate and inferred, dotted where concealed
- Thrust fault—Dashed where approximate and inferred, dotted where concealed; teeth on upper plate
- Moraine Extent
- Shoreline or riverbank
- Ice contact
- Lineament
- Fissure
- Major roads
- Glaciers

Johnson Bay on Knight Island. The mountains in the background are the gabbro and sheeted dikes that make up the base of the ophiolite of Prince William Sound. The hills in the foreground are pillow basalt and minor interbedded turbidites that represent the top of the ophiolite. (*photograph by Chad Hults*)

Turbiditic rocks of the Valdez Group. (*photograph by Marit Miller*)

GEOLOGY OF THE PRINCE WILLIAM SOUND AND KENAI PENINSULA REGION, ALASKA

Compiled by
Frederic H. Wilson and Chad P. Hults

2012

Pillow basalt of the Ophiolitic rocks of Prince William Sound along the western shores of Knight Island. (*photograph by Chad Hults*)

Contorted chert beds of the McHugh Complex mélange on Yukon Island in Kachemak Bay. (*photograph by Chad Hults*)

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