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The Devonian of WCSB: overview of GSC contributions over the last 10 years

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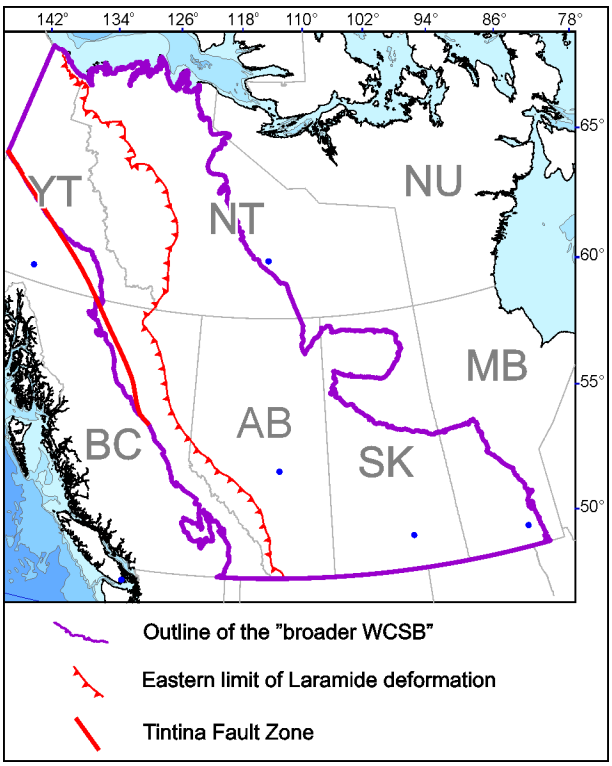

This bibliographic account of the last decade summarizes 89 publications dealing with various aspects of the Devonian-earliest Mississippian rocks and geologic processes. The geographic extent of this compilation is outlined by purple on Figure 1: it consists of the Western Canada Sedimentary Basin (WCSB) and the eastern Cordillera residing within the limits of the autochthonous portion of paleocontinent Laurentia. At least one author in these publications is either working at the Geological Survey of Canada (mostly GSC-Calgary office) or was working at the GSC at the time of publication preparation and submission, which reflects in published author's affiliation.

Figure 1. Outline of the Neoproterozoic-Phanerozoic sedimentary wedge of the autochthonous portion of western Laurentia ("broader WCSB"), Canadian part.

Most of these works are trackable in GEOSCAN (https://ostrnrcan-dostrncan.canada.ca/home). A few works led by provincial or territorial geological surveys don't have GEOSCAN records (Ferri et al., 2015, 2019a,b, 2021; Fraser et al., 2018). These works can be traced in respective provincial/territorial libraries, which were iteratively cross-checked as well. My compilation includes full-size publications with new or updated geoscience information. I did not track formal "project update" open files without new scientific information, internal reports (e.g., GSC PaleoLab reports, Minister briefing notes), short and extended conference abstracts, and big-data works where GSC's analytical data are used as a small fraction of a larger, usually international database. This compilation brings together 'black-and-white" and "grey" literature pools, which makes it rather comprehensive, although exhaustive completeness cannot be guaranteed.

The following thematic classifiers were used: Sedimentology, tectonics, magmatic and Earth-surface processes (STEP); Lithogeochemistry, core data (LCD); Burial-Exhumation (BE); Clastic provenance (CP); Fluids, gas, geothermal, reservoirs (FGGR); Bedrock maps (BM); and Metallogeny (ME). Each publication in the References table is indexed with one of these codes, depending on the research focus, although it is obvious that most journal papers and book

chapters cover more than one. The ST grouping is different from STEP in its focus on formal or informal updates on the litho- or biostratigraphic frameworks of Devonian rocks. On Figures 2 and 3, the percentage of GSC lead authorship is the fraction of papers led by GSC scientists in the total publication output per theme (Fig. 2A) or annually (Fig. 3B). The GSC annual average authorship is the mean fraction of GSC authors in the list of author (Fig. 3B).

Over the last decade, GSC scientists were investing most scientific efforts in understanding sedimentologic, tectonic, magmatic, evolutionary, or, broadly, the Earth-surface processes of the Devonian, followed by fluid and reservoir studies and bedrock mapping (Fig. 2A). Figure 2B shows that most work was done in the Northwest Territories (53 works or 60% of total output), which was driven by bedrock mapping under the GeoMapping for Energy and Minerals Program of NRCan (Fig. 2B). This is followed by efforts in understanding the origin of MacMillan Pass and HEBS (Hyper Enriched Black Shale) metalliferous horizons in Yukon (15 works or 18% of total) and specialized fluid and reservoir studies on samples from Alberta, mostly the Duvernay Formation (12 works or 13.5% of total). The province of Saskatchewan is least represented in GSC collaboration: only one work on hydrocarbon resource assessment of the Bakken Formation (Chen et al., 2016). No works on the Manitoban portion of Williston Basin could be traced.

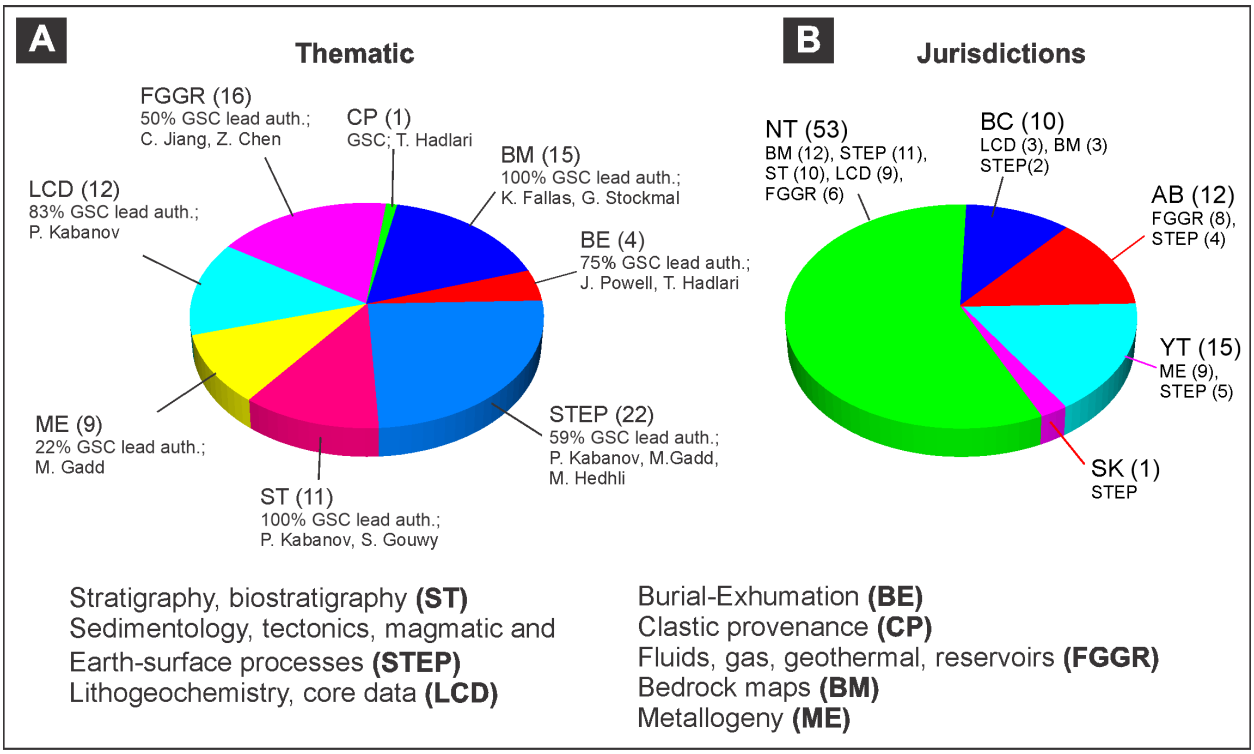

Figure 2. Publications on the Devonian of broader WCSB with GSC authors: (A) by theme; (B) by province and territory. Number of published works in parentheses. Most frequent first authors are listed.

Figure 3 shows that the first authorship of GSC scientists slopes from 80-100% in 2014-2017 down to 30-65% in 2020-2023, and the GSC average authorship co-trends. Conversely, the fraction of papers in peer-reviewed journals increases from ≤50% before 2019 to the domoinant publication type afterwards. This seems to reflect the tendency of increasing inter-organizational

and international collaboration while delegating some research leadership to non-GSC colleagues.

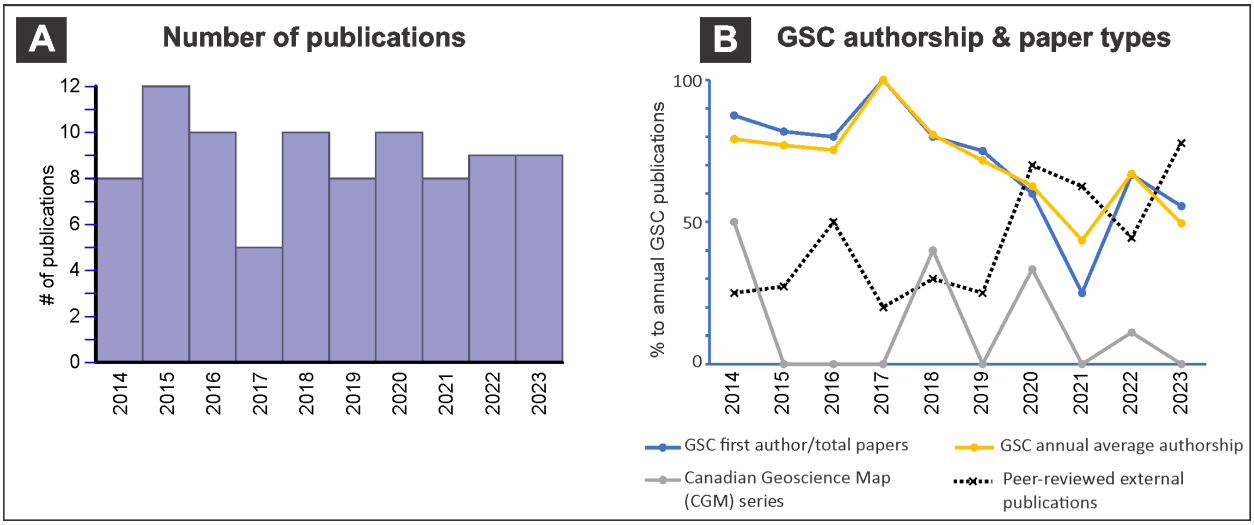

Figure 3. Time trends in 2014-2023: (A) number of publications with GSC authors and (B) metrics for the proportion of GSC authors and publication types.

References

References (GSC authors in bold)	Thematic code
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