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GEOG 6165: Lab 7
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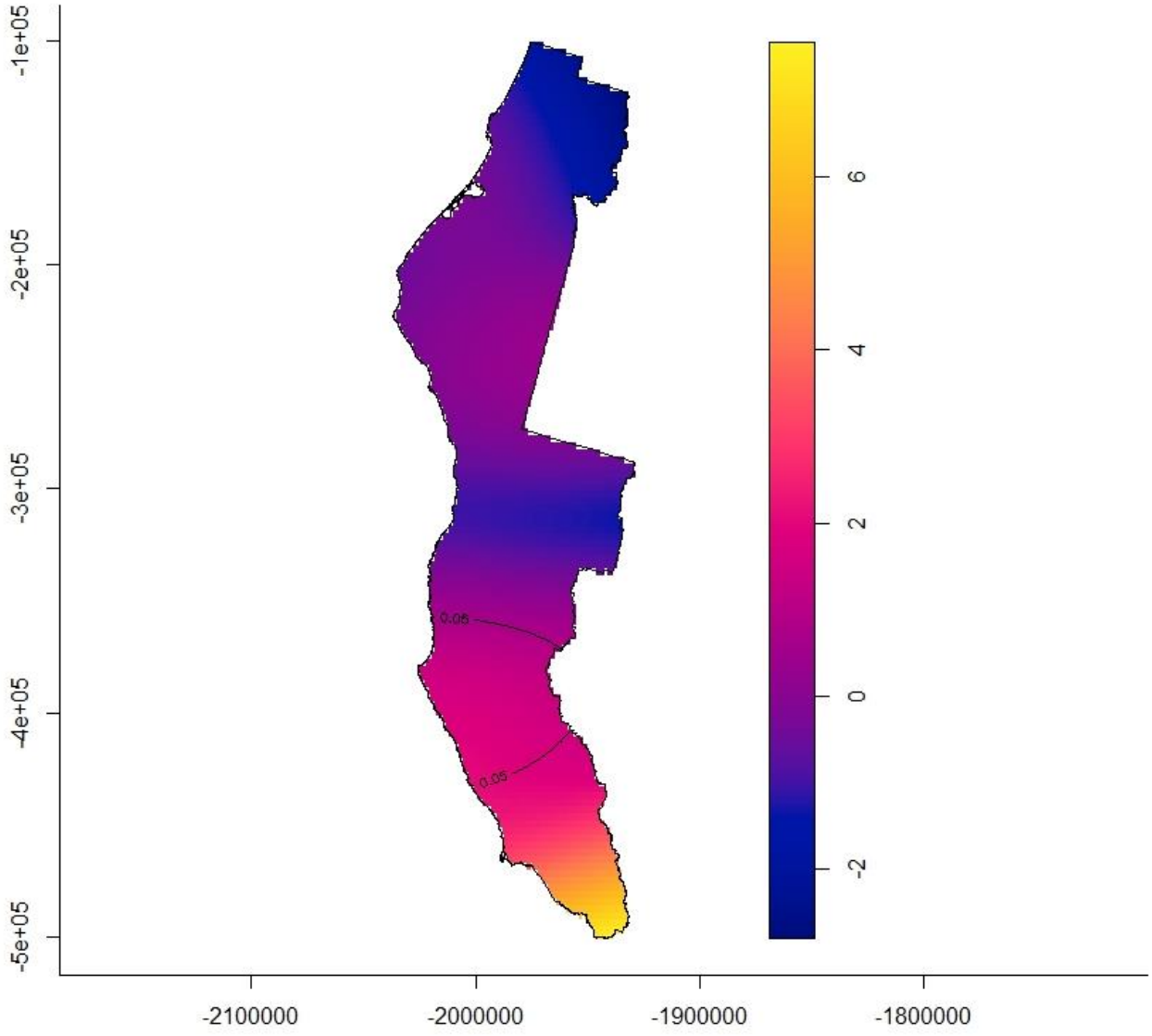
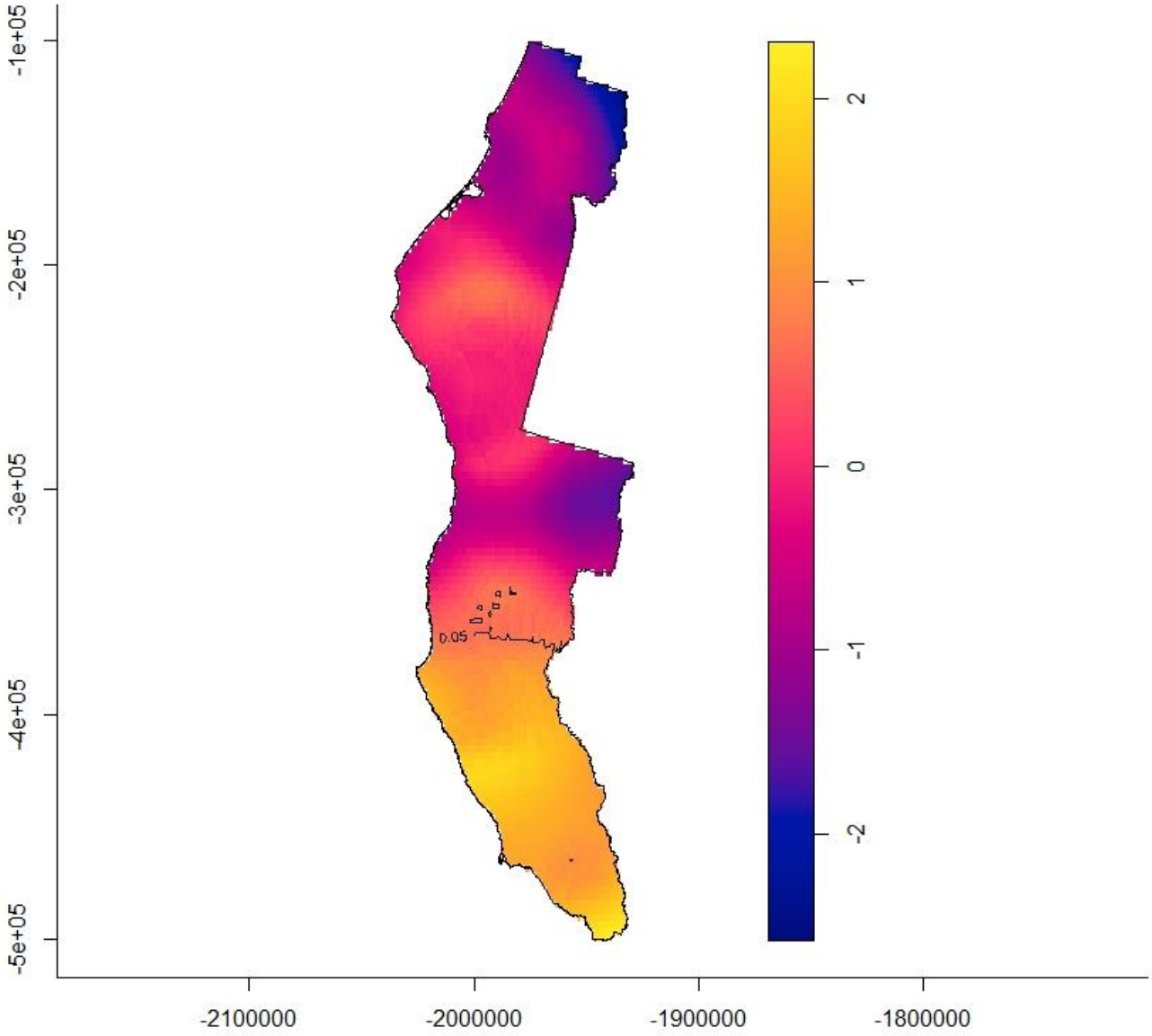
I used the sod data from the Canvas data folder. R code and data attached as a zip file to Canvas assignment.

1. Fixed Symmetric



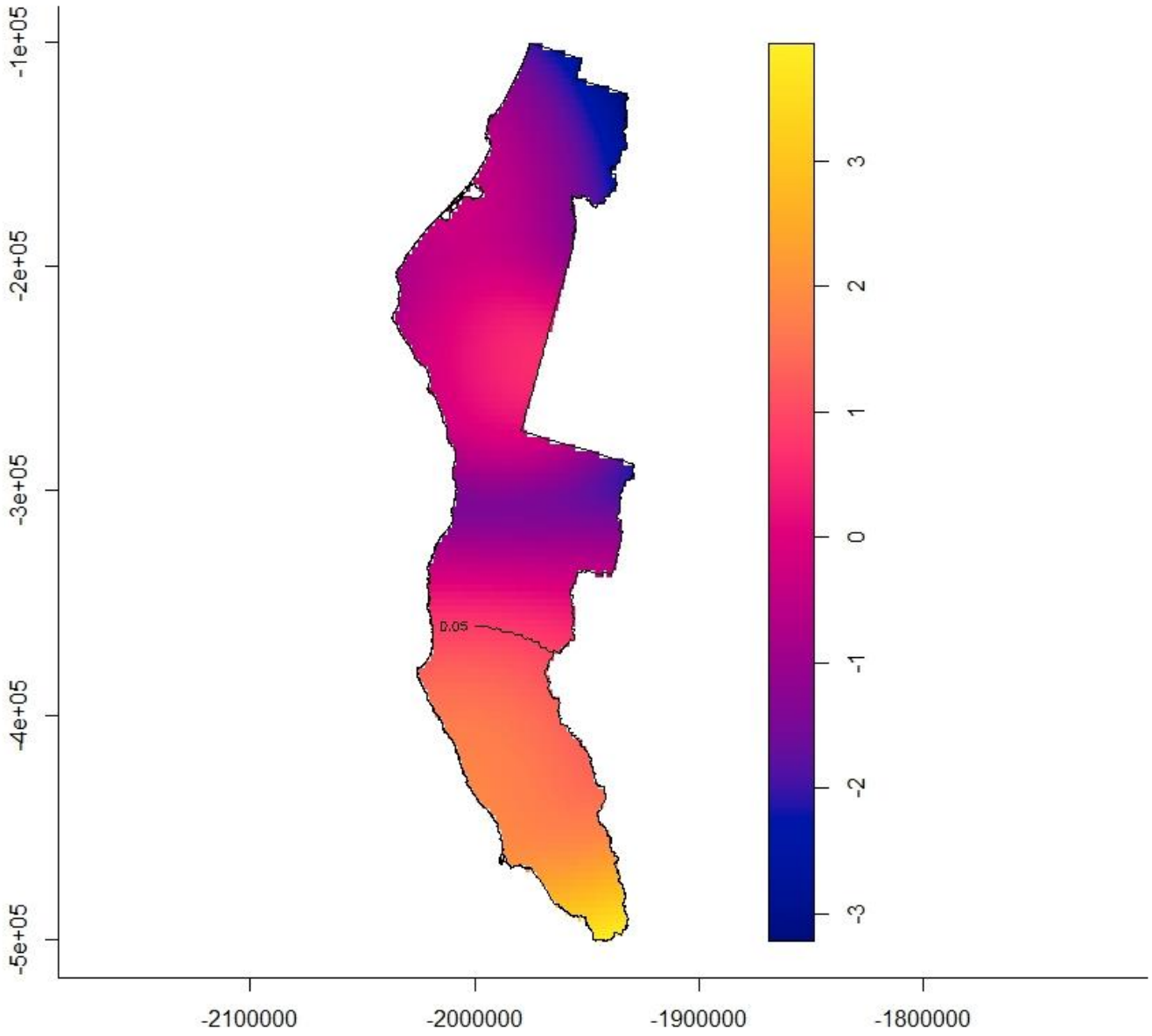
The fixed symmetric uses a bandwidth equal for the case and control densities. The pattern here shows a higher density (hot spot) of Sudden Oak Death (SOD) being detected in the southern tip of California and fades to a low density of SOD being detected north of Central California. The small segment north of Central California shows ~1, meaning some SOD is detected.

2. Asymmetric Adaptive



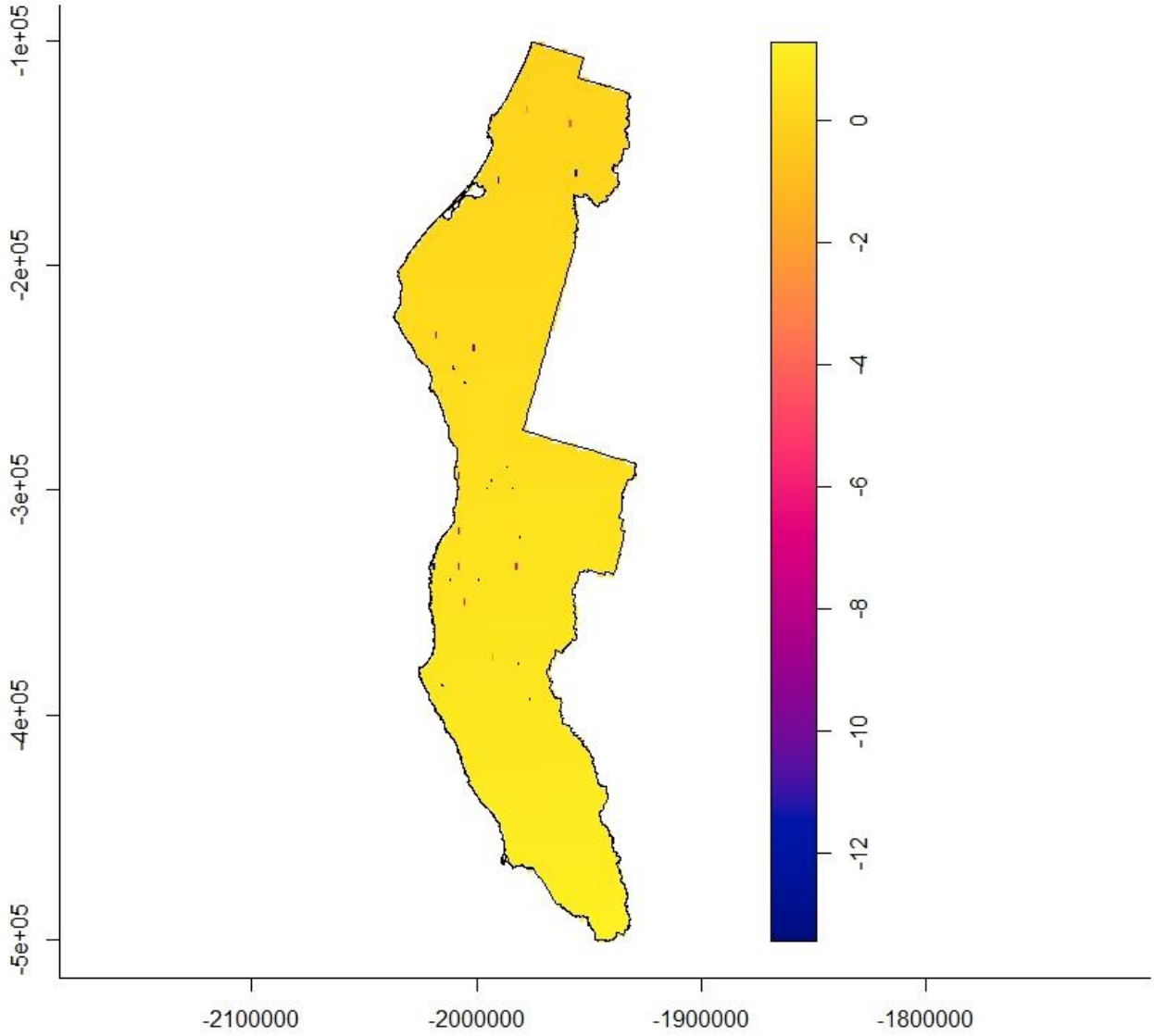
The asymmetric adaptive map shows a similar pattern to the previous map. However, this map has a higher spatial density of SOD detection throughout the lower 1/3 of California and a small hotspot north of Central California. This is due to the bandwidths adapting to the case and control densities independently. It is harder to see the areas where there is little SOD detected because most of the map shows values above 0. This map seems to be undersmoothed and makes the data distribution appear noisy.

3. Symmetric (pooled) Adaptive



This map again shows a similar pattern to the previous two maps. However, a greater distribution of areas shows higher density and lower density. Here, the pattern reconfirms greater SOD detection in Southern California, and a lower density of SOD is detected just north of Central California. This map shows a greater range in distribution to the asymmetric adaptive map in figure 2 but still seems to lose the visual of distribution seen in the symmetric adaptive map in figure 1.

4. Symmetric (case) Adaptive



The symmetric (case) adaptive map doesn't show much spatial distribution of SOD detection in California and shows a very different pattern than the previous three. The pattern in this map initially makes it look like the entire State of California has higher SOD detection, with a few tiny pockets of smaller SOD detection sites. This map seems to be oversmoothed, losing the resolution of the data distribution.

5. Which of the 4 regimes is best?

I think the fixed symmetric regime (first figure) visualizes the SOD data the best and is 'just right' for the bandwidth selection. In this map, I can see a better distribution of sites where SOD was detected. The asymmetric adaptive regime is undersmoothed and loses the high to the low density of sites where SOD

is detected. The symmetric (case) adaptive map is oversmoothed and loses the sites' distribution where SOD is detected. The symmetric (pooled) adaptive map doesn’t seem to reflect the spatial distribution of data compared to the fixed symmetric, but is a good alternative.