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README FILE

DESCRIPTION OF SUPPLEMENTARY FILES

Supplementary data files (7)
Supplementary Google Earth file (1)
Supplementary map file (1)
Supplementary figure file (1)
Supplementary methods file (1)

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Supplementary data files (SD)
File names:
SD 1- Endnote database for Wrangellia (.enl file)
SD 2- Reference list for Wrangellia (.doc file)
SD 3- Petrography and geochemistry for $^{40}Ar/^{39}Ar$ samples (.xls file)
SD 4- $^{40}Ar/^{39}Ar$ analytical data (.xls file)
SD 5- Wrangellia ages and biostratigraphy (.xls file)
SD 6- Previous research on Wrangellia (.doc file)
SD 7- Stratigraphy of Wrangellia (.doc file)

SD 1- Endnote database for Wrangellia (.enl file)
This Endnote library is a compilation of approximately 500 references mostly related to research of Wrangellia, or parts of western North America. This .enl file was created with Endnote X1.0.1 (Bld 2682) and should be compatible with older versions of Endnote. The folder names SD1_Endnote_database_Wrangellia.Data is also necessary for opening the .enl file.

SD 2- Reference list for Wrangellia (.doc file)
This .doc file is an exported version of the Endnote file in Supplementary data file 1 (SD1) and was created with Microsoft Word 2003.

SD 3- Geochemistry for $^{40}Ar/^{39}Ar$ samples (.xls file)
This Microsoft Excel file contains the analytical data for whole-rock analyses for the 19 samples dated by the $^{40}Ar/^{39}Ar$ dating method. Analyses were performed by ActLabs and the analytical methods are summarized in Chapter 2 and Appendix E. Additional information in this table includes: UTM coordinates, geographic location, lithology, mineral proportion, and texture. This file was created with Microsoft Excel 2003.

SD 4- $^{40}Ar/^{39}Ar$ analytical data (.xls file)
This Microsoft Excel file contains the analytical data for the $^{40}Ar/^{39}Ar$ dating method for the 20 mineral separates analyzed at the Noble Gas Laboratory in the Pacific Centre for Isotopic and Geochemical Research at University of British Columbia. Age spectra and isochron diagrams for each of the samples are shown along with all the analytical data from incremental step-heating. The analytical methods are summarized in Appendix H. Where

multiple analyses of a single sample were made, all the results for each sample are included in a single worksheet in this workbook. This file was created with Microsoft Excel 2003.

SD 5- Wrangellia ages and biostratigraphy (.xls file)
This Microsoft Excel file contains 3 worksheets that are described separately below.

Age (worksheet)
The Age worksheet contains ~750 isotopic ages for units assigned to Wrangellia. Most of this data was extracted from the CordAge 2004 database and was supplemented by ~50 ages not in the CordAge database, mostly from Alaska. Samples of the Coast and Insular Belts are included, based on their location, and caution should be used in deciding whether samples are actually located within Wrangellia. CordAge 2004 (a database of isotopic age determinations for rock units from the Canadian Cordillera) is an MS-Access based database, consisting of the merged datasets of the publically available products BCAge 2004A-1 (released October 2004; Breitsprecher and Mortensen (2004a)) and YukonAge 2004 (released July, 2004; Breitsprecher and Mortensen (2004b)). The compilation contains all reported non-proprietary isotopic age determinations for bedrock units from British Columbia and Yukon Territory respectively: 9321 age determinations from 5997 rock samples, summarizing 778 published articles, theses, reports or unpublished sources. Katrin Breitsprecher offered assistance with extracting this information. The user is referred to Breitsprecher and Mortensen (2004a, 2004b) for information about the rating system of ages (**Rel_rating** column; column H) and other details.

The database should not be cited as the source of the age. Age determinations should be cited to the original source, which is provided in each record of the database.

Age_refs (worksheet)
This worksheet contains the information of the references for the age compilation listed in the Age worksheet (described above). The **ref no** column (column A) in the Age_refs worksheet refers to the **Ref No** column (column L) in the Age worksheet.

Biostratigraphy (worksheet)
This is a compilation of 75 fossil age determinations from published literature related to Wrangellia. The full reference where each determination is published is included in column B and the region is shown in column E. All of the age ranges are plotted in Figure 5.22 according to the region indicated in column E. The low and high ages for each age range use the age boundaries for epochs and stages from Gradstein *et al.* (2004). Age boundaries for the Triassic are from Ogg (2004) and revised based on Furin *et al.* (2006). This file was created with Microsoft Excel 2003.

SD 6- Previous research on Wrangellia (.doc file)
This is a summary of previous research on parts of the Wrangellia Terrane in Alaska, Yukon, and British Columbia that includes many references to work. These references and others are listed in SD1 and SD2.

SD 7- Stratigraphy of Wrangellia (.doc file)

A detailed description of the stratigraphy of Wrangellia is presented in this word document. The Supplementary figure file contains 9 figures that accompany this summary of the stratigraphy.

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Supplementary Google Earth file
File name: ALL Wrangellia files (.kmz file)

This .kmz file consists of georeferenced information that is designed to be viewed with the satellite imagery in Google Earth. The Google Earth application is available for free download at http://earth.google.com/. Information about Google Earth can be found at this web address. **Please use the most current version of Google Earth for viewing these files (version 5.0 as of June, 2009).**

This single Google Earth file contains subfolders with ten folders listed below. Ten Google Earth files were combined into a single file as separate folders. This is a larger file, but it will be easier to download this single file and have all the Google Earth files contained within a single kml file for viewing. The photograph files have subfolders for each of the field areas.

The folders contain the following information:

1- Mapped Wrangellia flood basalts
This is a red transparent layer that shows the distribution of the Wrangellia flood basalts in Alaska, Yukon, and British Columbia. The map was derived from data in Wilson *et al.* (1998, 2005), Israel (2004), Massey *et al.* (2005a, b), and Brew (2007, written comm.).

2- Major faults in Alaska and Yukon
3- Major faults in southwest BC
These folders show the location of faults in parts of Alaska, Yukon, and BC. These files were filtered from original files found at the following locations: Alaska from http://www.asgdc.state.ak.us/; Yukon from in Israel (2004); BC faults from Massey *et al.* (2005a, b).

4- Alaska sample locations
5- Yukon sample locations
6- Vancouver Island sample locations
These files show the locations, sample numbers, and flow type of samples of Wrangellia flood basalts collected during field work.

7- Alaska Range photograph locations
8- Wrangell Mountains photograph locations
9- Yukon photograph locations
10- Vancouver Island photograph locations
These four folders contain small versions of georeferenced photographs. Multiple photographs are referenced to a single coordinate. Therefore, in order to view all of the

photographs from a single coordinate it is necessary to open the subfolders for each region in the My Places menu so individual photographs can be selected and viewed. Zooming in also helps to distinguish photograph locations. These photographs and others can be viewed in higher resolution online at the following link:
http://www.eos.ubc.ca/research/wrangellia/

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Supplementary map file
File name: Supplementary maps (.pdf)

This file contains four maps of different part of Wrangellia as part of a single pdf file with references. Two maps are simplified regional geologic maps of southwest Yukon and southeast Alaska showing the distribution of Triassic flood basalts. Two maps are detailed geologic maps of areas in the Amphitheater Mountains in the Alaska Range and on northern Vancouver Island.

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Supplementary figure file
File name: Supplementary figures (.pdf)

There are nine figures with captions in this single pdf file. These figures accompany SD7 (Stratigraphy of Wrangellia) and illustrate some of the exceptional exposures of the volcanic stratigraphy of the Wrangellia plateau in Alaska, Yukon, and British Columbia. Additional georeferenced photographs are part of the Supplementary Google Earth files and also can be found at the following website dedicated to research on Wrangellia: http://www.eos.ubc.ca/research/wrangellia/.

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Supplementary methods file
File name: Supplementary methods (.doc)

This file summarizes the analytical methods used for $^{40}Ar/^{39}Ar$ analyses.

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