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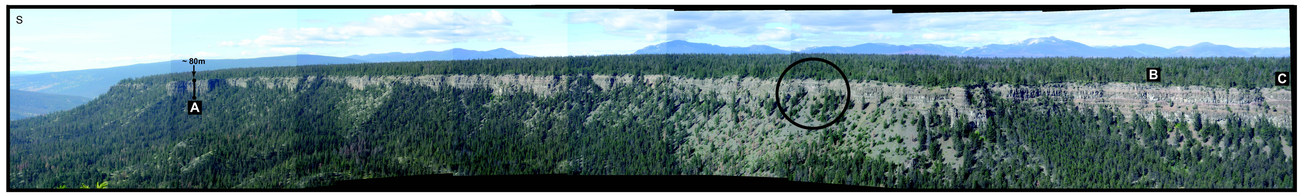
Chasm Bedrock Cross-sections at Chasm Provincial Park, British Columbia

R.-E. Farrell, J.K. Russell, and K.A. Simpson



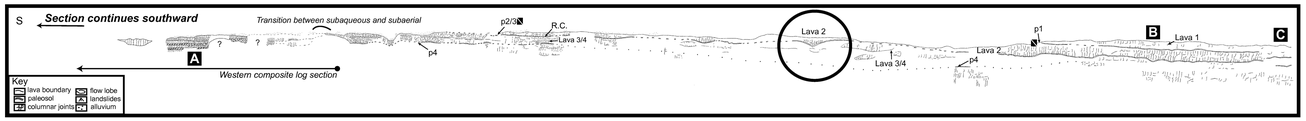


Figure 1. Liden Panorama, view to the southwest. Photomosaic and associated line drawing illustrating the stratigraphic relationships on the western wall of the Chasm canyon, terminating near Liden Pond. The approximate length of this section is 3 km. This panorama has been spliced into two panoramas (southern and northern) due to perspective. The southern panorama is two-thirds the size of the northern panorama, using the 'C' control point as reference. Letters B and C are control points across the two panoramas. Lava 2 is circled highlighting an identifiable feature in the exposed lavas. The abbreviation 'R.C.' indicates the southernmost exposure of the red colouration of the paleosols. There is some variability in vertical and horizontal scale along the photomosaic as a result of the positions from which the photographs were taken relative to the canyon wall. The exposed cliff walls range in height from approximately 40 to 120 metres and expose subhorizontal basalt lavas that are underlain by red paleosols. The view ends at the northern end of the "West Composite graphic log" (Farrell, 2010; Farrell et al., 2010). Lavas and paleosols vary in thickness and internal texture. Moving south along the canyon exposes older lavas. Circled areas are reference points between the image and the line drawing. A, B, C, and D on the photomosaic correspond with A, B, C, and D on the line drawing. Lava 3/4 and paleosol 4 have been correlated across an area of no exposure. The stratigraphic correlation is made on the basis of colour and texture of the paleosol horizon, the blocky to massive character of the columnar-jointed lava, and the clear association of the Lava 3/4 to paleosol 4, where there is exposure.

1) Truncated paleosols ( ) = paleosols that are terminated or discontinuous.
2) Merged paleosols ( ) = a blurred boundary. Younger soils have developed into older soils.
3) Numbering System: Lavas and paleosols are numbered youngest (Lava 1/ p1) to oldest (Lava 6/ p6).

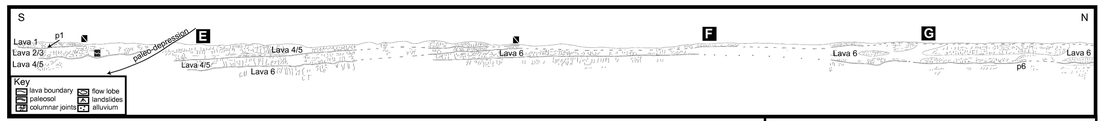
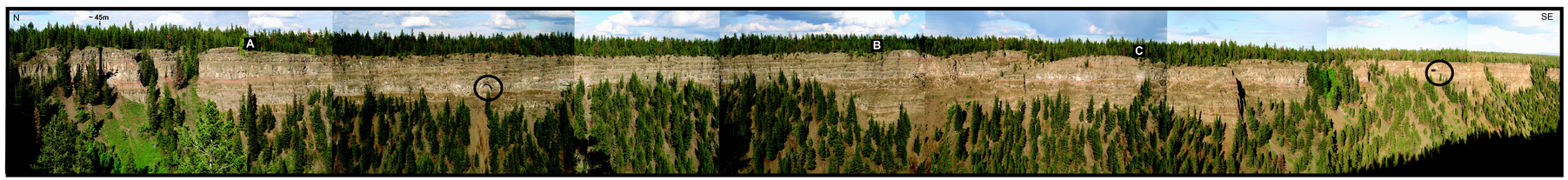


Figure 2. Lookout Panorama, view to the west. Photomosaic and associated line drawing illustrating the stratigraphic relationships on the western wall of the Chasm canyon. There is a period of no exposure between the northernmost section of Liden panorama and the start of Lookout panorama. There is some variability in vertical and horizontal scale along the photomosaic as a result of the positions from which the photographs were taken relative to the canyon walls. The exposed cliff walls range in height from approximately 40 to 120 metres and expose subhorizontal basalt lavas that are underlain by red paleosols. The sequence dips gently to the north, where the youngest lava (Lava 1) on this canyon wall is exposed. Moving south along the canyon exposes older lavas. E, F, and G on the photomosaic correspond with E, F, and G on the line drawing.

1) Truncated paleosols ( ) = paleosols that are terminated or discontinuous.
2) Merged paleosols ( ) = a blurred boundary. Younger soils have developed into older soils.
3) Numbering System: Lavas and paleosols are numbered youngest (Lava 1/ p1) to oldest (Lava 6/ p6).



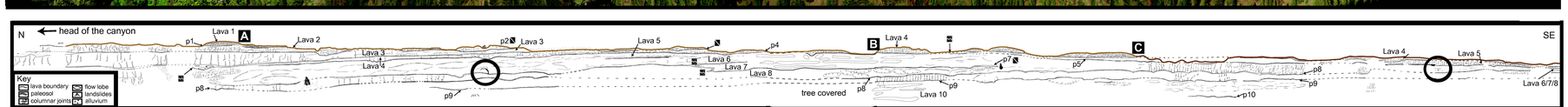


Figure 3. Eastern Panorama. Photomosaic and associated line drawing illustrating the stratigraphic relationships on the eastern wall of the Chasm canyon. The approximate length of this section is 4 km. There is no vertical exaggeration. There is some variability in vertical and horizontal scale along the photomosaic as a result of the positions from which the photographs were taken relative to the canyon walls. The exposed cliff walls range in height from approximately 40 to 120 meters and expose subhorizontal basalt lavas that are underlain by red paleosols. The view begins at the head of the canyon, which is visible from the Chasm Provincial Park lookout site, and ends at a location of the northern end of the "East Composite graphic log" (Farrell, 2010; Farrell et al., 2010). Lavas and paleosols vary in thickness and internal texture. The sequence dips gently to the north, where the youngest lava (Lava 1) on this canyon wall is exposed. Moving south along the canyon exposes older lavas. Circled areas are reference points between the image and the line drawing. A, B, and C on the photomosaic correspond with A, B, and C on the line drawing. Brown line indicates the top surface of the section.

1) Truncated paleosols ( ) = paleosols that are terminated or discontinuous.
2) Merged paleosols ( ) = a blurred boundary. Younger soils have developed into older soils.
3) Numbering System: Lavas and paleosols are numbered youngest (Lava 1/ p1) to oldest (Lava 10/ p10).

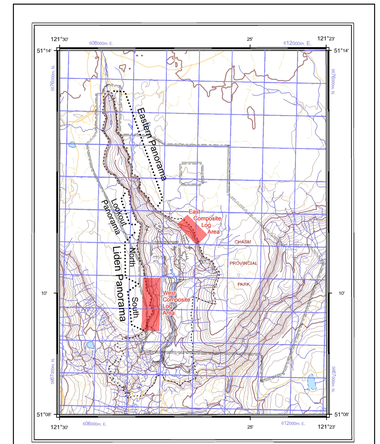


Figure 4. Detailed Location Map, Chasm Provincial Park vicinity

Log extents, Farrell et al., 2010

Digital base map from Terrain Resource Information Management Program (TRIM), BC Provincial Baseline Atlas, under the External TRIM Data Access Policy Guidelines for BC education institutions. Modified by Geological Survey of Canada

DESCRIPTIVE NOTES

These cross-sections relate to GSC Open File 6230 (Farrell et al., 2010).

The modified method of Architectural Element Analysis (AEA) used at Chasm, and inter-relationships of the lavas and paleosols at Chasm, are described in Farrell, 2010.

Liden panorama is separated into two parts (northern and southern) due to perspective differences. The southern panorama is two-thirds the size of the northern panorama.

REFERENCES

Farrell, R.-E., 2010. Volcanic facies architecture of the Chilcotin Group Basalts at Chasm Provincial Park, British Columbia. Unpublished M.Sc. thesis, The University of British Columbia, Vancouver, BC, 151 p.

Farrell, R.-E., Anderson, R.G., Simpson, K.A., Andrews, G.D.M., and Russell, J.K., 2010. Geology, Chasm Provincial Park and vicinity, British Columbia. Geological Survey of Canada Open File 6230 and Geoscience BC Map 2009-16-1, scale 1:20 000.

OPEN FILE DOSSIER PUBLIC 6657
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2010

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