GEOG 205: lectures and labs, March 11-15

Reminders for this week:

Friday lecture will be posted ONLINE by Tuesday (no in-class lecture)

Lecture = 'Projects' – examples of past year projects

- ideas, what to do, what not to do

Take a look before your lab this week

Project guidelines will be posted on the homepage by Tuesday

- also on labs page for this week (Lab 9)

This gives tips and data sources – **review this before your lab** Recommended to find your data this week



Interlaken, Switzerland

Mountain cartography: extra challenges

Which relief techniques: hachures, contours, hypsometric tints, shading ?

- High density of hachures and contours lines
- Contrast of colour tint layers, and shading (SW slopes)
- Ridges running NW-SE (equal shading / illumination)
- Issues of colour contrast with density of human features in valleys
- 2D map v 2.5D perspective (visual versus no steady scale)



Is it a map?or a 2.5D graphic

Mountain Cartography



Jasper / Mt. Robson, 1935 (Icefields Parkway first constructed 1931-41)

Mountains and cartography

25% of world land surface





Brief timelines of mountain mapping

Early mapping pre-1875

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- Photo-topography in Canada 1875-1950
- Federal mapping 1950 -1995
- Private sector 1995 present

• Planetary mapping (1645 – present)

Brief history of mountain cartography: Early mapping pre-1875



Switzerland, 1737: mountain mapping before surveying





1862.



1911 hachures

Canada (Selkirks) 1885, part of railway map

2. Early mapping: Photo-topography, 1885-1950

A technique introduced from France by the surveyor-general (Edouard Deville). Surveyors would place the camera on a mountain peak, point the lens at the horizon and take panoramic shots of the surrounding peaks. Surveyors took photos in the short summer season, then would complete their calculations and mapping in their offices during the winter. **This allowed larger areas to be surveyed more accurately**, in less time, and at one-third the cost of conventional surveying. It later gave way to aerial photogrammetry.

← Founder: Alpine Club of Canada

Early full colour map: Canadian Rocky Mountain

Mapped to entice climbers from Europe (20 maps in the series, Banff to Lake Louise)

Figure 3: Forty-Mile Creek 1890. Topographical Surveys Branch, Department of the Interior, Ottawa. Triangulation by W.S. Drewry, D.L.S. Topography by J.J. McArthur, D.L.S. 1:40,000

Mapping before aerial photography: Selkirk Range, 1906 (A.O. Wheeler) UNBC special collections, contours 100'

BC-AB boundary commission 1913-21

INTERPROVINCIAL BOUNDARY COMMISSION BOUNDARY DETWEEN ALBERTA AND BRITISH COLUMBIA

sample map from AB-BC boundary commission map series: Mt. Robson, 1923

Robson Glacier, Rearguard Mountain and Berg Glacier / Lake – August 2011

3. Post 1950: Manual shaded relief 1960s-70s (1962)

Swiss cartographers 'imported' to train Canadian cartographers on the 'swiss' method incorporating rock hachures with contours and hillshading - 1975

gure 15. Ayesha (left) and Bow Glacier (right) from Peyto Glacier Map - New Edition.

Columbia Icefield, 1981 ... contours, shading and rock hachures

4: **1995:** government map-making was left to the private sector e.g. **Gemtrek maps (Calgary):** <u>http://www.gemtrek.com</u>

BC 'TRIM' data – available ~1995 (\$500 / map sheet) e.g for recreational mapping

Mt. Waddington- highest mountain entirely in BC

Note striping in the DEM on icefields BC TRIM DEM

Marcel Morin, Timberline consulting

Skyline trail, Jasper National Park, 2013 (Mike Mitchell)

Area 1: Pyramid Peak, Axel Heiberg Island

Our final map sheet to complete the 1:50,000 topo series: 13,350 maps

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NASA 2000 Landsat 7

Hillshade 50% transparency

Contours and ice intersected To enable bi-colour contours

Pyramid Peak

Tundra grasses in yellow plus index contours labels

1400

Pyramid Peak

and a

1300

1100

International Mountain workshop commission- biennial workshop

Berchtesgaden, Austria-Germany

http://www.mountaincartography.org/activities/workshops/index.php

New Zealand: Geographx, Roger Smith 'Mapsmith' – NZ track maps https://geographx.co.nz/services-products/printed-maps/milford-track-2/

Tom Pattersonhttp://shadedrelief.com/maps-and-data.htmlBernhard Jenny:http://www.reliefshading.com/

Realism: http://www.shadedrelief.com/realism

OSTTIROL-ÖSTERREICH

Außervillgraten

Sillian HOCHPUSTERTAL

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Eric Knight maps

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Summary of Mountain cartography methods:

All relief methods used, especially shaded relief, contours, panoramas

Online topographic map viewers / mountain countries

Switzerland: http://map.geodataviewer.admin.ch/geodatenviewer.php

New Zealand: https://www.topomap.co.nz/

Norway statkart: http://www.norgeskart.no

2000S -> Mapping from drones - UAVs Unmanned Aerial Vehicles – easily and quickly launched

Matterhorn:

https://www.youtube.com/watch?v=Fs2C_wXQ_IM

