Andrew Kramer – Data Analysis Assignment 1 - #7d

1. Overall, there is a trough centered over the Rocky Mountains and a ridge nearly centered over the Appalachians. There are fairly stacked 500mb height contours over the great plains into the Midwest. There are also stacked contours over the Pacific Ocean off the coast of California, though that is most likely due to a lack of observations over the ocean.
2. With the expansion of our radius of influence, each analysis point will be influenced by a greater number of observations. This increase in observations acted to smooth out contours and even spread the stacking of contours over the Great Plains/Midwest. This is because with the greater number of observations, each analysis point is less susceptible to local influences, such as only receiving observations from a single side of a cold front.
3. There are many noticeable changes when the radius of influence is set to 6cm. The trough and ridges are more pronounced. Issues in the map can be seen towards the oceans and the northern edges of the map in central to northern Alberta, Saskatchewan, and Manitoba. With so few (if any) observations to pull from, each analysis point is subject to wild variations in the contoured values.
4. No, it would not be possible. This would result in a singular matrix which cannot be inverted.

Map 1: 500mb heights with a RoI of 10cm

A picture containing sky, day

Description automatically generated

Map 2: Number of observations used at each analysis point for a RoI of 10cm

Chart

Description automatically generated

Map 3: 500mb analysis with a RoI of 20cm

A picture containing sky, silhouette

Description automatically generated

Map 4: Number of observations used for each analysis point, for a RoI of 20cm

Chart

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