

# Nowcasting for BC Hydro: EmWxNet data assimilation project

Nadya Moisseeva

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## Contents

<b>Contents</b>	<b>1</b>
<b>Data and coverage</b>	<b>2</b>
WRF forecast field data . . . . .	2
EmWxNet data . . . . .	3
DEM data . . . . .	3
<b>Temperature Downscaling</b>	<b>3</b>

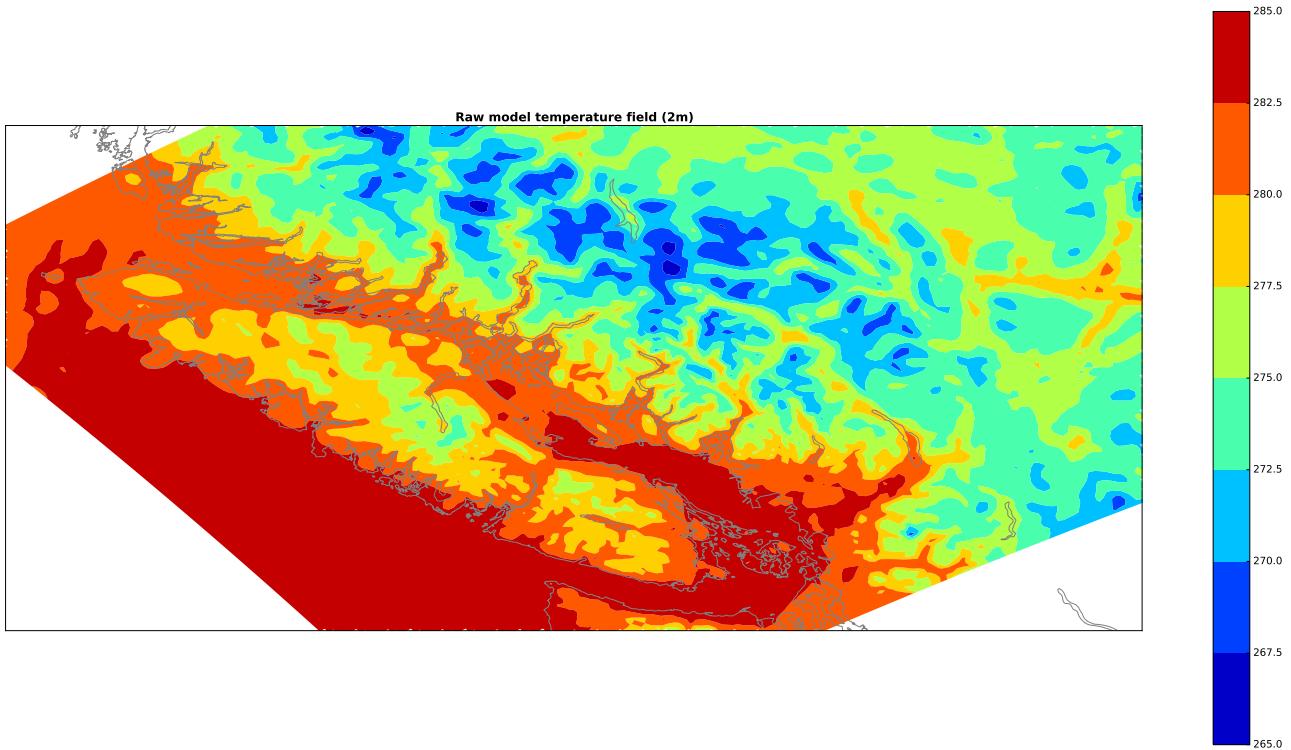


Figure 1: Raw model (forecast) data on a standard lon-lat grid for Feb 19, 2015 at 1800.

## Data and coverage

### WRF forecast field data

Temperature (2 meters), wind and precipitation data are obtained from UBC WRF-GFS runs for a 4km domain. Points falling within the selected -129W-120W longitude and 48N-52M latitude bounded area are extracted. Figure 1 shows the obtained data overlayed on a standard grid for the temperature field.

## **EmWxNet data**

A C routine was developed based on the EmWxNet API system, to extract select stations falling within the desired domain. Station meta as well as weather data are subsequently downloaded and saved. A total of over 500 stations fit the criteria, however approximately 300 stations actually contain useful data. The spatial distribution of stations is shown in Figure 2. Note that points falling within the boundaries of US are excluded, due to lack of elevation data for the area.

## **DEM data**

Surface elevation data was obtained from Natural Resources Canada [available at: <http://geogratis.gc.ca/site/eng/extraction?layers=cdsm&bbox=-139.5,48,-113.5,60>]. CDEM dataset was extracted for the above-mentioned domain at 12 arcsecond ( $\approx$ 330m) resolution in GeoTIFF format (shown in Figure 2)

The remainder of data shown in the figures (eg coastlines, boundaries) are provided by Python standard Matplotlib.basemap package.

## **Temperature Downscaling**

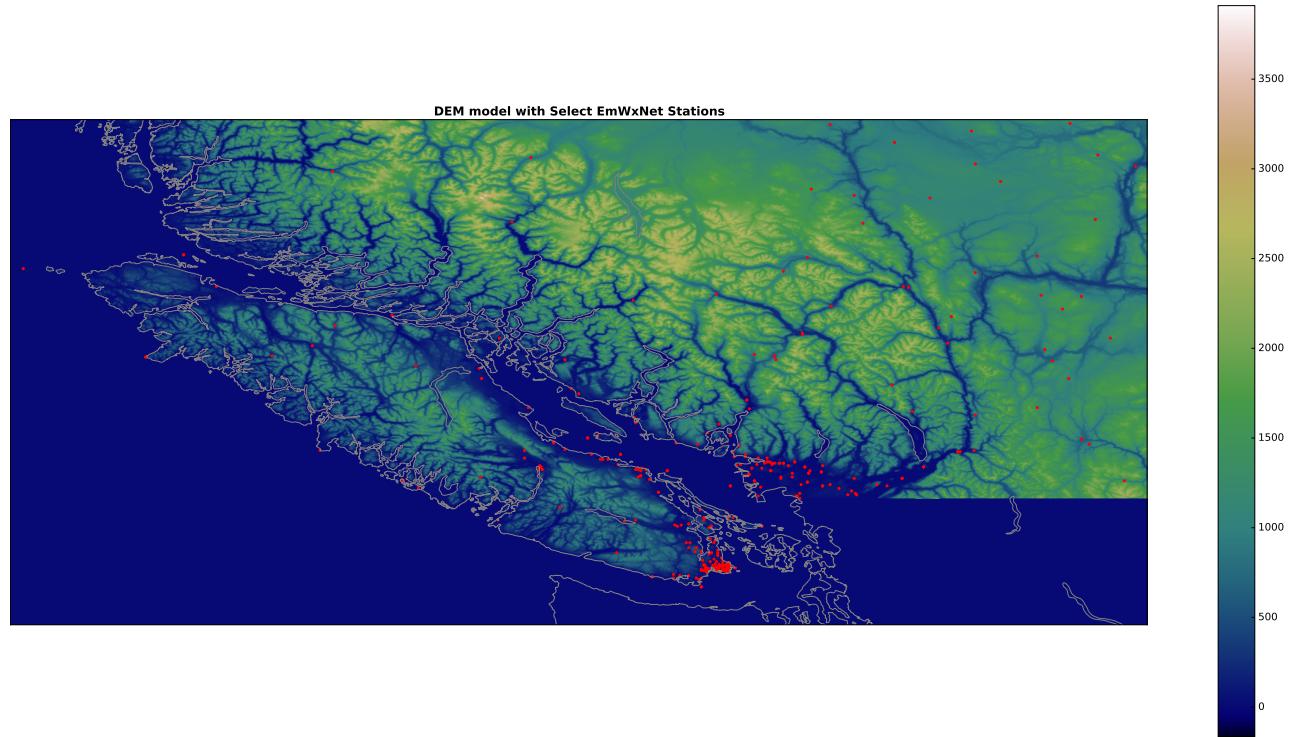


Figure 2: EmWxNet station locations shown in red, over 12 arcsecond DEM grid.

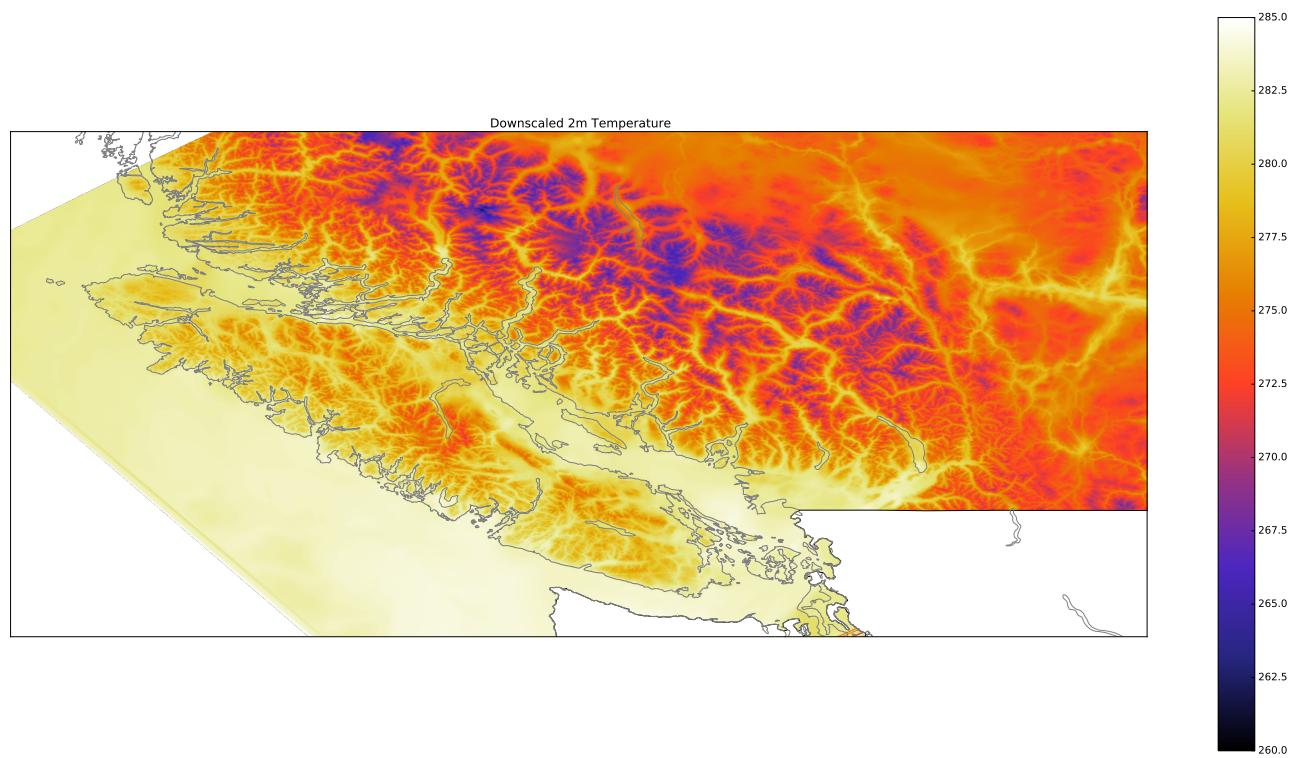


Figure 3: Downscaled temperature using constant lapse rate.

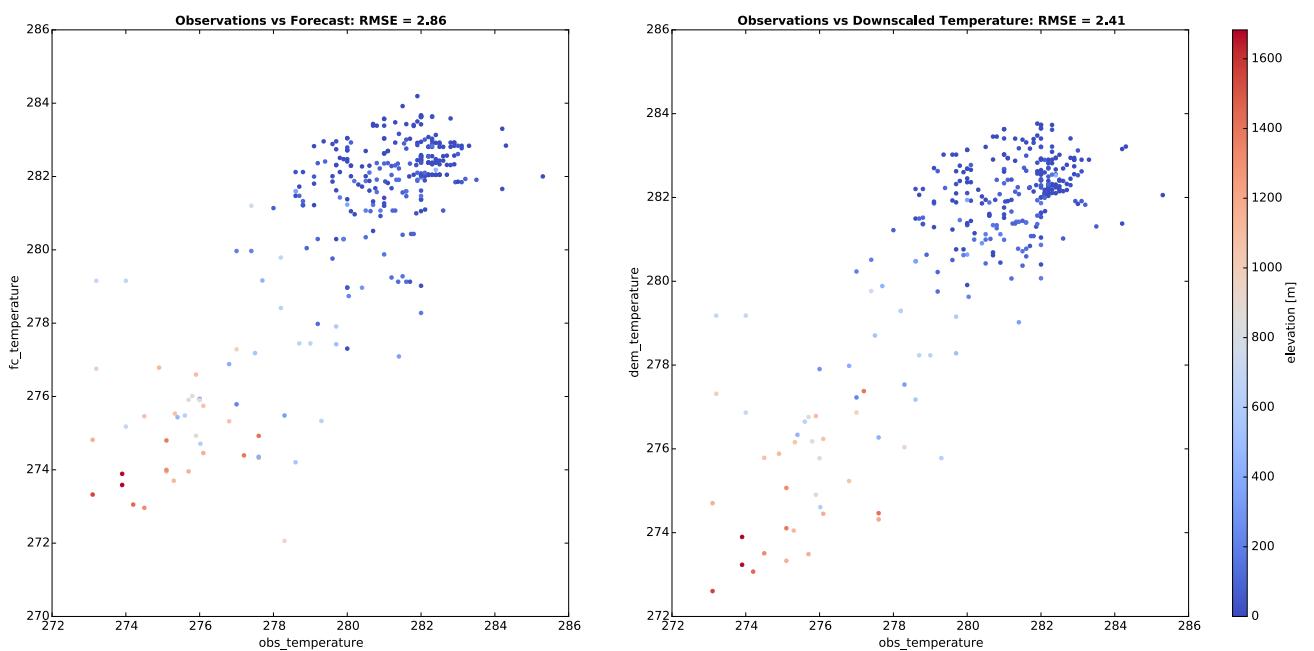


Figure 4: Regression analysis of raw forecast and downscaled temperature data.