GEOLOGICAL MAP OF SASKATCHEWAN

2021 Edition Map Legend **General Information** This map represents our current state of knowledge and is based on its precursor compiled by **Phanerozoic Sedimentary Rocks Unmetamorphosed Proterozoic Rocks²** Macdonald and Slimmon (1999). It is a geological bedrock and subcrop map; therefore, the legend of the unmetamorphosed sedimentary basins does not reflect the entire stratigraphic record of southern Saskatchewan (Saskatchewan Ministry of the Economy, 2014) or the Undifferentiated diamictite (Paleogene to Neogene): Poorly sorted, containing matrix-supported rounded to very angular clasts (pebbles to Diabase dykes and sills: Includes Mackenzie Dyke Swarm (1270 Ma), Douglas Athabasca Basin region (Bosman and Ramaekers, 2015). The 1:1 000 000 scale topographic map cobbles); clasts of Mannville Group, Winnipegosis Formation, Athabasca Supergroup and crystalline basement; matrix contains carbonate; River Suite (1165 Ma), Moore Lakes Suite (1108 Ma) base uses CanVec files, an acronym for Canadian Vector, which are a digital cartographic reference product produced by Natural Resources Canada. Map projection is UTM NAD83 **Ectasian to Stenian** CSRS98 (Canadian Spatial Reference System 1998) in Extended Zone 13. The map was 7u Undifferentiated Paleogene and Neogene: Quartzite and chert gravel, locally conglomeratic; sand and clayey silt Athabasca Supergroup (1840 to 1500 Ma) processed overall using ArcMap 10.x software. McFarlane Group Wood Mountain Formation (Miocene): Terrestrial conglomerate and sandstone; abundant mammalian and other vertebrate fauna; silicified The lithological codes (e.g. PTAbd) are constructed using the following format: the first letter wood common; <20 m MAFc Carswell Formation: Siliciclastic rocks and stromatolitic carbonate (capitalized, bold, italicized) denotes the geological era or period; the second and, in some Cypress Hills Formation (Eocene to Miocene): Fluviatile conglomerate, mainly quartzite; interchannel lacustrine marlstone with minor cases, third letters denote a major geological subdivision (e.g. 'A' – Athabasca Supergroup, volcanic ash beds toward the east; abundant mammalian and other vertebrate fauna; <80 m; fossiliferous fine-grained sandstone with local MAFd Douglas Formation: Mudstone, fine- to very fine-grained arenite [1767 Ma]; deposition ongoing at |1541 Ma| 'R' – Rae craton, 'T' – Trans-Hudson Igneous Supersuite, 'm' – Mannville Group, 'W' – Wollaston conglomerate of the Swift Current Creek Beds; <20 m Supergroup, etc.). For most crystalline Precambrian rocks, the last one to two lower case letters denote rock type (e.g. 'o' – conglomeratic rocks, 'sn' – pelitic rocks, 'vm' – mafic volcanic Ravenscrag Formation (Paleocene): Fluviatile-lacustrine buff, grey, and white sandy claystone, locally cemented, green-grey to buff MAFod Otherside Formation feldspathic sandstone, siltstone and shale; minor coal; includes kaolinite beds of the Willow Bunch Member; <245 m rocks, etc.), but the last letters in the Athabasca Supergroup and Phanerozoic sedimentary Davy Member: Pebbly quartz arenite and quartz arenite rock codes indicate Group, Formation, Member or rock type. A full explanation of codes is given in the accompanying Summary of Investigations publication. Otherside Formation Birkbeck Member: Quartz arenite Undifferentiated Eastend, Whitemud, Battle, and Frenchman formations (Maastrichtian): Nonmarine to estuarine with marine pelecypod Information from this publication may be used if credit is given. It is recommended that Kfe beds near base, yellow-brown fine-grained silty and clayey volcanic lithic sandstone with interbedded grey to greenish shale (Eastend Fm); Otherside Formation reference to this publication be made in the following form: Maxeiner, R., Ashton, K.E., mainly fluviatile, kaolinitic mudstone and sandstone, grey-purple mudstone and carbonaceous shale, thin lignite beds; dark brown to Archibald Member: Pebbly quartz arenite, quartz arenite Bosman, S., Card, C., Kohlruss, D., Love, M., Love, T., Marsh, A., Morelli, R. and Slimmon, W.L. purplish black bentonitic silty shale, mauve-grey weathering; fluviatile-lacustrine grey-green sandstone, nonmarine red and green shale and (2021): Geological map of Saskatchewan, 1:1 000 000 scale; Saskatchewan Geological mudstone, locally dolomitic or calcareous, kaolinitic and carbonaceous with thin lignite beds, dinosaur fauna, including Triceratops and MAFIm Locker Lake Formation Marsin Member: Pebbly quartz arenite Survey, Saskatchewan Energy and Resources. Tyrannosaurus rex, amphibians and fish (Frenchman Fm); <130 m Bearpaw Formation (Campanian to Maastrichtian): Marine grey claystone, shale, and siltstone; minor brownish grey sandstone; concretionary MAFIb Locker Lake Formation Brudell Member: Conglomeratic quartz arenite Credits: Revisions since 1999 are based on detailed mapping and geochronology beds and thin bentonite layers; commonly with foraminifera and molluscs; <400 m completed by the co-authors of this map and other authors. Detailed references for this work are not given, but include work in the Rae Province (K. Ashton, C. Card), the Hearne Belly River Formation (Campanian): Fluviatile to minor marine light grey-buff sandstone, siltstone, and mudstone with sharp lateral variations; MAFIs Locker Lake Formation Snare Member: Pebbly quartz arenite Province (C. Card, R. Maxeiner, C. Harper), work completed throughout the Reindeer Zone local coal and bentonite; mollusc coquinas; <200 m (K. Ashton, R. Maxeiner, R. Morelli), and the Athabasca Supergroup based on drillcore interpretation from drilling by the mineral exploration industry in the Athabasca Basin Lea Park Formation (Campanian): Marine grey shale, minor siltstone, fine-grained sandstone, and bentonite beds; abundant foraminifera and Wolverine Point Group [1662 Ma] region (S. Bosman). Revisions for the Phanerozoic are a result of government compilations and targeted field work (A. Marsh, D. Kohlruss, S. Bosman), which enabled **P**AWq Quartz arenite ± mudstone ± phosphatic hardgrounds (1644 Ma) a more detailed breakdown of the subglacial distribution of Phanerozoic strata. Kmr Milk River Formation (Santonian to Campanian): Marine greenish grey bentonitic siltstone and shale; <265 m Lazenby Lake Group Science Editors: Berenyi, J., Delaney, G., Morelli, R., Yurkowski, M. Upper Colorado Group - First White Speckled Shale, Carlile Formation, Second White Specks Formation (Cenomanian to Santonian): Marine **P**ALI Larter Formation: Quartz arenite ± pebbly, mudstone Production Editor: Brown, H. calcareous shale, claystone, and mudstone locally with coccolith debris; siltstone, shale, mudstone, bentonite beds and chalk; <275 m This map is accompanied by the following report: Maxeiner, R.O., Ashton, K.E., Bosman, S., Lower Colorado Group - Belle Fourche Formation, Fish Scales Formation, Westgate Formation, Viking Formation, Joli Fou Formation (Albian PALs Shiels Formation: Quartz arenite with pebbly layers Card, C., Kohlruss, D., Marsh, A., Morelli, R. and Slimmon, W.L. (2021): Notes to accompany to Cenomanian): Marine siltstone, mudstone, shale, sandstone, conglomerate, minor coeval kimberlite in the Fort à la Corne area; <270 m the new 2021 edition of the 1:1 000 000-scale geological map of Saskatchewan; in Manitou Falls Group [1814 Ma] Summary of Investigations 2021, Volume 1, Saskatchewan Geological Survey, Mannville Group (Aptian to Albian): Fluviatile to marine quartzose sandstone, mudstone and siltstone; clay-intraclast-rich quartz arenite Saskatchewan Ministry of the Energy and Resources, Miscellaneous Report 2021-4.1, Km > siltstone and mudstone; quartz arenite, minor pebbly quartz arenite, minor clay intraclasts; minor coeval kimberlite in the Fort à la Corne **PAMd** Clampitt-Dunlop formations: Clay-intraclast-rich quartz arenite ± mudstone Success Formation (Kimmeridgian to Berriasian): Fluviatile white to light grey-green kaolinitic quartzose sandstone and mudstone with **P**AMh Hodge Formation: Pebbly quartz arenite ± conglomerate The geological data that was used to create this map (including the 1:1 000 000 scale subordinate feldspar, sphaerosiderite, chert, marcasite, and carbonaceous fragments; cobble and silt end-members, trough cross-bedding geology, fault and Precambrian basement elevation contour layers) are also available and truncated cross-sets; glauconitic with upward-coarsening sets; <90 m for viewing or download on the Saskatchewan Mining and Petroleum GeoAtlas: **P**AMw Warnes Formation: Clay-intraclast-rich quartz arenite (https://gisappl.saskatchewan.ca/GeoAtlas) Winnipegosis Formation (Eiffelian to Givetian): Marine platform carbonate, basinal reefs with bituminous inter-reef laminites; <120 m Although the Ministry of Energy and Resources has exercised all reasonable care in **P**AMb Bird and Collins formations: Conglomeratic quartz arenite, ± pebbly quartz arenite the compilation, interpretation and production of this map, it is not possible to ensure total accuracy, and all persons who rely on the information contained herein do so at Da Ashern Formation (Eiffelian): Marine reddish brown to greenish grey argillaceous dolostone and dolomitic shale; local anhydrite; <35 m **PAMr** Read Formation: Conglomerate to mudstone, quartz arenite their own risk. The Ministry of Energy and Resources and the Government of Saskatchewan accept no liability for any errors, omissions or inaccuracies that may be Meadow Lake Formation (Emsian to Eiffelian): Marine grey to buff and greyish pink to reddish brown argillaceous dolostone with interbeds included in, or derived from, this map. Reilly Formation (outlier located 90 km southeast of Athabasca Basin): of mudstone, limestone, sandstone, and local evaporites; restricted to northwest of the Meadow Lake Escarpment; <280 m Conglomeratic quartz arenite Fair Point Group [1810 Ma] Interlake Formation (Rhuddanian to Homerian): Marine dolostone with thin argillaceous and arenaceous marker beds in lower part; < 220 m PAFq Conglomeratic and pebbly quartz arenite Bracket conventions for age constraints; ages are given in million Stonewall Formation (Richmondian to Rhuddanian): Marine dolostone with thin argillaceous and arenaceous marker beds; minor anhydrite Mafic flows; intraformational to Martin Group sedimentary rocks beds in southeastern Saskatchewan; <50 m (1920 Ma) - Crystallization age of igneous rock; Conglomerate, sandstone, arkose, siltstone [1905 Ma] conformable relationship) or minimum and thin anhydrite at top in southeastern Saskatchewan; <50 m crosscutting) age of sedimentary sequence Statherian Intrusive Rocks Orr Red River Formation (Edenian to Richmondian): Marine interbedded dolomitized mudstone and wackestone; dolomudstone; <170 m 1920 Ma] - Youngest detrital zircon age; used to Jan Lake Intrusive Suite: Leucogranite, aplogranite, granite, constrain maximum depositional age of a pegmatite (1774 to 1730 Ma) Deadwood Formation (Upper Cambrian to Lower Ordovician): Marine interbedded fine-grained quartzose sandstone, siltstone, and shale, usually tints of green and red, commonly glauconitic in upper portion; medial silty limestone in southwest; basal medium- to {1920 Ma} - Minimum age based on other coarse-grained sandstone; Cambro-Ordovician boundary near top in southeast; <510 m evidence (e.g. metamorphic overprint) The Phanerozoic portion of this map largely represents a subcrop map and therefore does not reflect the entire stratigraphic record of southern Saskatchewan; this also means that The Athabasca Basin portion of this map is a geological bedrock and subcrop map and therefore does not reflect |1920| - Absolute age of deposition of none of the unconformities are indicated in the legend; this additional information can be found in Saskatchewan Ministry of the Economy (2014). Estimated maximum formation the entire stratigraphic record of the Athabasca Basin region; this also means that none of the unconformities are sedimentary rock indicated in the legend; this additional information can be found in Bosman and Ramaekers (2015). **Metamorphosed Rocks of the Reindeer Zone Metamorphosed Rocks of the Western Churchill Structural Province** Trans-Hudson Igneous Supersuite in Reindeer Zone and Missi Supracrustal Suite (1848 Ma) to (1831 Ma) Granite, megacrystic granite; syenogranite (1850-1750 Ma); includes minor includes Mullock Lake Assemblage and historic McLennan, Archean rocks and unmetamorphosed Hudson and Nueltin suites Sickle, and Ourom groups) Volcanic and plutonic rocks related to the Trans-Hudson Orogen, Arkose, conglomerate, psammite and derived migmatite; spanning the rifting to post-orogenic phases (2086 to 1730 Ma) magnetic; felsic-intermediate arc volcanic and subvolcanic rocks Hurwitz Group (possibly correlative with 1960 to 1900 Ma PTe Enderbite, charno-enderbite sills (1830 Ma) Upper Hurwitz Group in Nunavut) **PCMc** Calcic arkose, psammite, psammopelite **PHUc** Marble, calcic pelite, calc-silicate rock Anatectic Leucogranitoid Suite (1835 to 1800 Ma) Thluicho Lake Group [1922 Ma] to {1889 Ma}: Conglomerate, PTIg Leucotonalite to leucogranodiorite (1816 to 1800 Ma); minor (1832 Ma) components sandstone, siltstone **PCMo** Polymictic conglomerate, arkose, wacke paleo-unconformity between **P**RTs and units **A**Rg, **U**Rgq, **U**Rgd **PHUsn** Pelite; derived schist and migmatite Burntwood Supracrustal Suite PTgl Leucogranite to leucotonalite (1837 to 1814 Ma) paleo-unconformity between unit **P**RTs and units **A**Rg, **U**Rgq, **U**Rgd Wathaman Intrusive Suite (1865 to 1850 Ma) Burntwood Supracrustal Suite (1867 Ma) to (1841 Ma) rusive rocks related to Arrowsmith and Taltson orogenies Wollaston Supergroup and similar-aged supracrustal rocks includes 1867 to 1850 Ma Wunehikun Bay, Hebden Lake, Crew Lake Wg Megacrystic granite and quartz monzonite Anatectic monzogranite to granodiorite; inclusion-rich in Hearne Province (2075 Ma) to (1865 Ma) ssemblages; and historic 1855 to 1841 Ma Burntwood Group) (1930 Ma; includes White Lake and Rogers Lake granites) Arkose, calcareous arkose, psammite, psammopelite; derived gneiss; may include unit **A**Hfn **PCBsd** Diatexitic pelite derived from unit **PCBsn** Leucomonzogranite to leucogranodiorite (1930 Ma; Wbd Megacrystic monzonite, diorite and gabbro probably includes some 2330 Ma rocks) ntrusive contact with Hearne craton, Rottenstone Pelite to psammopelite; derived gneiss (includes Daly Lake Pelite, psammopelite, minor psammite and wacke; generally Migmatite Complex, and older Amisk Lake Igneous Suite Taltson Magmatic Suite: Granite to quartz diorite (1971 to graphitic; derived gneissic pelite and migmatite Conglomerate, arkose, bimodal volcanic rocks (includes Calcic psammopelite, calc-silicate rock, quartzite; minor Amisk Lake Igneous Suite (1905 to 1832 Ma) intrusive contact with **A**Rsn, **A**Rbm, **A**Rg, **U**Rgl, **U**Rgn, **U**Rgqr, **U**Rgq, **P**Rgl Courtenay Lake and Geikie River groups) marble, intermediate volcaniclastic rock, amphibolite, in part Arc to MORB igneous rocks related to the Manikewan Ocean in the (>1897 Ma); derived gneiss and migmatite Reindeer Zone, including rocks that were previously included in Amisk **P**Wc Mixed calc-silicate rock, pelitic gneiss, marble Group, Amisk Collage, 'successor-arc' plutons paleo-unconformity between Burntwood Supracrustal Suite and older components of Amisk Lake Igneous Suite Plutonic Rocks (1897 to 1832 Ma) Quartzite, pelite, calc-silicate rocks, minor pebble conglomerate (includes Daly Lake and Campbell River groups, gd Granite, granodiorite, tonalite and Hidden Bay Assemblage) Amphibolite, mafic volcanic rock, arkose, psammopelite and ottenstone Migmatite Complex calc-silicate rocks (includes rocks related to Hidden Bay Agn Strongly foliated and refolded granitic to quartz dioritic gneiss Psammite, feldspathic quartzite, arkose, conglomerate, quartzite ssemblage and Courtenay Lake Group) and derived migmatite [2059 Ma]; includes Park Island paleo-unconformity between Wollaston Supergroup and Assemblage (<1865 Ma) **P**TAqd Diorite to quartz diorite (minor granodiorite) southern Hearne craton Murmac Bay Group and similar-aged supracrustal rocks in Pelitic to psammopelitic gneiss and derived migmatite [1848 Ma]; Rae Province [2327 Ma] to {1940 Ma} includes Kenyon Lake Assemblage Porter Bay Intrusive Suite (1918 to 1913 Ma) of Trans-Hudson Gabbro to diorite (minor ultramafic intrusions) Undifferentiated sedimentary and minor volcanic rocks gneous Supersuite: Monzodiorite, gabbro; minor supracrustals (includes Waugh Lake, Virgin Schist groups) Undifferentiated granodioritic to gneissic tonalite of Volcanic Rocks (1905 to 1860 Ma) Trans-Hudson Igneous Supersuite; derived anatectic granitoids Psammopelite to pelite, and derived gneiss, migmatite (includes tectonic slivers of Burntwood and Missi supracrustal suites) in part in structural contact with Amisk Lake Igneous Suite and anatectic granite (includes Careen Lake Group) Felsic to intermediate volcanic, volcaniclastic and minor subvolcanic intrusive rocks; derived gneiss Amphibolite including mafic volcanic, minor gabbro, and clastic sedimentary rocks (includes Virgin Schist Group) ntermediate to felsic volcanic, volcaniclastic and minor Quartzite, siltstone, psammite, dolostone, calc-silicate, and subvolcanic intrusive rocks derived gneiss; minor amphibolite, psammopelite to pelite Mafic to intermediate (ultramafic) volcanic rocks; derived paleo-unconformity between Murmac Bay Group and ARgt, ARd, Cook Lake Igneous Suite (2086 to 2075 Ma) Amphibolite; unknown affiliation and protolith; includes mafic ARgg, URgn, URgq; in part synchronous with PRg Syenogranite, quartz-feldspar porphyry; in part intruding volcanic, mafic gneiss and minor plutonic precursors; in part Clam Lake Structural Inlier (possibly related to Hearne likely high-grade equivalents of **P**TAvm Wollaston Supergroup and unit **A**Hag Clearwater Intrusive Suite (2120 to 2110 Ma) Augen granite and derived gneiss (2045 Ma); possibly intruding Archean granite and orthogneiss (unit **A**Hag) Anorthosite (2110 Ma) PRCg Granite (2120 Ma) intrusive contact with **U**Rgq, **U**Rgd Porphyroclastic felsic gneiss derived from supracrustal and plutonic precursors; minor Archean components of **A**Slt (Nistowiak thrust) North Shore Plutons: Granite; minor granodiorite, quartz structural contact monzonite, diorite (2327 to 2287 Ma) intrusive contact with **A**Rgt Aixed Orthogneisses Granitic to quartz dioritic gneiss (in part 2517 to 2325 Ma); Pelican, Hunter Bay, Iskwatikan and Nistowiak tectonic windows Mirond Lake Igneous Suite: Charnockitic granite, granite, Retrogressed granitic to quartz dioritic gneiss (derived from minor gabbro and ferrodiorite, tonalite-quartz diorite gneiss Black Bear Island Lake Structural Inlier and derived migmatite (2488 to 2422 Ma) possibly related to Hearne craton) intrusive contact with unit ASIt **U**Rbd Quartz monzonite to norite; derived gneiss Black Bear Island augen granite and derived gneiss (2518 Ma) Granite, granodiorite; derived gneiss (in part 2565 to 2420 Ma) Granitic to granodioritic orthogneiss, quartz monzodiorite (2606 to 2300 Ma); leucogranite and amphibolite sheets ASIt Leucogranodiorite to leucotonalite gneiss; derived URg| Gneissic leucogranite to granite (in part 2707 Ma); minor migmatite (3117 to 2804 Ma); includes 'Q gneiss' gneissic pelite Ennadai Structural Complex (Central Hearne Craton) (2722 to 2681 Ma) AEsn Psammopelite to pelite; derived schist and gneiss ARgg Leucogranodioritic to tonalitic orthogneiss; amphibolite rafts (ca. 2.7 to 2.5 Ga) Mafic volcanic; minor felsic volcanic, wacke and iron **Map Symbols** rmation (2708 to 2681 Ma) AEttg Tonalite to granodiorite; derived gneiss and migmatite (2722 to 2681 Ma) Granite to granodiorite; derived orthogneiss (2680 to 2580 Ma) -1500 Elevation contour of Precambrian basement relative to mean sea level in metres ARbm Quartz monzodiorite to gabbro; derived gneiss (in part 2650 to 2575 Ma) inferred structural contact between Central and Southern Hearne cratons Geological contact (defined or approximate) Southern Hearne Craton (2812 to 2529 Ma) Norite-diorite-gabbro (in part 2639 to 2637 Ma) AHdi Swan River Intrusive Suite (2562 to 2560 Ma): Diorite, Late fault or fault system: brittle to semi-brittle (brittle-ductile), in some cases overprinting ARd Garnetiferous diatexite (granitic to tonalitic, and pelitic monzodiorite, anorthosite; minor gabbro older shear zones; defined, inferred in Athabasca and Phanerozoic basins Swan River Intrusive Suite (2562 to 2560 Ma): Layered leucogabbro to gabbro-norite; diorite and ultramafic rocks; Early thrust fault or shear zone: generally inclined with mainly horizontal translation, width Intermediate to mafic volcanic rocks; intrusive equivalents; includes Zengle Lake gabbro (2529 Ma) up to kilometre-scale, generally early tectonic history, placed in basal part of thrust zone amphibolite (>2575 Ma) ARsn Migmatitic psammopelite to pelite and derived anatectic Migmatitic granite to granodiorite complex Multiply-reactivated shear zone: generally subvertical, but some moderately inclined with granite (in part >2639 Ma) variable or unknown translation, width up to kilometre-scale AHt Granodiorite to leucotonalite (2664 Ma) ARgn Tonalitic orthogneiss (2740 Ma) Provincial/national park Granite, augen granite, leucogranite; derived gneiss (2680 to National Topographic System (NTS) grid with map 2520 Ma); includes 2580 to 2566 Ma Lueaza River Granitoid sheet labels and latitude/longitude designations Suite and lesser Proterozoic granites Tonalite-granodiorite gneiss and migmatite complex; Dominion Land Survey grid with Township (N-S) AHfn granitic gneiss (2812 to 2565 Ma); lesser Paleoproterozoic and Range (E-W) designations Monzogranite to tonalite; derived gneiss (>3385 to 2941 Ma; includes Lodge Bay granite) Lithostructural Domains of the Canadian Shield and Phanerozoic Structural Elements The Rae and Hearne provinces, comprising Archean basement rocks and overlying Proterozoic Phanerozoic Basin platformal cover sequences, are part of the western Churchill Structural Province and are separated from each other by the enigmatic Snowbird tectonic zone (STZ). The Rae and Hearne cratons are Not subdivided dominated by Archean rocks and are flanked by the Paleoproterozoic Taltson Orogen to the west and Watrous and Wynyard domes (Punnichy Arch) and Molanosa Dome Trans-Hudson Orogen to the east. The Sask craton underlies much of the southeastern Shield but is (Early Cretaceous, Mannville) only exposed in small tectonic windows. It is structurally overlain by Paleoproterozoic volcano-Sparky Coal Basin (Early Cretaceous) plutonic arc rocks and derived clastic sedimentary rocks of the Reindeer Zone. These rocks formed in an oceanic environment as the Rae-Hearne, Sask, and Superior (exposed in central Canada) cratons Swift Current Platform (Jurassic) converged prior to amalgamating during the Trans-Hudson orogeny. The Canadian Shield in Saskatchewan has been further subdivided into a number of domains distinguished by rocks with Shaunavon Shelf (Sandstone, Jurassic) distinct lithological and/or structural characteristics (Saskatchewan Geological Survey, 2003). Orosirian to Calymmian rocks of the Athabasca Supergroup are contained in the current geographical Athabasca Basin remnant called the Athabasca Basin. Sediments that formed these rocks were deposited Athabasca Supergroup (Proterozoic) unconformably on rocks of the western Churchill Structural Province.. The major lineaments, shown on the Canadian Shield, are the traces of a selection of major structures that include multiplyreactivated shear zones, thrusts, and brittle to semi-brittle faults. The surface of the Precambrian basement below the Phanerozoic exhibits many structural features that have been identified through seismic and well data (Kent and Christopher, 1994; Christopher, 2003). Many are dome-like features with positive relief that may simply be resistant erosional remnants, while others are reactivated fault blocks that affected facies distribution of overlying strata through time. Many of these features are expressed as orthogonal lineaments coincident with the basement structural fabric. Some have also been recognized at surface, like the Missouri Coteau, while others, such as the Swift Current Platform, are only recognized through isopach mapping or trends in structure maps. Tectonic inlier The Meadow Lake Escarpment marks the northern erosional edge of Ordovician-Silurian carbonates, Hearne craton north of which Middle Devonian strata infill the erosional low on top of Cambrian sandstones (Haidl, **Tectonic Windows** 1989). The Punnichy Arch (comprising the Watrous and Wynyard domes) is a basement-controlled Sask craton antiformal complex, which extends along the northern solution edge of the Middle Devonian Prairie Evaporite salt beds and represents the northern rim of the Williston Basin. The Winnipegosis Reef Trend, marking the southwestern edge of the Prairie Evaporite, and the Elbow-Weyburn Linear, Dissolution edge of Prairie Evaporite Formation delineating the eastern margin of the Swift Current Platform, both parallel the surface expression of (ticks on side where salt is preserved) the Missouri Coteau. The Swift Current Platform, a dome-like feature reactivated through time, is a Astrobleme, with name region of thinning Devonian strata and has undergone numerous vertical fluctuations throughout the Phanerozoic, acting as a depositional basin during the Middle Jurassic. The Shaunavon Shelf demarcates the western flank of the Swift Current Platform and terminates the Middle Jurassic Shaunavon Sandstone facies. The Molanosa Dome is another basement-controlled feature that remained tectonically active through much of the Phanerozoic, acting as a paleo-upland during deposition of Cretaceous strata. The Sparky coal basin represents an area during the Early Cretaceous, where peat growth was equilibrated with sea-level rise for an extended period, leading to the development of broad depositional flats and the subsequent formation of coal. The northeasttrending, basement-controlled Torquay-Rocanville Trend in southeast Saskatchewan coincides with down-warped stratigraphy and a series of salt sinks. It also parallels and is possibly coincident with the northern projection of the Weldon-Brockton-Froid-Fromberg fault zone from the U.S. portion of the Williston Basin (Christopher, 1961; Gerhard et al., 1987). DANIELSON Sub-Phanerozoic and Sub-Athabasca Basin Geophysical Domains (after Kreis et al., 2004) Reindeer Zone (includes Sask craton) Diefenbaker (equivalent to Reindeer Magnetic Quiet Zone) Wapawekka-Estevan Wyoming Province **Duck Mountain** Great Falls Tectonic Zone In 2004, Kreis et al. used provincial total field aeromagnetic and Bouguer Magnetic: Geological Survey of Canada, gravity maps, aided by seismic data, to subdivide the sub-Phanerozoic Open File 7799, 2016, 1 sheet Precambrian rocks into a number of geophysical domains based on https://doi.org/10.4095/297337 extrapolation of major features on the exposed Shield. The Clearwater and Taltson domains of the Rae craton were extended to the southwest. Gravity: Geological Survey of Canada, The Mudjatik and Wathaman domains of the Hearne craton were also Open File 8081, 2017, 1 sheet extrapolated southwestward, whereas the Wollaston Domain was https://doi.org/10.4095/299561 subdivided into the Makwa and Battlefords domains based on magnetic susceptibility. The Assiniboia Domain was identified as an entity distinct from the Battlefords Domain based on the disruption of magnetic signatures that may mark the Great Falls Tectonic Zone, which separates the Wyoming and Hearne cratons. A number of ~1.76 Ga post-tectonic, anorogenic high-level granitic and extrusive rocks comprising the Swift Current Anorogenic Province (SCAP; Collerson et al., 1989; white diagonal hatch) further disrupt the aeromagnetic pattern in this area. The Diefenbaker Domain corresponds to the Reindeer magnetic quiet zone (RMQZ; Burwash et al., 1993) and represents the southern extension of the Rottenstone Domain; it overlaps with the broadly correlative North American Central Plains conductivity anomaly (NACP; Reitzel et al., 1970; white horizontal hatch) and occurs along the boundary between the Hearne and Sask cratons, the latter of which has been subdivided by magnetic characteristics into the Tobin, Smeaton, Humboldt and Weyburn domains. Structurally overlying rocks of the Wapawekka-Eszone between the craton and juvenile rocks of the exposed Glennie and Flin Flon domains to the north and east, respectively, where the craton has also been overprinted by the Tabbernor fault zone. The Duck Mountain Domain represents a transition zone between juvenile rocks of the Reindeer Zone and predominantly Archean rocks of the Superior Residual Total Magnetic Field Map **Bouguer Gravity Map** craton to the east, and may be correlative with the Superior Boundary Zone in Manitoba. Selected list of references that helped with compilation of map and insets: Kreis, L.K., Ashton, K.E. and Maxeiner, R.O. (2004): Geology of the Precambrian basement and Phanerozoic strata in Collerson, K.D., Lewry, J.F., Van Schmus, R.W. and Bickford, M.E. (1989): Sm-Nd isotopic constraints on the age of the Ashton, K.E. (1999): A proposed lithotectonic domainal re-classification of the southeastern Reindeer Zone in Saskatchewan: Sheet 1 of 8. 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