

The Yukon Digital Bedrock Geology compilation

Maurice Colpron
Yukon Geological Survey

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Abstract

The Yukon Digital Bedrock Geology dataset was first released in 1999. It was rebuilt and expanded in 2016 and has since received regular updates. This paper summarizes the enhancements made to the bedrock geology dataset since 2016, the other ancillary geoscience datasets available, and the various ways to access and use the dataset.

Introduction

Gordey and Makepeace (1999) produced the first comprehensive GIS (geographic information system) compilation of the Yukon bedrock geology (Fig. 1). This digital compilation was inspired in large parts by the tectonic assemblage map of Wheeler and McFeely (1991) for which a GIS version was produced by Journey and Williams (1995). The tectonic assemblage map of the Canadian Cordillera was a “classic” compilation map in that the compilers made decisions to simplify the source information to produce the published 1:2 000 000-scale map. The GIS capture of this map by Journey and Williams (1995) was faithful to the 1:2 000 000 map and therefore lacked the details from the source maps. In contrast, Gordey and Makepeace (1999) captured the geological information at the scale of publication, without compromise. For most of Yukon, Gordey and Makepeace (1999) digitized the geology from the 1:250 000-scale regional maps published by the Geological Survey of Canada (GSC), but they also included locally more detailed maps published at 1:50 000-scale. This approach allowed for more detailed capture of the 1:250 000 or larger scale maps, more precise contact locations, incorporation of more rock units and more detailed description of those units than on the Cordillera-wide compilation of Wheeler and McFeely (1991).

* Maurice.Colpron@yukon.ca

Following the digital release (on CD at the time), a “wall map” and graphical legend were produced at the 1:1 000 000-scale (Gordey and Makepeace, 2001). At the same time, the Gordey and Makepeace (1999) GIS compilation was used to develop the first online map by the Yukon Geological Survey (YGS’ Map Gallery,

ca. 2001). It was the base for further development of online map applications for nearly 15 years and the Gordey and Makepeace (1999) compilation became the primary source of geological information for Yukon.

One issue with the Gordey and Makepeace (1999) compilation was that it was not easy to update and

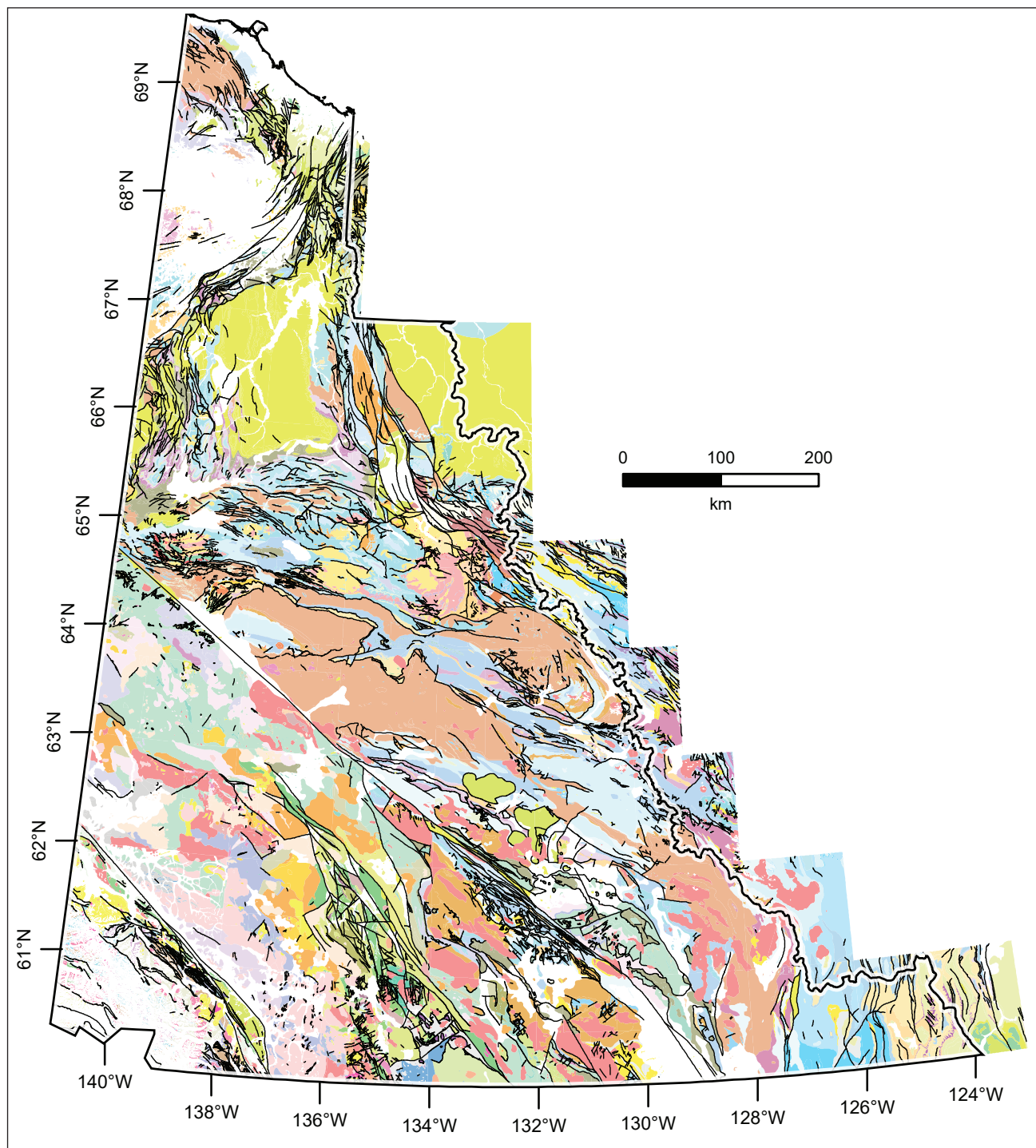


Figure 1. Bedrock geology compilation of Gordey and Makepeace (1999).

incorporate new detailed mapping into it. The digital geology compilation rapidly became out-of-date as new detailed bedrock maps were published, generally at a scale of 1:50 000, by the Yukon Geological Survey (and its precursor, the Yukon Geology Program) and the GSC. Because the digital bedrock geology had become the primary source of geological information, the difficulty in updating this dataset resulted in users not always getting the most current data available.

A partial update of the digital bedrock geology that included some newer detailed maps was released by Gordey and Makepeace (2003) but the new maps were only included as overlays to the original compilation and not integrated in the main GIS dataset. As a result, the 1999 compilation remained the de facto source of geological information for Yukon, a source that did not accurately reflect the evolving knowledge over time.

As of writing of this paper, new maps published since 1999 covered approximately 40% of Yukon (33% when excluding 1:250 000-scale maps published after

1999 but compiled in the original GIS dataset; Fig. 2a). Approximately 32% of the territory has been mapped in greater detail (1:150 000-scale or larger) since 1999, with 15% of Yukon mapped at 1:50 000-scale (Fig. 2b). These figures are constantly growing as the Yukon Geological Survey publishes new detailed bedrock geology maps annually.

The Ancient Pacific Margin NATMAP project (1999–2003) was a major impetus for updating the Yukon bedrock geology compilation. This collaborative mapping project involved geologists from the Geological Survey of Canada, British Columbia Geological Survey, Yukon Geological Survey and the United States Geological Survey and resulted in extensive detailed mapping and redefinition of the pericratonic Yukon-Tanana and Slide Mountain terranes in the northern Cordillera (Colpron and Nelson, 2006). Colpron (2006) produced a 1:1 000 000-scale compilation map to illustrate this new knowledge of Yukon-Tanana and related terranes, and this raised the need for an update to the Yukon digital bedrock geology.

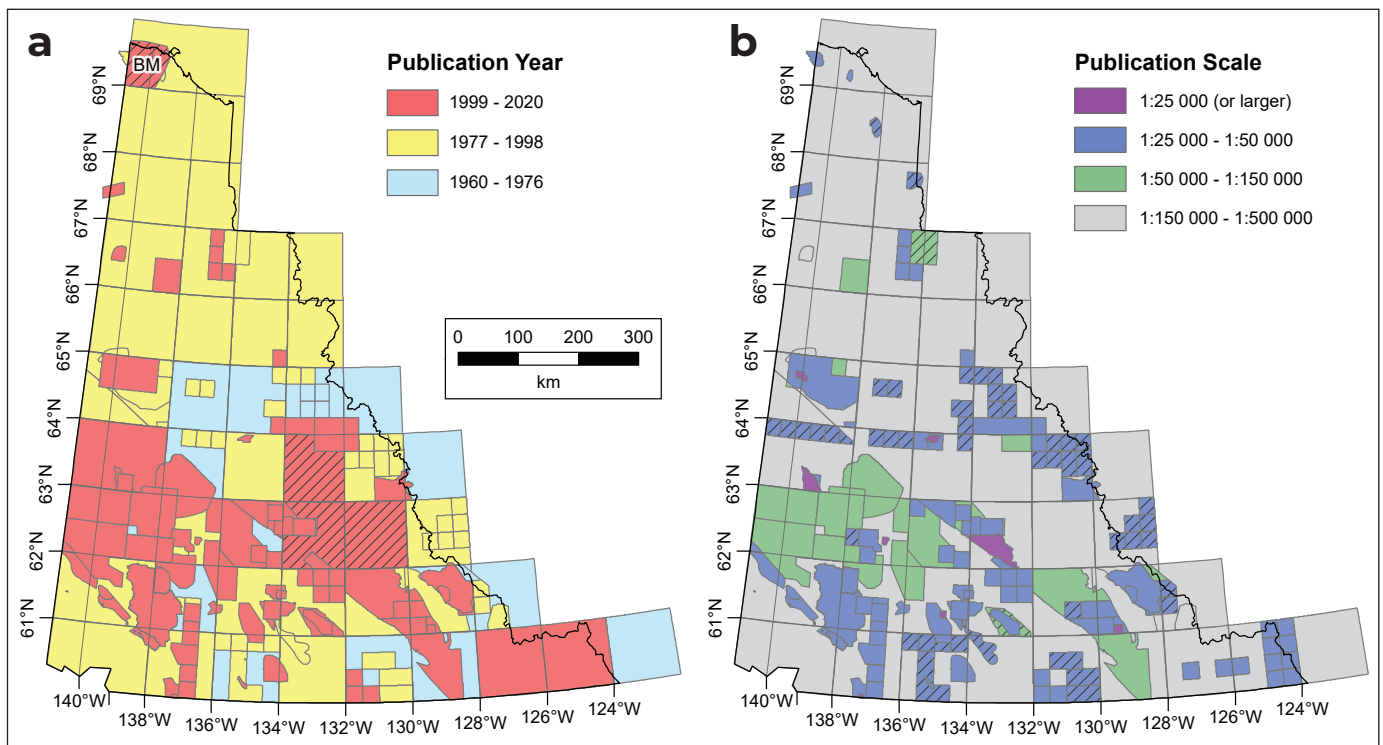


Figure 2. Status of bedrock mapping in Yukon. The source geology maps used in the digital bedrock geology compilation are symbolized according to year **(a)** and scale **(b)** of publication. Hatched areas in **(a)** are 1:250 000-scale maps published after 1999 but compiled in the original GIS dataset (Gordey and Makepeace, 1999). Note that the geology map of the British Mountains (BM) in North Yukon was only published as part of the Gordey and Makepeace (1999) compilation. Hatched areas in **B** are detailed maps that were included in the original GIS compilation (1:50 000 in blue; 1:125 000 in green).

A key objective in developing an update of the digital bedrock geology was to ensure that future updates of the dataset could be done efficiently and more frequently, such that the more detailed geological information could be disseminated through the various online portals in a timely manner. This was achieved in 2016 and the Yukon bedrock geology GIS compilation has been “live” and seen periodic updates since. This paper summarizes the concepts that guided the overhaul of the Yukon digital bedrock geology dataset, and the enhancements in data organization and presentation the user will find in the modern GIS compilation. The various ways in which the dataset can be accessed and used are described, as well as the ongoing development of ancillary geoscience datasets that complement the bedrock geology map.

Rebuilding the Yukon Bedrock Geology Compilation

The original compilation of Gordey and Makepeace (1999) was constructed in ArcInfo as a set of lines and polygons that were attributed using codes that referenced external database tables. The polygon structure made it difficult to integrate new maps into the dataset. Most users accessed the data as shapefiles on other GIS software and therefore couldn't benefit from ArcInfo interconnectivity between tables and the code-base attribution of the GIS features made it cumbersome to build queries and symbolize the data. The attribute structure of GIS tables in the Gordey and Makepeace (1999) compilation were designed to be lean and minimize file sizes (Fig. 3). A few attributes contained plain language entries that were readily understood but many included concatenated text difficult to query. Polygon attributes did not include stratigraphic information and the user needed to be acquainted with the unit codes (e.g., REG_UNIT) to readily extract this information. The polygons were keyed to an HTML legend (PICKINFO field; Fig. 3b) but this assumed proper link to the HTML files, an assumption that did not necessarily apply for most users.

The update of the digital bedrock geology dataset aimed at producing a more flexible and user-friendly map. To facilitate more regular updates of the map,

the polygons from the Gordey and Makepeace (1999) compilation were first converted to centroids. A centroid is a point feature that carries all the attribute information for a given map unit bound by geological contacts. Using lines and centroids, topologically correct polygons can be generated quickly using a series of ArcGIS tools. The workflow begins with merging the linework (faults, contacts, extent polygon) using the Merge (Data Management) tool, then cleaning to remove topology errors with the Trim Line (Editing) tool, and then creating polygons from the enclosed spaces that the lines create using the Feature to Polygon (Data Management) tool. Finally, the geological attributes are spatially joined from the centroid to the newly created polygon feature class using the Spatial Join (Analysis) tool. This workflow is saved as a model builder tool in ArcGIS so it can be run consistently with the same parameters (Fig. 4). Although the data are still delivered to the end-user as lines and polygons, the centroid-based master files at the YGS allow for regular updates as new maps are published, and easy corrections to the data as errors are being detected.

The following step in rebuilding the bedrock geology dataset was to develop an extended attribute structure for both line and centroid/polygon features (Fig. 3). Several fields were added to the new data tables and were assigned names that are readily recognized by most users (Appendix 1). The coding from the original Gordey and Makepeace (1999) dataset was converted to text and previously concatenated attributes (e.g., AGE) were distributed over multiple fields to facilitate queries. New fields were introduced to provide the full stratigraphic information for each map unit (e.g., Group, Formation, etc...), and a short unit description (10 words or less) was added for rapid investigation of the GIS dataset and easy production of abbreviated legends. Line features are now provided in separate feature classes (or shapefiles) for faults and contacts (Fig. 3a). Both line feature classes have identical attribute structures (Appendix 1), but they are provided individually for easy symbolization. The “map boundary” lines that were part of the Gordey and Makepeace (1999) dataset were removed to produce comprehensive unit polygons (Fig. 5). In the updated dataset, the source information is provided as a separate polygon feature class (Bedrock Map Index)

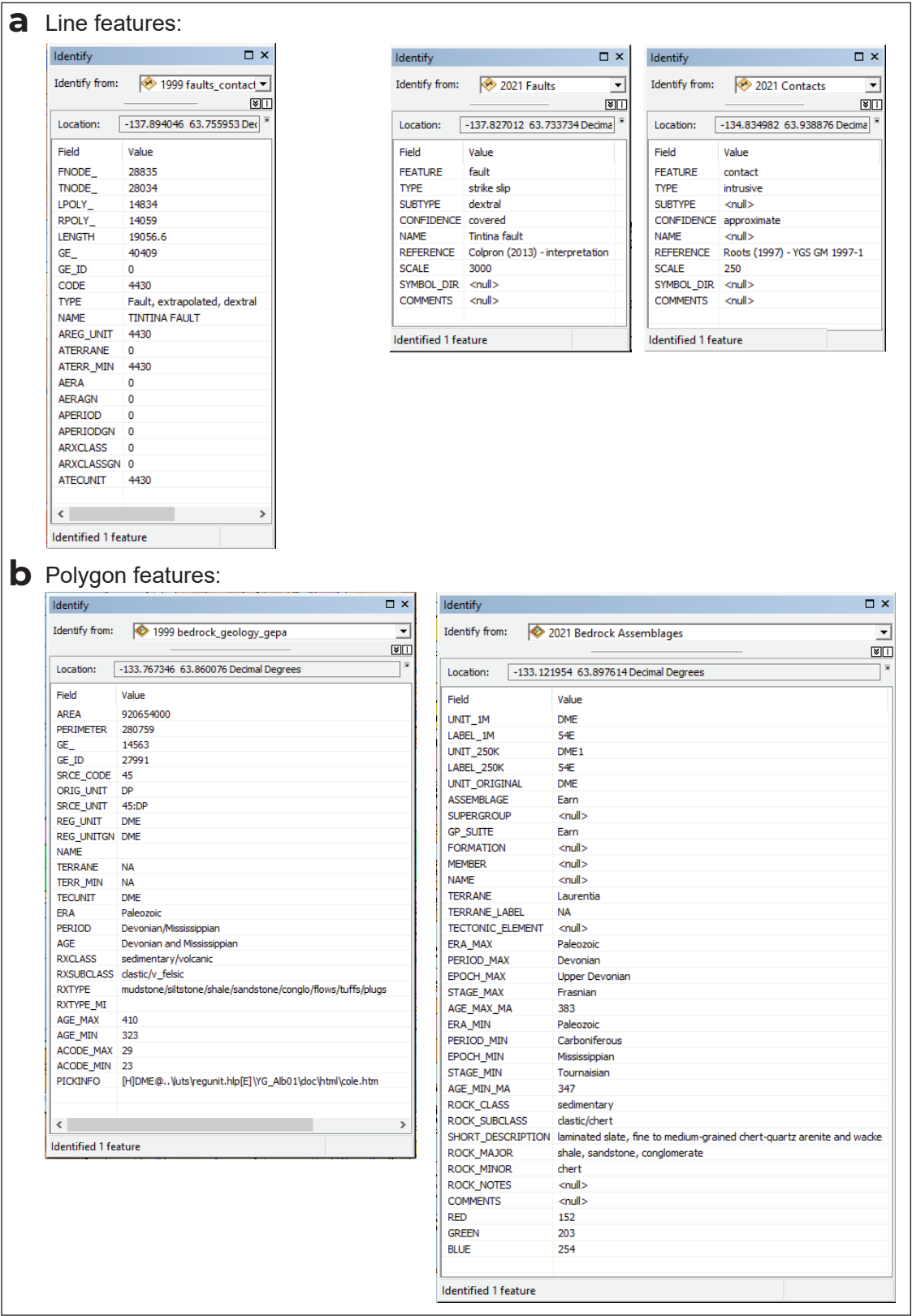


Figure 3. Comparison of attribute structures for line (a) and polygon (b) features between the original digital compilation of Gordey and Makepeace (1999; left) and the current version of the bedrock geology dataset (Yukon Geological Survey, 2022; right).

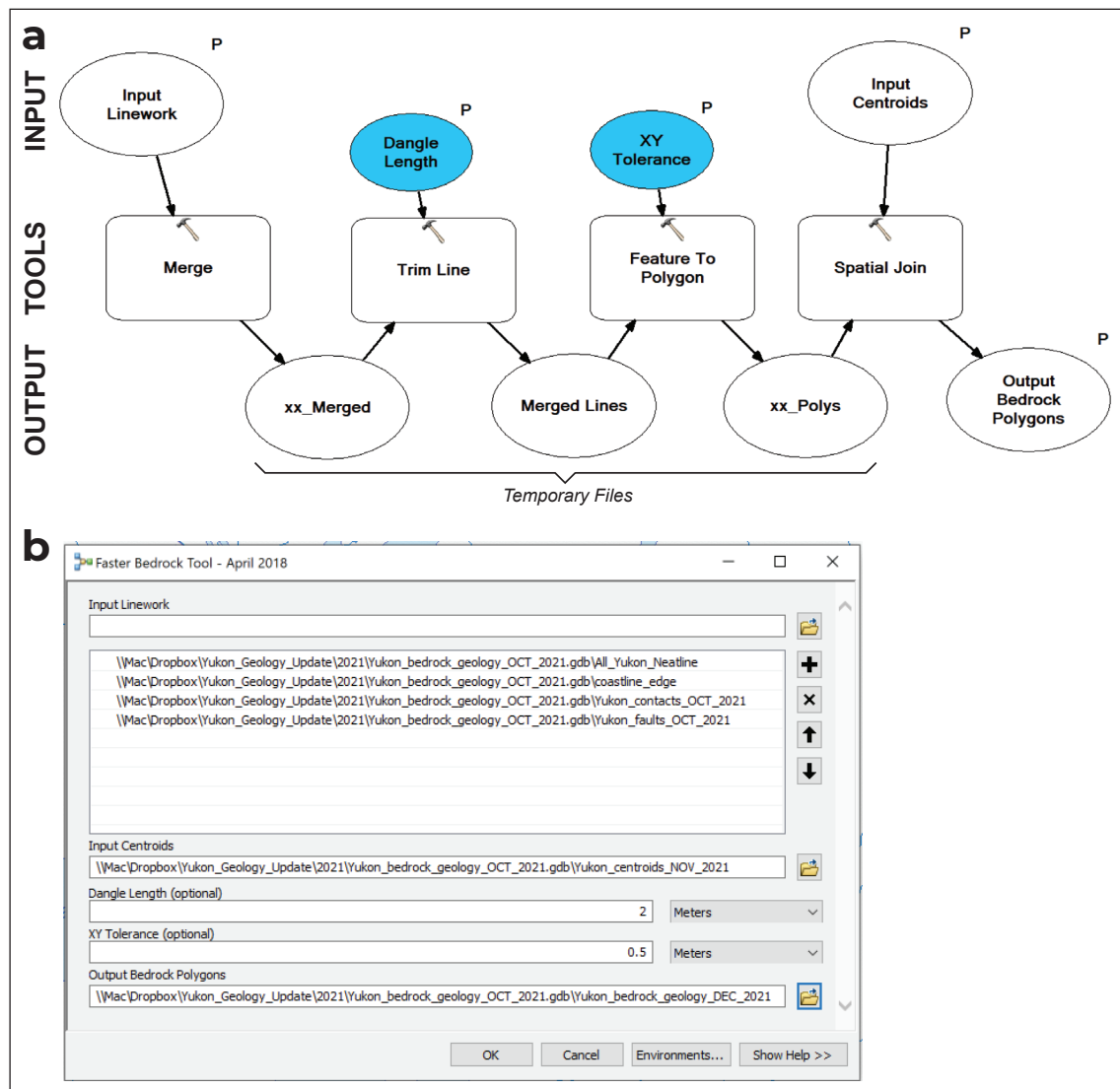


Figure 4. (a) ArcGIS workflow employed for polygon creation at the Yukon Geological Survey. Input data and parameters are shown at the top, ArcGIS tools (indicated by hammer symbol) in the middle, and output files at the bottom. Parameters shown in blue at the top can be adjusted in the user interface shown in **(b)**. For polygon creation in the Yukon bedrock geology dataset, Dangle Length is set at 2 m and XY Tolerance at 0.5 m.

and source attribution is now included in the line feature classes, rather than within unit polygon attributes. References to source maps are also given as shorthand text attributes that are readily recognizable (Figs. 3a and 5c).

Another objective in updating the GIS dataset was to extrapolate the interpretation of the bedrock geology through many of the areas shown as Quaternary cover (Q) in the Gordey and Makepeace (1999) compilation

(compare Fig. 5a and 5b). Interpretations were guided using remote sensing images such as aeromagnetic maps and satellite images, resulting in a more coherent bedrock geology map with only limited regions of extensive Quaternary cover left (e.g., Old Crow Flats; Fig. 6). Users can still access information about surficial geology by using the YGS surficial geology dataset (<https://data.geology.gov.yk.ca/Compilation/33>) in concert with the bedrock geology dataset. Surficial geology mapping does not yet cover all of Yukon.

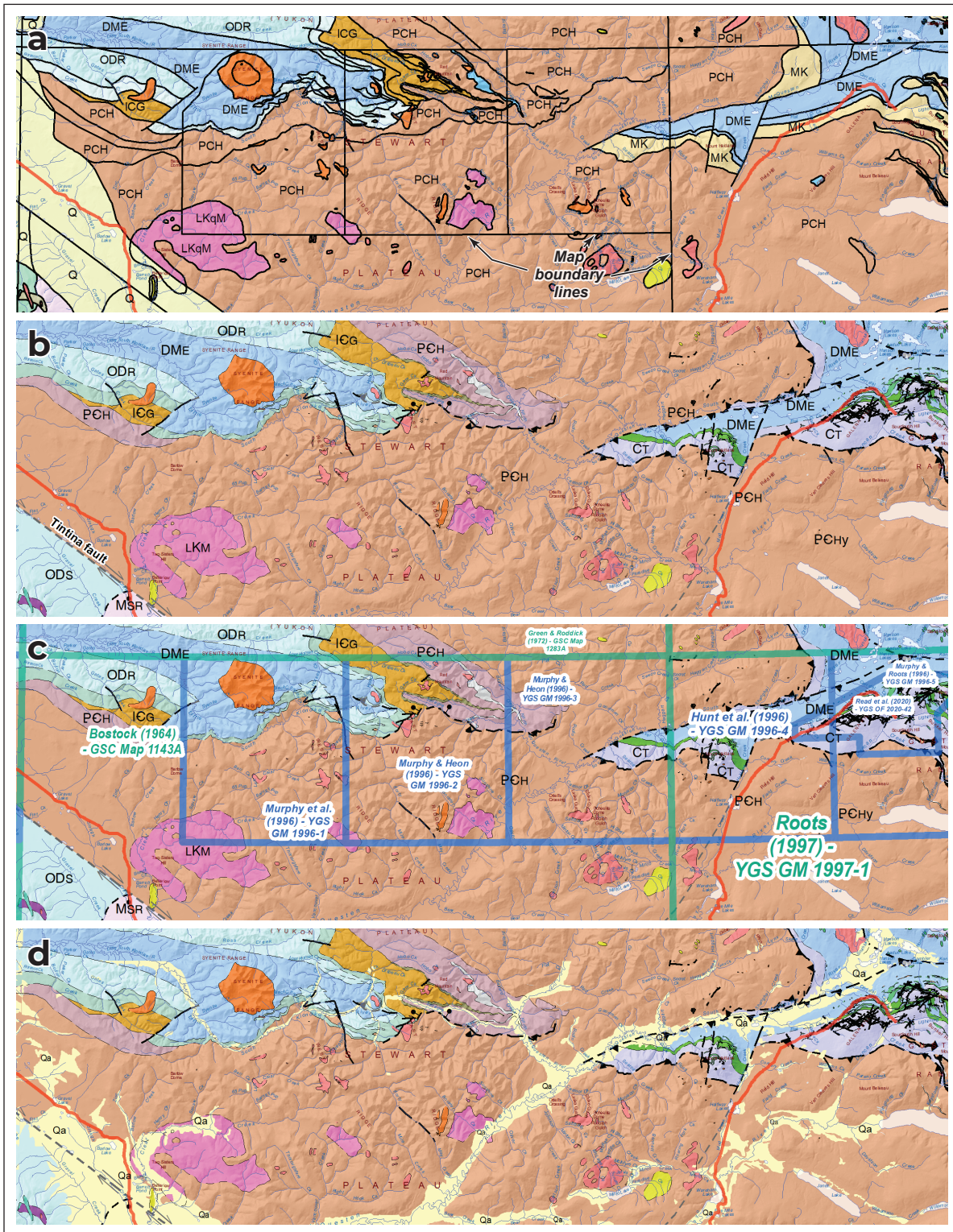


Figure 5. Comparison between the original compilation of Gordey and Makepeace (1999) (a) and the current version of the bedrock geology map (b–d). (b) In the current GIS compilation, the bedrock geology is extrapolated through region of extensive Quaternary cover (Q in (a)) and unit polygons are seamless across map boundaries. (c) Information about the source maps compiled into the bedrock geology map is now provided in a separate feature class. (d) Areas of extensive Quaternary colluvium and alluvium deposits (Qa) are now provided as a distinct feature class extracted from the surficial geology dataset.

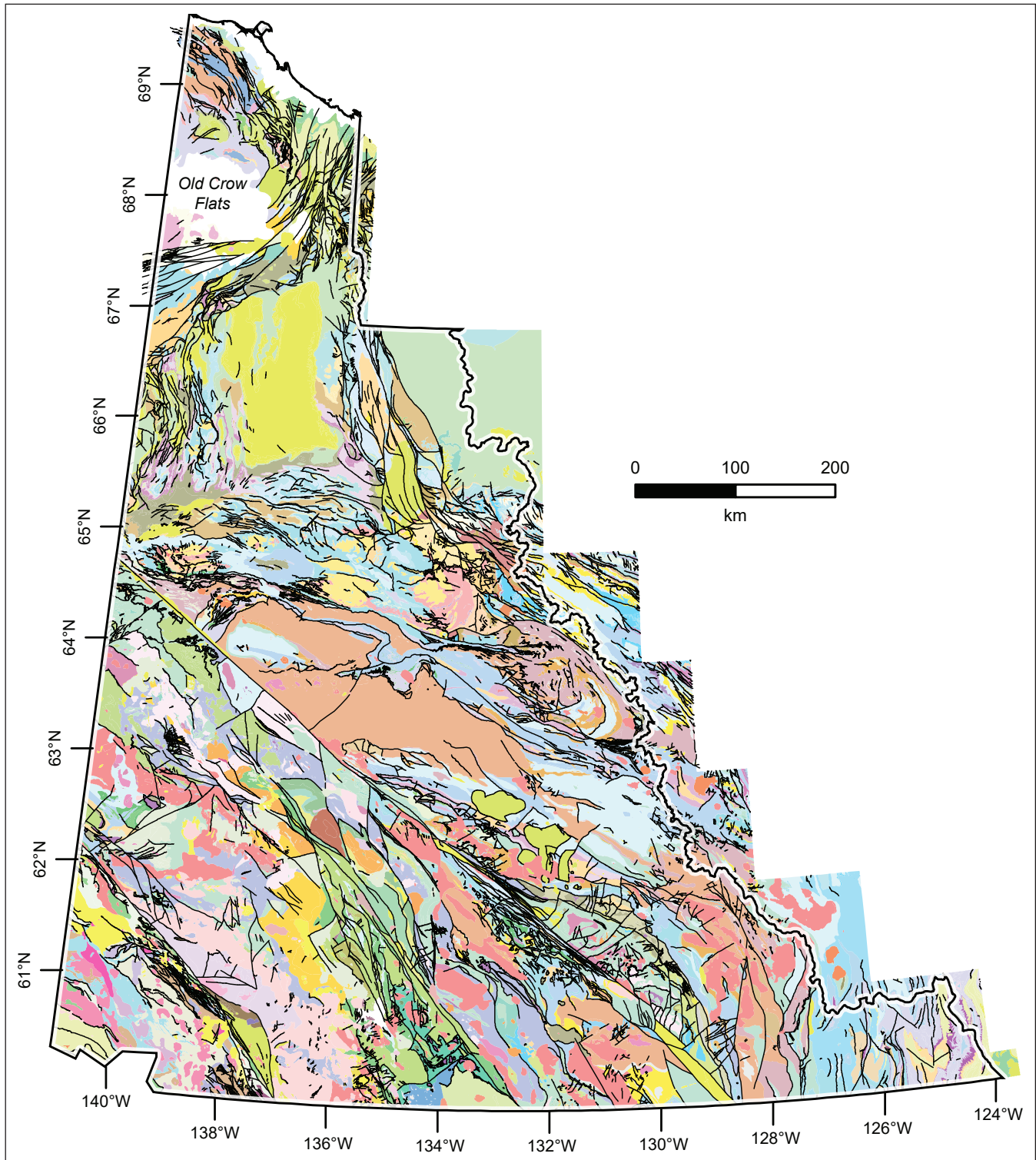


Figure 6. The current version of the GIS compilation provides an interpretation of the bedrock geology beneath Quaternary cover over much of the territory, except in few locations such as Old Crow Flats in North Yukon (Yukon Geological Survey, 2022). Compare with the Gordey and Makepeace (1999) map in Figure 1.

To facilitate overlay with the bedrock geology map, regions where extensive alluvial and colluvial deposits hinder bedrock exposures were extracted as a “Quaternary Alluvium” feature class from existing regional surficial maps (Qa; Fig. 5d). Following Gordey and Makepeace (1999), the bedrock geology compilation and accompanying spatial datasets are provided in Yukon Albers projection (Appendix 2).

The first comprehensive update to the Yukon bedrock geology GIS dataset was available for download in early 2016, and the dataset has seen periodic updates since. Online map services were also updated in 2016 to show the latest version of the bedrock geology dataset and are updated at the same frequency as the GIS dataset. With each update, new detailed maps are added to the dataset, errors in previous data captures are corrected, and feature attributions are improved. Since 2016, the Yukon bedrock geology map has become “live” online such that the end-user can now access the best information available in a timely manner.

Map and Legend Organization

Gordey and Makepeace (1999) used the Wheeler and McFeely (1991) tectonic assemblage map as the basis for organization of their map, choice of colours and regional unit names, but aimed to provide more of a stratigraphic map (vs. tectonic assemblages) by preserving details from the source maps. Gordey and Makepeace (2001) produced a 1:1 000 000-scale “wall map” accompanied by a graphic legend with more detailed unit descriptions. The 2016 update of the Yukon bedrock geology dataset was also accompanied by release of a revised 1:1 000 000 “wall map” and legend which followed the same general organization as previous maps but integrated more recent interpretations of regional stratigraphic units (Colpron et al., 2016). With ongoing mapping in various parts of Yukon, there has been sufficient additional improvements to the regional stratigraphy in the last 5 years to warrant a new revision to the Yukon bedrock geology 1:1 000 000-scale “wall map” and legend (Colpron, 2022).

The new bedrock geology map (Colpron, 2022) is symbolized and labeled for display at the 1:1 000 000 scale but was generated from the full GIS dataset (Yukon Geological Survey, 2022). The map includes 1:5 000 000-scale inset maps of terranes (Yukon Geological Survey, 2020), glacial limits (Duk-Rodkin, 1999), total field aeromagnetic (Oneschuk et al., 2019) and bouguer gravity (compilation by N. Hayward, December 2021; data available from: <http://gdr.agg.nrcan.gc.ca/>).

The graphic legend that accompanies the 1:1 000 000-scale geology map (Colpron, 2022) provides more detailed descriptions of regional map units compared to short descriptions built into the GIS compilation. The legend is organized in a series of columns that correspond to geographic areas of Yukon characterized by distinct geology (Fig. 7). Columns in the legend are generally arranged from southwest to east and north.

- Column A, in southwestern Yukon, includes units of the Insular and Outboard terranes and their Mesozoic and younger overlap assemblages.
- Units in Column B, in western Yukon, are the extension of parautochthonous Ancestral North American (Laurentian) rocks of the Yukon-Tanana Uplands of east-central Alaska (Dusel-Bacon et al., 2006; Murphy, 2007), and their Mesozoic overlap assemblages. Many units in Column B are considered equivalents to units in Selwyn basin described in Column E.
- Column C contains description of units in the Intermontane terranes, including the Yukon-Tanana, Slide Mountain, Stikinia, Quesnellia and Cache Creek terranes, overlapping Mesozoic sedimentary (e.g., Whitehorse trough) and volcanic units (e.g., Carmacks Group), and the numerous Mesozoic–Cenozoic plutons that intrude the region.
- In Column D, units of the Cassiar terrane and its contained Cretaceous and Eocene plutons are described.

- Column E covers the “Selwyn basin region” of central and eastern Yukon (Fig. 6). Selwyn basin *sensu stricto* comprises lower Paleozoic, mainly siliciclastic, off shelf strata (Gordey and Anderson, 1993; Gordey, 2013) but the term Selwyn basin (*sensu lato*) is commonly used to refer to the region underlain by the Selwyn Mountains (west of Mackenzie Mountains and south of Ogilvie-Wernecke Mountains) and encompasses Neoproterozoic to lower Mesozoic strata and the numerous Cretaceous plutons that intrude them.
- Columns F and G describe the mainly continental shelf, carbonate and siliciclastic lower Paleozoic strata of the Mackenzie/MacDonald platform to the east (F) and the Ogilvie platform to the north (G). Both regions are overlapped by Mesozoic foreland basin strata and include older Neoproterozoic ‘rift’ facies. Column G covers the region known as the Yukon block (Fritz, 1996) and includes the oldest rocks in the northern Cordillera (Wernecke Supergroup).

- Finally, Column H describes displaced continental margin strata of Neoproterozoic to Devonian age exposed north of the Porcupine shear zone and west of the Yukon fault in North Yukon. These rocks are overlapped by upper Paleozoic and younger strata described in column G.

Within these columns, brackets to the left group units according to terrane affinities, overlap successions or post-accretionary intrusions. Stratified units are symbolized with rectangles, while intrusive units are shown with oval swatches (Fig. 8).

Ancillary Datasets

The bedrock geology compilation is complemented by a series of ancillary datasets, including compilations of radiometric ages (Geochronology – <https://data.geology.gov.yk.ca/Compilation/22>), whole rock geochemistry (Lithochemochemistry – <https://data.geology.gov.yk.ca/Compilation/35>), and mineral occurrences (MINFILE – <https://data.geology.gov.yk.ca/Compilation/24>).

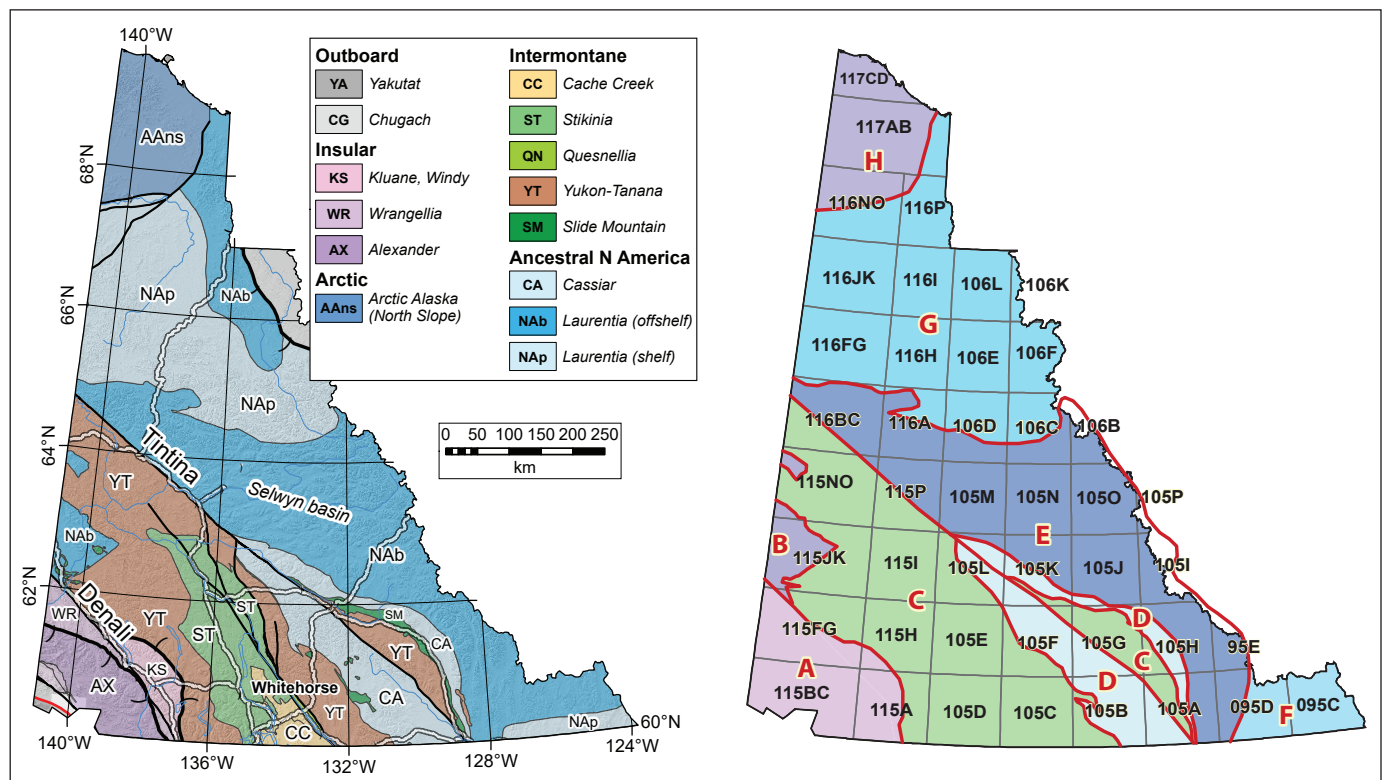


Figure 7. (a) Terrane map of Yukon (Yukon Geological Survey, 2020). **(b)** Organization of map legend where areas A–H correspond to columns in the legend of Colpron (2022).



Figure 8. Portion of the legend that accompanies the “wall map” (Colpron, 2022) showing some key symbolization features. Stratified units are represented by rectangular swatches (e.g., DMF) while plutonic units are shown with ovals with red outline (e.g., MSR). The assemblage or suite names are shown in capitalized bold letters at the start of the descriptions, while regional stratigraphic or intrusive units are listed in bold-italic after some rock descriptions where appropriate. Map labels of regional units (UNIT_1M and LABEL_1M fields in the geodatabase, Fig. 3b) are typically shown in the unit swatch (e.g., DMF and MSR) while compositional grouping shown by bold-italic letters or numbers at the start of unit descriptions correspond to attributes in the UNIT_250K field. Compositions of plutonic rocks are indicated by letters that are inserted between age and unit descriptors in labels (e.g., MgSR, where M is for Mississippian, g granodiorite, and SR Simpson Range). Stratified units are listed in numerical order (e.g., DMF1, DMF2, etc...). The corresponding map label (LABEL_250K) is listed last after rock descriptions for some units (e.g., DMFv, DMFf). Map labels require the gscGeology true-type font for proper display. For some subunits, pattern overlays are used to distinguish facies. In the example shown here, the diagonal hatch pattern for subunit DMFv (or DMF1) indicates a mafic volcanic facies.

The Geochronology dataset was developed based on the YukonAge database of Breitsprecher and Mortensen (2004). YukonAge was a relational database that provided a querying interface in Microsoft Access, but that wasn't easily integrated with GIS platforms (for spatial queries) and required database skills for maintenance. The YukonAge database was converted to a 'flatfile' format (comma-separated values [CSV] and shapefile) that is more readily used on any software platform and easily updated. The Geochronology feature class is easily integrated with the bedrock geology GIS dataset allowing for spatial interrogation

of the data. The Geochronology dataset contains a compilation of all known radiometric ages from igneous and metamorphic rocks in Yukon, including U/Pb, K/Ar, $^{40}\text{Ar}/^{39}\text{Ar}$, and other dating methods, as well as mineralization ages determined by the Re/Os method. For some geochronology samples, images of the age plot are included to provide a means of evaluating the confidence of the age determinations. Future development should include links to published isotopic data tables. Detrital zircon U/Pb ages are excluded from the Geochronology dataset, except for samples that have a precisely determined maximum depositional age that is interpreted to closely reflect the age of strata.

A separate compilation of detrital zircon data is under development. The Geochronology dataset was first made available on the YGS website in 2018 and has been updated annually with the addition of new age determinations from YGS projects, other publications and identified gaps.

The Litho geochemistry dataset was first posted online in 2019. The whole rock geochemistry compilation was first developed to facilitate calculation of radiogenic heat production from Yukon granitoids as part of YGS' geothermal energy research program (Friend and Colpron, 2017; Colpron, 2019); and data for volcanic, sedimentary and metamorphic rocks were subsequently added. The dataset is a compilation of all known published and archival YGS data (many unpublished). The Litho geochemistry dataset benefited substantially from large datasets released by the GSC (Milidragovic et al., 2016; Ryan et al., 2018; Zagorevski, 2020). Annual updates fill identified gaps in the dataset and add new data from the literature and from ongoing YGS projects.

The MINFILE database is maintained by the Minerals Geology unit of YGS and is interfaced with assessment report files and the YGS drill core collection. Other datasets being developed at the time of writing this report include compilations of structural and rock property data collected during bedrock mapping programs by the YGS. Finally, a terrane map is also available for more generalized representations of the geology of the northern Cordillera at scale of 1:5 000 000 and smaller (Fig. 6a; <https://data.geology.gov.yk.ca/Compilation/2>).

Accessing and Using the Bedrock Geology Datasets

The Yukon Bedrock Geology dataset can be accessed in a wide range of formats. The authoritative resource for accessing the latest version of the Yukon Bedrock Geology dataset is through YGS's publication database (<https://data.geology.gov.yk.ca/Compilation/3>). The dataset can be viewed as layers within many of the web mapping applications created by YGS (<https://data.geology.gov.yk.ca/WebMaps/>) and Yukon government, including GeoYukon (<https://mapservices.gov.yk.ca/>

[GeoYukon/](#)). Advanced users can download the data for use with their own desktop GIS software from the YGS website (<https://data.geology.gov.yk.ca/Compilation/3>) or Geomatics Yukon (<ftp://ftp.geomaticsyukon.ca/GeoYukon>). The Yukon geology map can also be downloaded in PDF format from the YGS website (<https://data.geology.gov.yk.ca/Compilation/3>) either as a Yukon-wide 1:1 000 000-scale compilation (or "wall map" with legend; Colpron, 2022) or as a series of 1:250 000-scale tiles for each NTS sheet in Yukon (total of 43 maps; <https://data.geology.gov.yk.ca/Compilation/23>). These PDF tiles are georeferenced maps that can be viewed interactively on mobile devices using the Avenza Maps™ app (www.avenzamaps.com). When downloaded (for free) directly from the Avenza Maps Store (<https://www.avenzamaps.com/vendor/3337/yukon-geological-survey>) the user can view the Yukon geology maps on the free Avenza Maps™ app. The georeferenced PDF maps allow for real-time tracking and navigation on the geology base using any GPS-enabled mobile devices (e.g., smartphones and tablets). Each 1:250 000-scale map contains a legend specific to the NTS sheet to the right of the geology map and displays subsets of the geochronology (U/Pb, K/Ar and ⁴⁰Ar/³⁹Ar dates) and mineral occurrences datasets on the map (Fig. 9).

From Outcrop to Digital Map

New, detailed bedrock geology maps produced by the Yukon Geological Survey are built within the same GIS framework as the Yukon-wide compilation, therefore facilitating easy integration within the regional geodatabase. In the field, geologists capture site information (e.g., stations, lithology, structural data, rock magnetic susceptibility, etc.) on mobile devices and these point data are transferred to ArcGIS in the office. Maps are digitized in ArcGIS using the same attribute structures as the regional compilation. At completion of a mapping project, the new geology map is then easily substituted into the regional compilation and integrated following some edge-matching by YGS geologists. Once incorporated into the bedrock geology geodatabase, the updated data can easily be substituted on the various web services, thus making the Yukon bedrock geology map a "live" map.

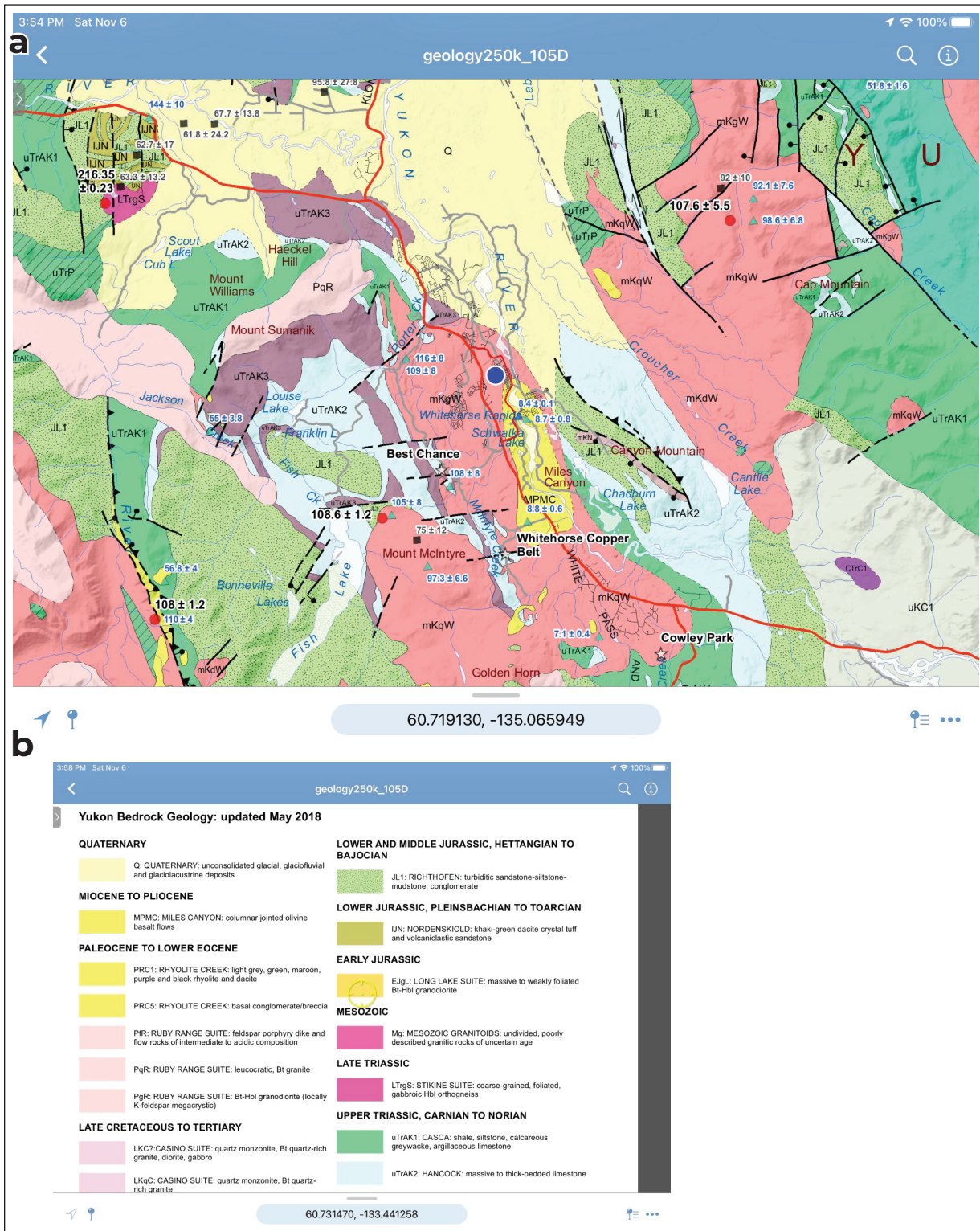


Figure 9. (a) Geology of the Whitehorse area as viewed on the Avenza Maps™ app on a tablet. The blue dot at the centre of the map indicates the “current” GPS position on the map, with coordinates shown at the bottom of the screen (latitude and longitude; WGS84 projection). **(b)** When scrolling to the right edge of the PDF map, the user can view a geological legend filtered for units present on the NTS sheet.

Some Key Points to Remember

- The Yukon Bedrock Geology dataset is in constant evolution with continued corrections, new data and maps added as they become available. As such, the user is encouraged to visit the YGS website regularly to ensure they are working with the latest version of the dataset.
- The bedrock geology GIS compilation was captured at the scale of publication. Therefore, the Yukon digital geology map does not have a unique scale. There is a common misconception that the Yukon bedrock geology map and data are at a scale of 1:1 000 000, because this is the scale of publication for the open file “wall map” (Gordey and Makepeace, 2001; Colpron et al., 2016; Colpron, 2022). For the most part, the bedrock geology data were captured at a scale of 1:250 000 or better. This last point is important to note, as a growing proportion of the Yukon map comprises data captured at 1:50 000 or larger scale (Fig. 2b).
- Although the Yukon bedrock geology GIS dataset offers a convenient way to access the latest information, with increasing better accuracy over time, the source maps remain the ultimate resource for any part of Yukon. The users should always consult the more detailed published maps when working in specific areas. Any discrepancies noted by the user should be reported to the Yukon Geological Survey (YGS-Bedrock@yukon.ca).
- User comments have made important contributions to improving the quality and accuracy of the bedrock geology dataset over the years. The Yukon Geological Survey aims to provide users with the best available geoscience data for Yukon. Any revisions or additional geological information known to the user would be welcomed by the Yukon Geological Survey.

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The original Digital Bedrock Geology compilation of Gordey and Makepeace (1999) provided the solid foundation from which the YGS’ modern geodatabase could evolve. The pioneering work of Steve Gordey and Andrew Makepeace helped propel the Yukon geology into the digital age. The update of the bedrock geology dataset was a lengthy and laborious process that involved many geologists and geological assistants at YGS over nearly a decade: Lee Pigage, Don Murphy, Steve Israel, David Moynihan, Grant Abbott, Esther Bordet, Olwyn Bruce, Panya Lipovsky, Kristy Kennedy, Samantha Darling, Liz Westberg, Brett Elliot and many others. I thank Kristy Kennedy for providing the Quaternary Alluvium (Qa) extract from the Surficial geology maps for use as an overlay to the bedrock geology map. Brett Elliot provided comments on an early version of this paper.

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Appendix 1

Yukon bedrock geology – centroid/polygon attribute

FIELD NAME	ALIAS	DESCRIPTION	TYPE	LENGTH
UNIT_1M	UNIT_1M	1 million-scale map unit	TEXT	25
LABEL_1M	Map_label_1M	Code for 1M label using gscGeology font	TEXT	12
UNIT_250K	UNIT_250K	1:250 000-scale map unit	TEXT	25
LABEL_250k	Map_label_250k	Code for 250k label using gscGeology font	TEXT	12
UNIT_ORIG	UNIT_ORIGINAL	Original map unit – at scale of capture (from published map)	TEXT	25
ASSEMBLAGE	ASSEMBLAGE	Tectonic assemblage (may include various stratigraphic units)	TEXT	50
SUPERGROUP	SUPERGROUP	Supergroup	TEXT	50
GP_SUITE	GP_SUITE	Group (stratigraphic); Suite (plutonic, metamorphic); Complex; Assemblage	TEXT	50
FORMATION	FORMATION	Formation (stratigraphic) and equivalents	TEXT	50
MEMBER	MEMBER	Member (stratigraphic) and equivalents	TEXT	50
NAME	NAME	Name of geological features such as plutons and batholiths	TEXT	50
TERRANE	TERRANE	Terrane	TEXT	50
TERR_LABEL	TERRANE_LABEL	Short label for terrane (e.g. YT, AX, SM...)	TEXT	10
TECT_ELEM	TECTONIC_ELEMENT	Tectonic element (e.g. Selwyn basin, Whitehorse trough)	TEXT	50
ERA_MAX	ERA_MAX	Maximum age – Era (timescale)	TEXT	50
PERIOD_MAX	PERIOD_MAX	Maximum age – Period/System (timescale)	TEXT	50
EPOCH_MAX	EPOCH_MAX	Maximum age – Epoch/Series (timescale)	TEXT	50
STAGE_MAX	STAGE_MAX	Maximum age – Stage/Age (timescale)	TEXT	50
AGE_MAX_MA	AGE_MAX_MA	Maximum age – numerical (in m.y.); derived from IUGS timescale for stratigraphic units OR from geochronological constraints for igneous rocks (date + error)	NUMBER	FLOAT
ERA_MIN	ERA_MIN	Minimum age – Era (timescale)	TEXT	50
PERIOD_MIN	PERIOD_MIN	Minimum age – Period/System (timescale)	TEXT	50
EPOCH_MIN	EPOCH_MIN	Minimum age – Epoch/Series (timescale)	TEXT	50
STAGE_MIN	STAGE_MIN	Minimum age – Stage/Age (timescale)	TEXT	50
AGE_MIN_MA	AGE_MIN_MA	Minimum age – numerical (in m.y.); derived from IUGS timescale for stratigraphic units OR from geochronological constraints for igneous rocks (date - error)	NUMBER	FLOAT
ROCK_CLASS	ROCK_CLASS	Rock classification – sedimentary, metamorphic, plutonic, volcanic	TEXT	50
ROCK_SUBCL	ROCK_SUBCLASS	Rock subclassification – clastic, carbonate, chert...; Prefix – ‘m’ = metamorphic, v = volcanic, p = plutonic; Suffix – for igneous rocks: ‘mafic’, ‘inter’ = intermediate, ‘felsic’, ‘ultram’ = ultramafic	TEXT	50
SHORT_DESC	SHORT_DESCRIPTION	Short unit description	TEXT	254
ROCK_MAJOR	ROCK_MAJOR	Major lithology(ies) within map unit	TEXT	100
ROCK_MINOR	ROCK_MINOR	Minor lithology(ies) within map unit	TEXT	100
ROCK_NOTES	ROCK_NOTES	Comment(s) for rock type	TEXT	254
COMMENTS	COMMENTS	Other comments	TEXT	250
RED	RED	Red value for unit RGB colour	NUMBER	Short Integer
GREEN	GREEN	Green value for unit RGB colour	NUMBER	Short Integer
BLUE	BLUE	Blue value for unit RGB colour	NUMBER	Short Integer

Appendix 1 continued.**Yukon bedrock geology – fault and contact attributes**

FIELD NAME	ALIAS	DESCRIPTION	TYPE	LENGTH
FEATURE	FEATURE	Fault, contact (<i>needed for query from merge line set</i>)	TEXT	25
TYPE	TYPE	Type of fault – thrust, normal, strike slip, unknown; or contact – stratigraphic, intrusive	TEXT	30
SUBTYPE	SUBTYPE	Fault – Dextral, sinistral, upright, overturned, unknown Contact – Unconformity, facies change, gradational... BLANK = Conformable	TEXT	30
CONFIDENCE	CONFIDENCE	Reliability – defined, approximate, inferred, covered	TEXT	15
NAME	NAME	Name of fault (<i>ignore for contacts</i>)	TEXT	50
REFERENCE	REFERENCE	Source (publication)	TEXT	254
SCALE	SCALE	Minimum scale for display (x 1000) – 1000, 250, 50...	NUMBER	INTEGER
SYM_DIR	SYM_DIR	Direction of symbols for faults (<i>e.g. NE, SW, etc...</i>)	TEXT	10
COMMENTS	COMMENTS	Comments	TEXT	250

Appendix 2**Projection information for YGS datasets:**

Projection ALBERS
 Datum NAD83
 Zunits NO
 Units METRES
 Spheroid GRS1980
 Xshift 0.0000000000
 Yshift 0.0000000000

Parameters

61° 40' 0.000" – 1st standard parallel
 68° 00' 0.000" – 2nd standard parallel
 -132° 30' 0.000" – central meridian
 59° 00' 0.000" – latitude of projection's origin
 500000.00000 – false easting (metres)
 500000.00000 – false northing (metres)

