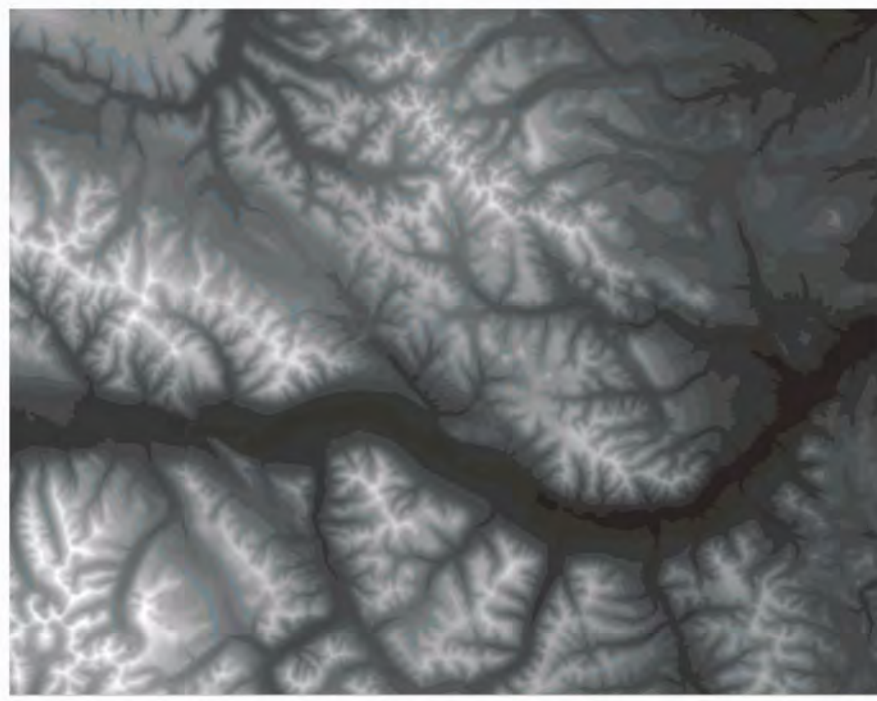
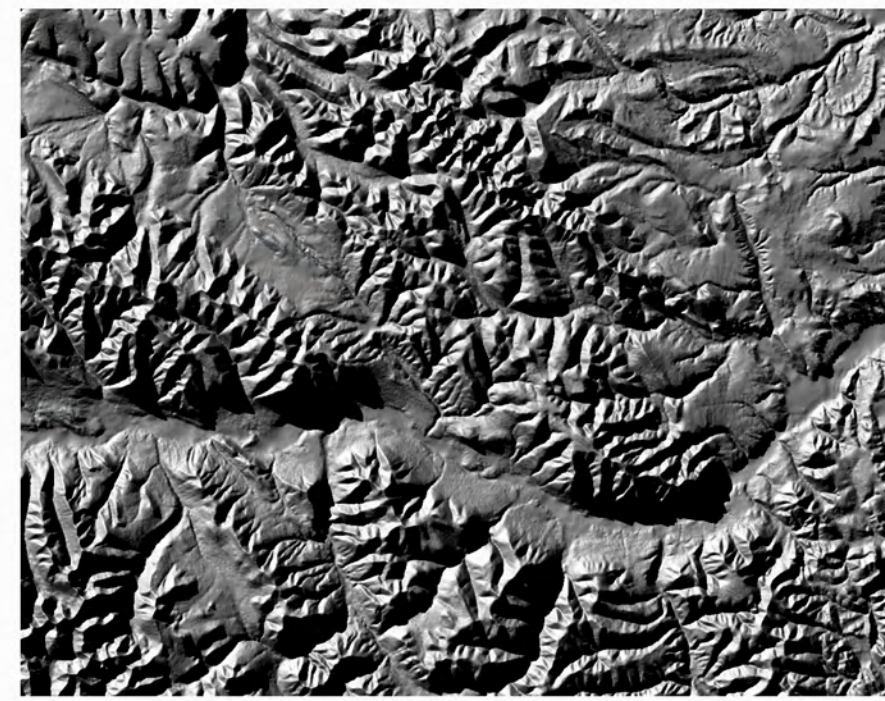


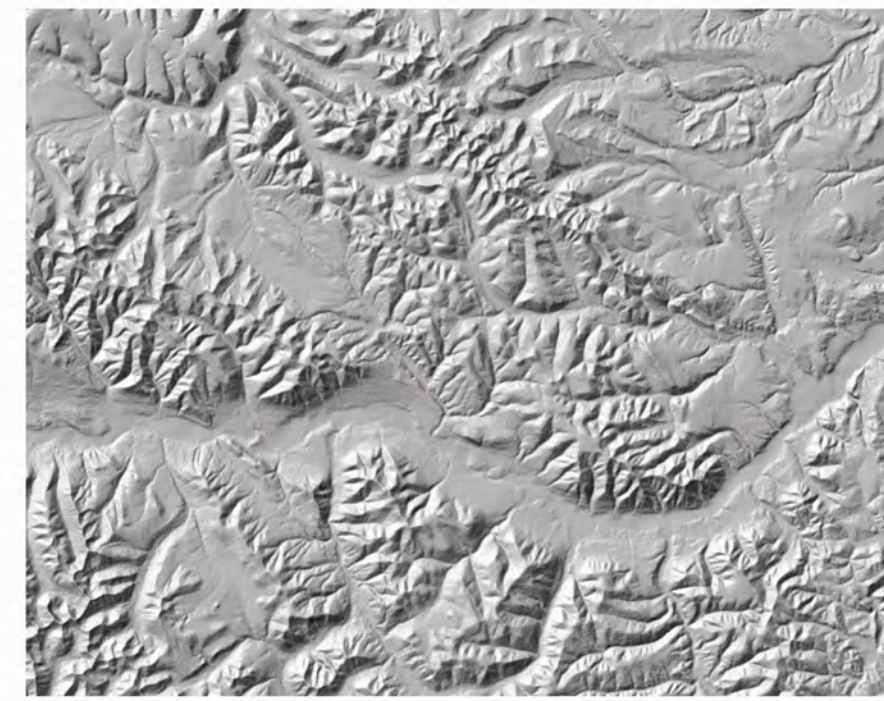
H I L L S H A D E E N H A N C E M E N T



DEM created from merged contour data using Topo to Raster



High Contrast: Z factor: 3 Azimuth: 315° Altitude: 35° Model Shadows option on

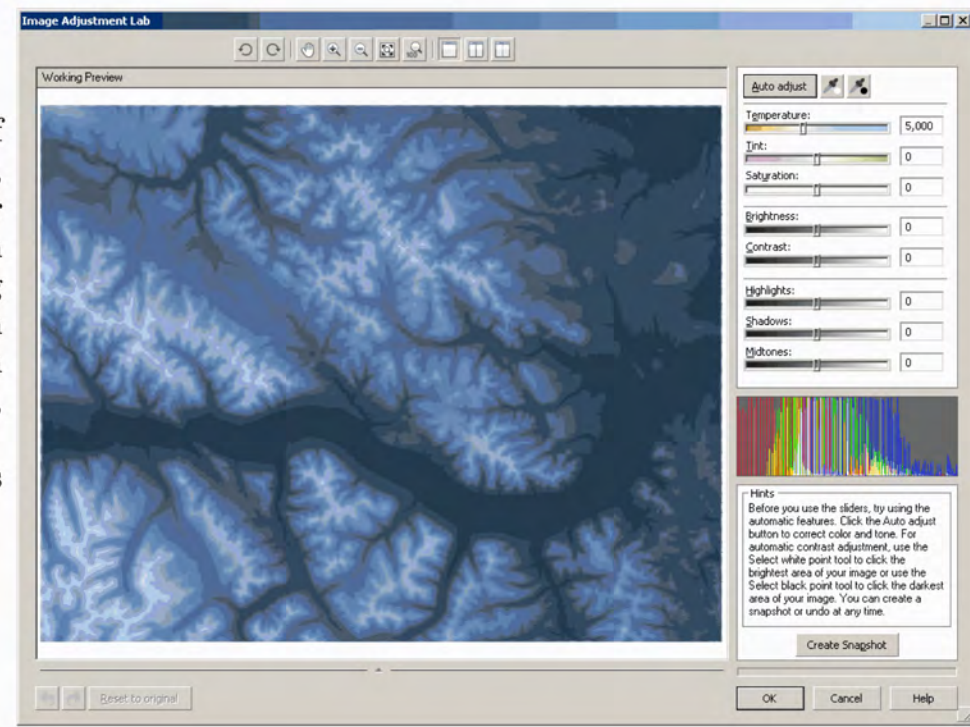


Medium Contrast: Z factor: 2 Azimuth: 315° Altitude: 50°

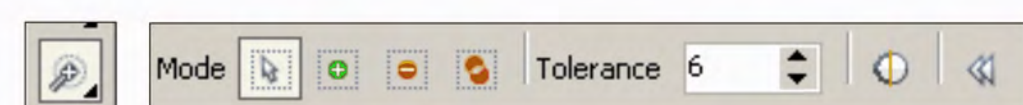
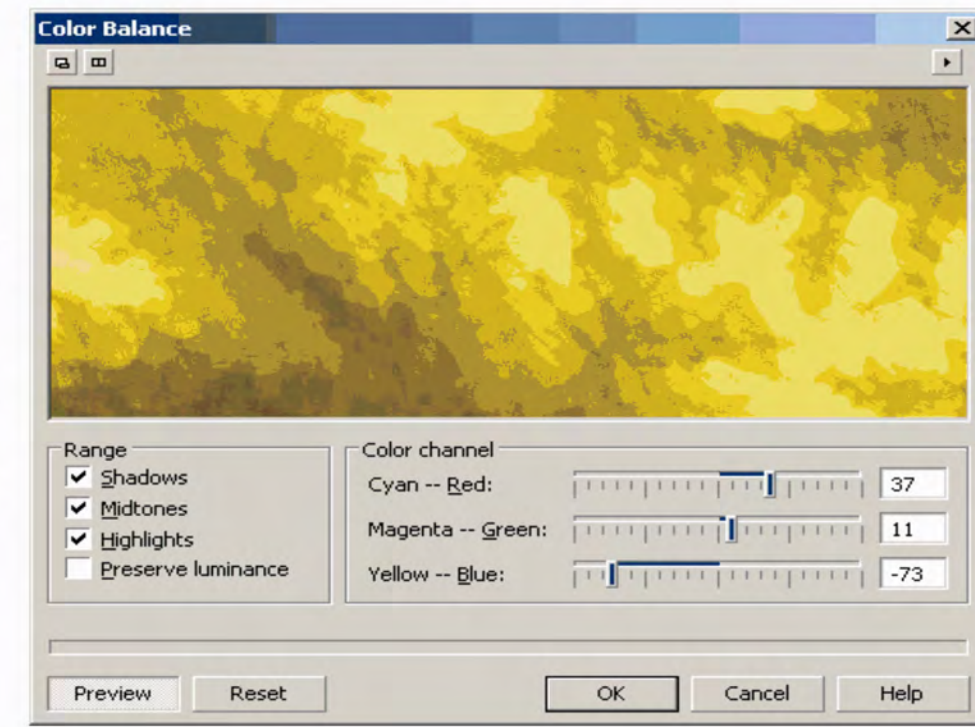


Low Contrast: Z factor: 1 Azimuth: 315° Altitude: 35°

The *Image Adjustment Lab* consists of automatic and manual controls, which are organized in a logical order for image correction. By starting in the upper-right corner and working down the list of controls, you can manipulate important aspects such as colour temperature, saturation, brightness and contrast. This tool was used to alter the DEMs of almost every hillshade example.



The *Colour Balance* dialogue allows you to manipulate the colour balance of an image by sliding between the complementary counterparts of CMY and RGB. CMY is listed on the right, RGB on the left. Shadows, Midtones and Highlights can be tweaked to produce attractive overlays for the hillshades pictured and was used extensively for each example.



The *Wand Tool* allows for the selection of colour elements with irregular edges and can grab others within the image by selecting 'similar'. It can be very useful in isolating specific colours, but can be very finicky at times. The Tolerance is paramount when selecting 'similar' as it will often select more than one would like.

The drop-down menu in the *Object Manager* allows you to pick various options that alter the look of a given layer or image. The options used in creating these hillshades were *Normal*, *Overlay* and *Multiply*.

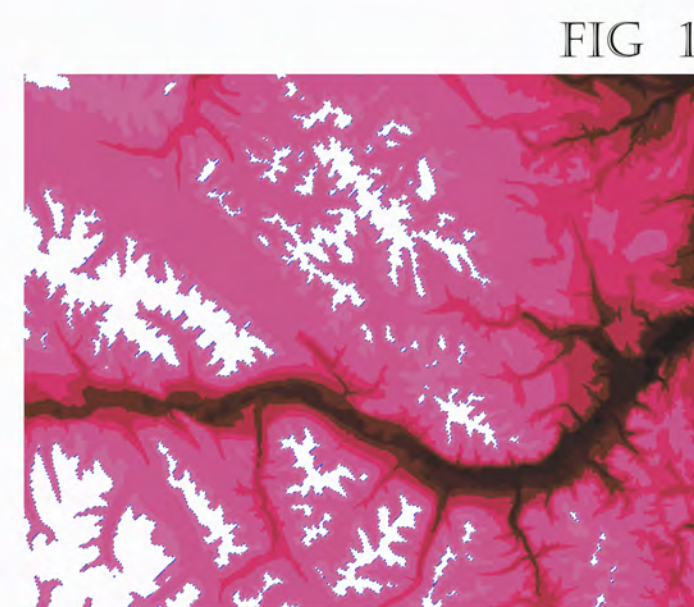
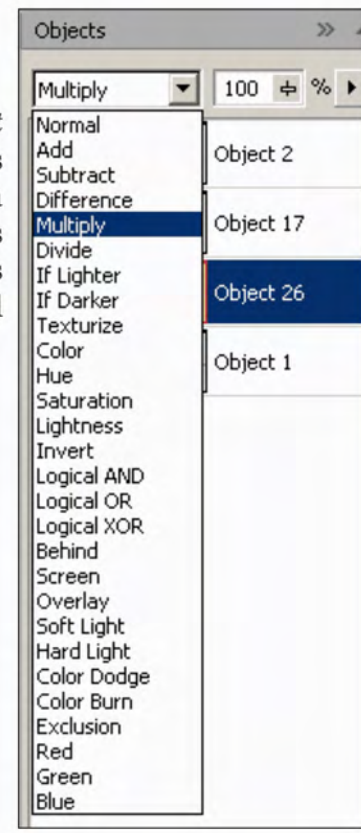


FIG 1

In the *Image Adjustment Lab*, the settings for brightness, contrast and saturation were meddled with in order to give the highest areas more distinction. Once this was achieved, the wand tool was used to isolate those areas. Since the colour of the peaks was not white, brightness on the area was increased to 100.

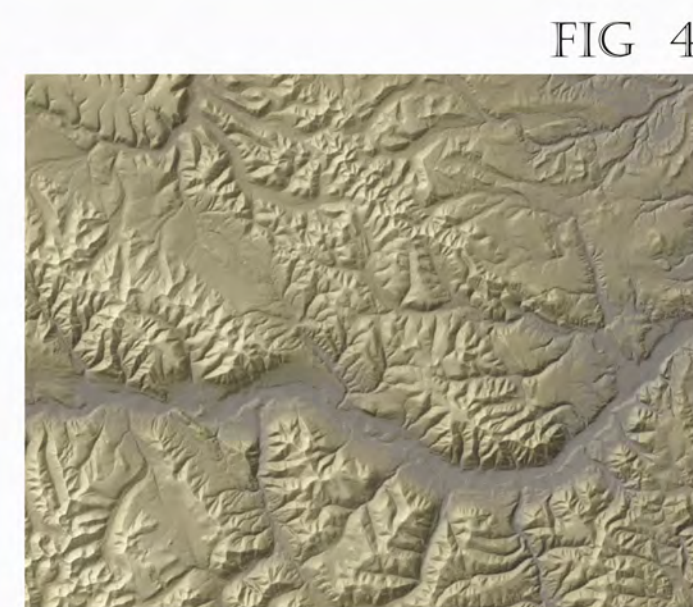


FIG 4

Hypsometric DEM laid over Medium Contrast Hillshade with a 35% transparency.

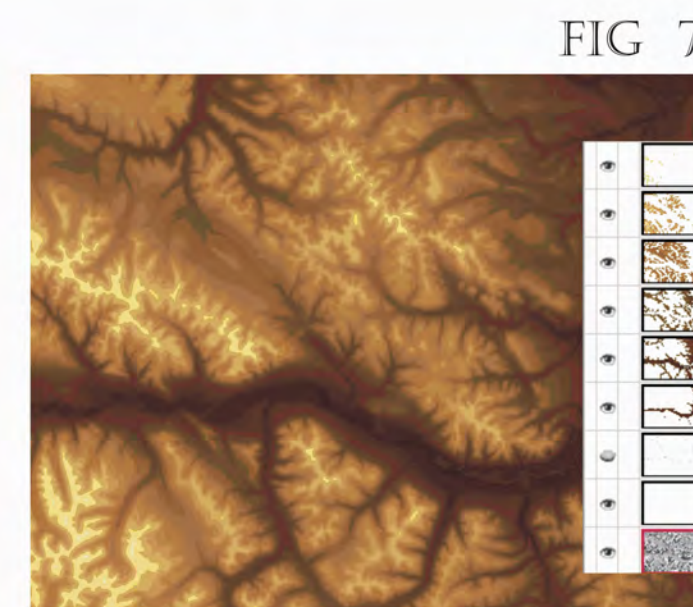


FIG 7

An example of separating the DEM into various layers in order to achieve desired colours and contrasts. This was used twice during the refinement of the sample hillshades.

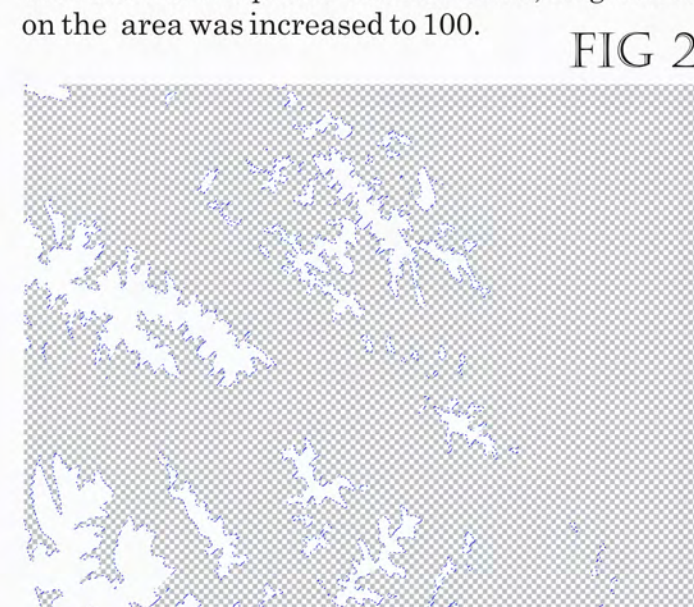


FIG 2

Once the white areas had been established, the wand tool was used again to remove the background areas of pink. The object was placed on a layer of its own and feathered linearly with a tolerance of 5. This efficiently created snow caps.



FIG 5

With snow caps - overlay with 45% transparency

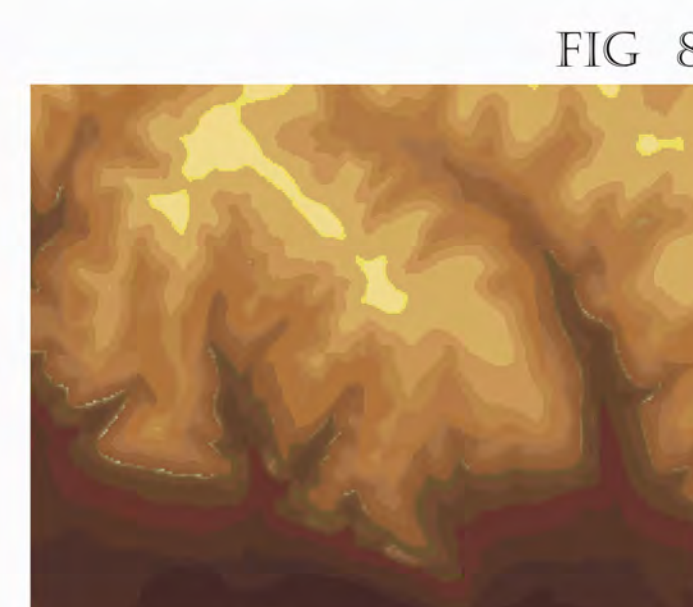


FIG 8

Using this particular method unfortunately meant that the wand tolerance left several gaps in between the layers where it failed to pick up colour. To remedy this problem the Smear tool was used to blend the edges over the holes.

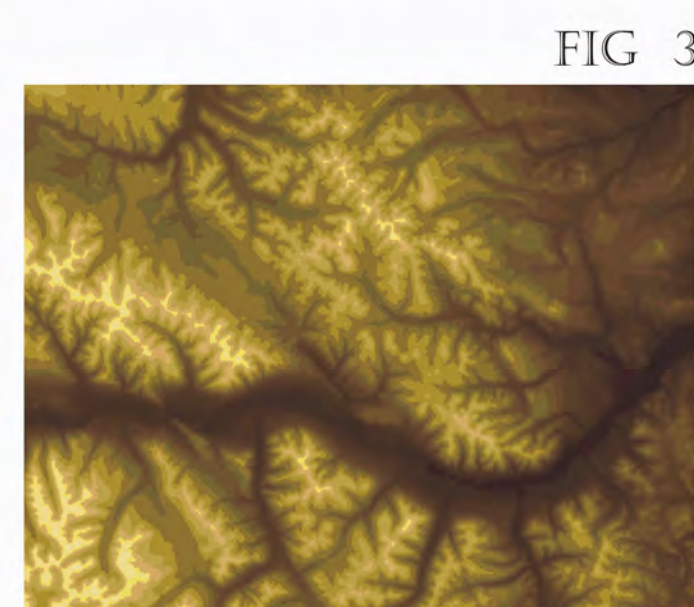


FIG 3

This is an example of a DEM that has been manipulated with *Colour Balance*.

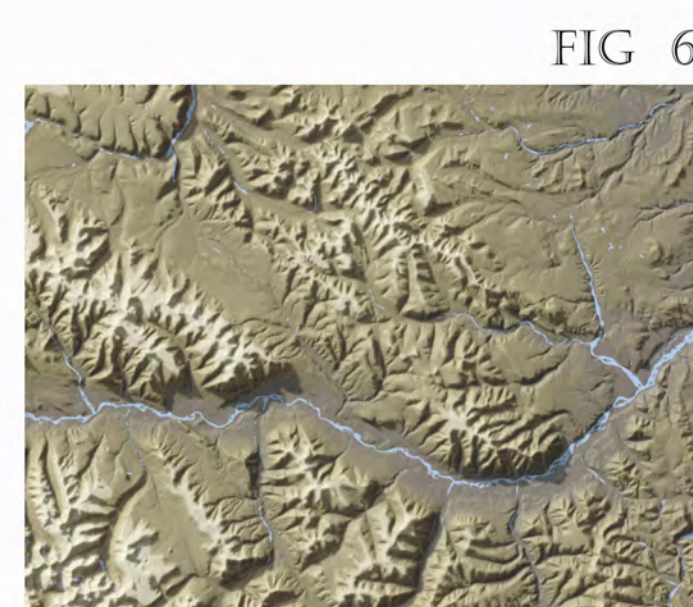


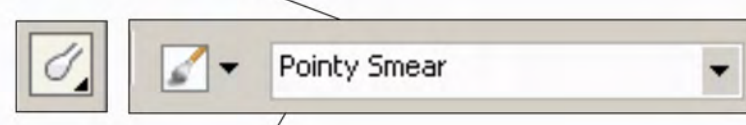
FIG 6

With shadows at 40% transparency and water features. Shadows: 100, -76, -100 Midtones: 59, -4, -45 Highlights: 24, -3, -89



FIG 9

Finished blending process.



Contour data used to create DEM were taken from 1:50 000 Canvec Mapsheets:
096d031, 096d032, 096d033, 096d034, 096d035, 096d036, 096d037, 096d038, 096d039, 096d0310, 096d0311, 096d0312, 096d0313, 096d0314, 096d0315, 096d0316

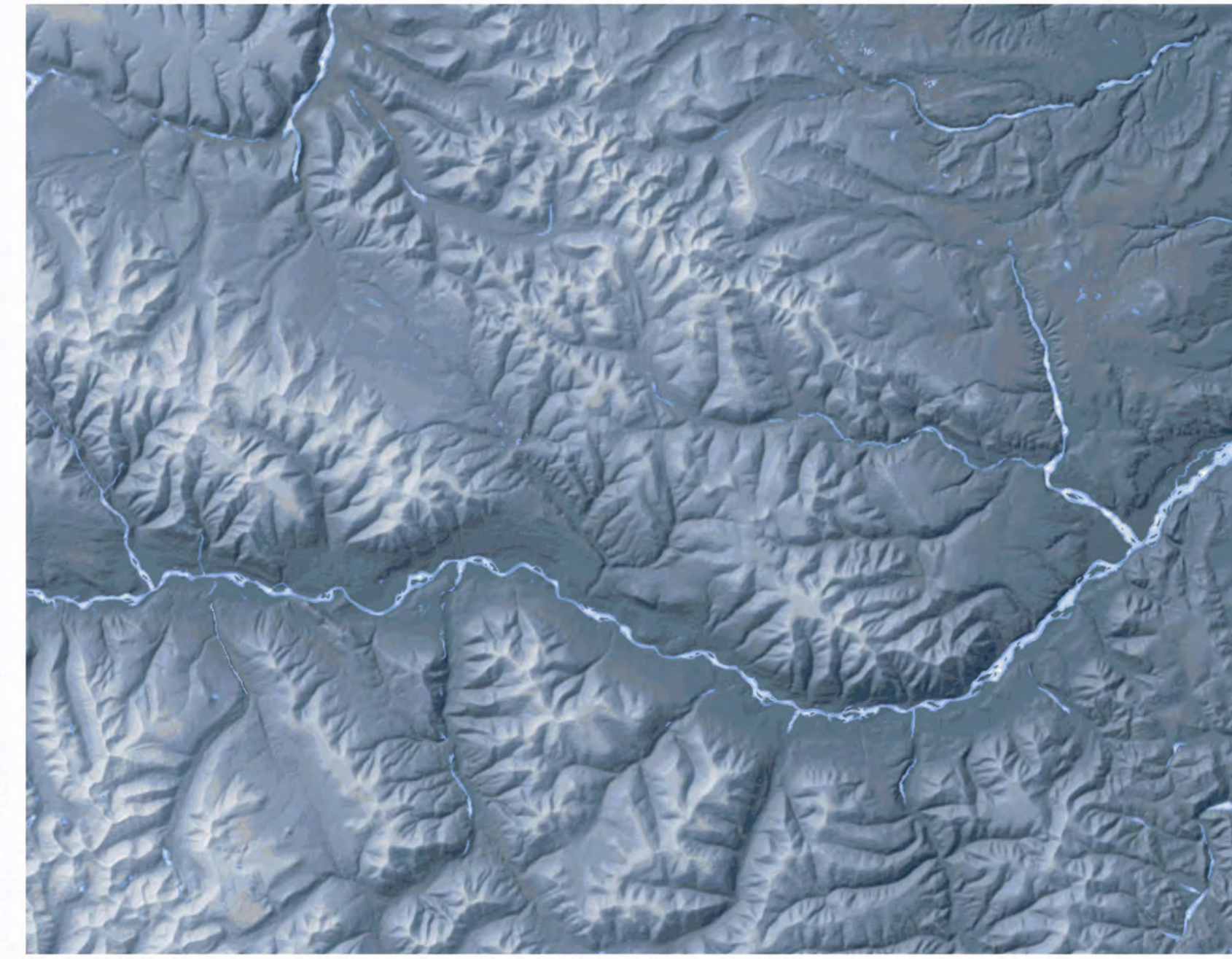
Downloaded from NRCAN at <http://ftp2.cits.rncan.gc.ca/pub/canvec/>

Produced by Lucy Hughes for Cartographic Image Enhancement CART 3023.



nscc
Centre of Geographic Sciences

SAMPLE 1



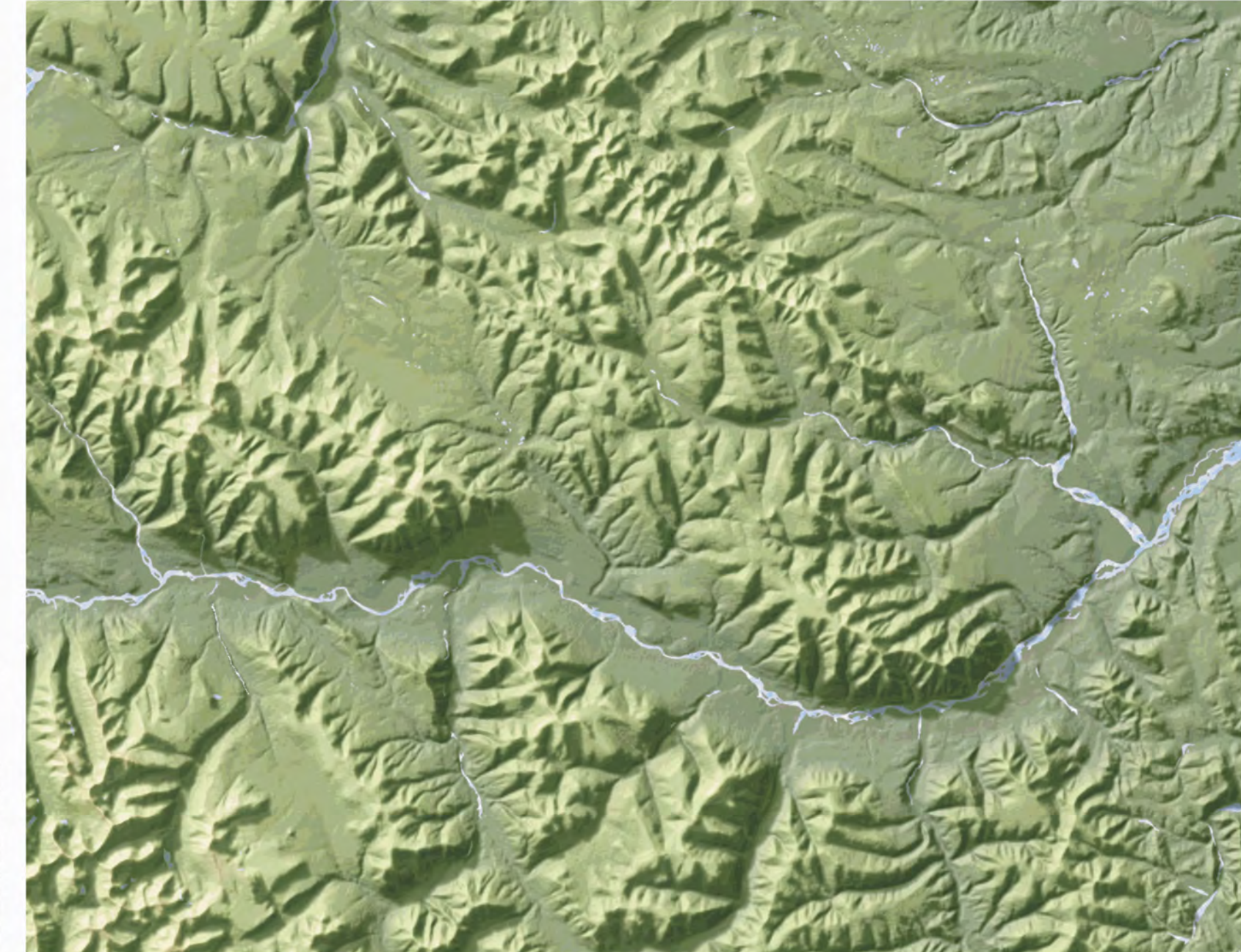
Separated DEM into 4 layers using the magic wand tool. Tolerance between 10 and 15.
Layer 1: Shadows, Midtones, Highlights: -42, 18, 54
Layer 2: Shadows, Midtones, Highlights: -20, -4, -23
Layer 3: Shadows, Midtones, Highlights: -6, -11, 14
Layer 4: Shadows, Midtones, Highlights: -28, -11, 14
Feathered these layers with Width: 8 Edge: Linear
Combined into one object and placed on Medium Contrast Hillshade with 52% transparency.

SAMPLE 3



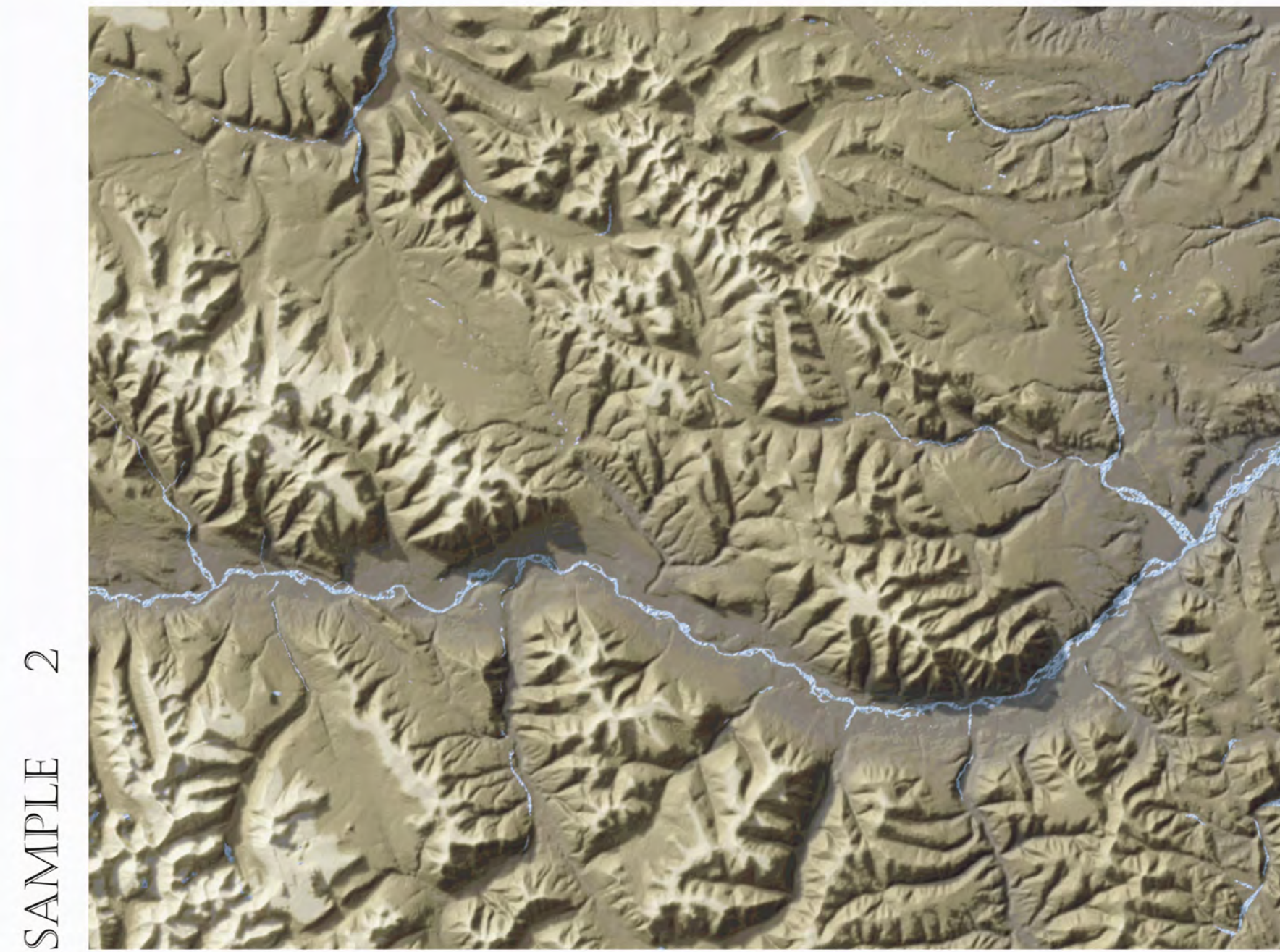
DEM manipulated in *Colour Balance*:
Shadows: 37, 11, -73
Midtones: 37, 11, -73
Highlights: 37, 11, -73
Conté Crayon effect applied:
Paper Colour: White
Pressure: 27
Texture: 3
Draped over Low Contrast Hillshade with a 55% transparency.

SAMPLE 5



DEM manipulated in *Image Adjustment Lab*:
Temperature: 7,212
Tint: 7
Brightness: -4
Then taken into *Colour Balance*:
Shadows: 58, -25, 66
Midtones: 11, 11, -17
Highlights: 24, 17, -20
Water has Pastel effect applied:
Pastel: Oil
Stroke: 2
Hue Variation: 16

SAMPLE 2



DEM manipulated in *Colour Balance*:
Shadows: -28, 49, -41
Highlights: 17, 55, -100
Midtones: 46, 69, -65
Shadows also manipulated:
Shadows: 46, 69, 30
Draped on top of DEM and hillshade at 58% transparency.
Snow caps overlaid at 20% transparency.

Water given the Stone effect: Roughness: 100 Detail: 100 Light Direction: 315

SAMPLE 4



Divided DEM into 6 individual layers with the magic wand tool. When DEM was separated there were a few gaps between layers that had to be blended. This happened primarily in Layer 3; see Fig 8 and Fig 9.
Layer 1: Shadows, Midtones, Highlights: 51, -23, -61
Layer 2: Shadows, Midtones, Highlights: 32, -20, -79
Layer 3: Shadows, Midtones, Highlights: 24, -13, -62
Layer 4: Shadows, Midtones, Highlights: 38, -11, -46
Layer 5: Shadows, Midtones, Highlights: 25, -18, -55
Layers were merged and draped over hillshade using *Multiply*.
Medium Contrast Hillshade at 90% transparency
Water manipulated in *I.A.L.* - Temperature: 4,127 Saturation: -51

SAMPLE 6



DEM manipulated in *Image Adjustment Lab*:
Temperature: 3,382
Tint: 54
Saturation: -23
Snow caps: 30% transparency.
Watercolour effect applied to DEM:
Brush size: 3
Bleed: 34
Water amount: 35
Water manipulated in *Image Adjustment Lab*:
Temperature: 6,893
Brightness: -21
Contrast: -43