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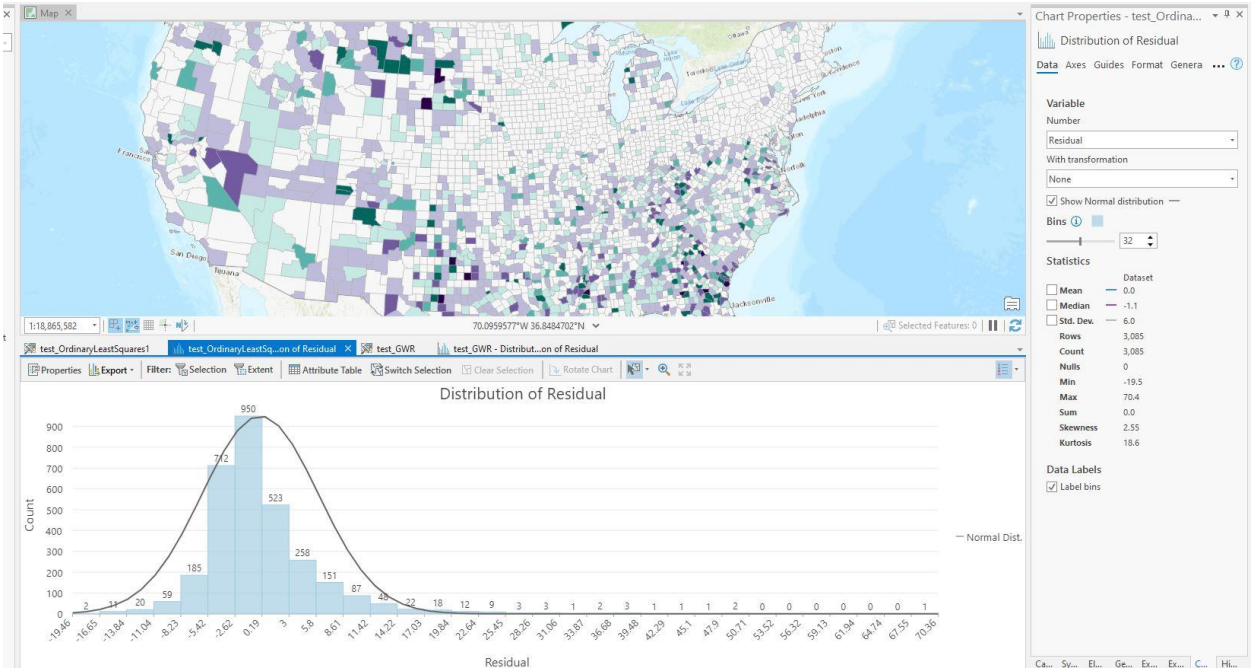
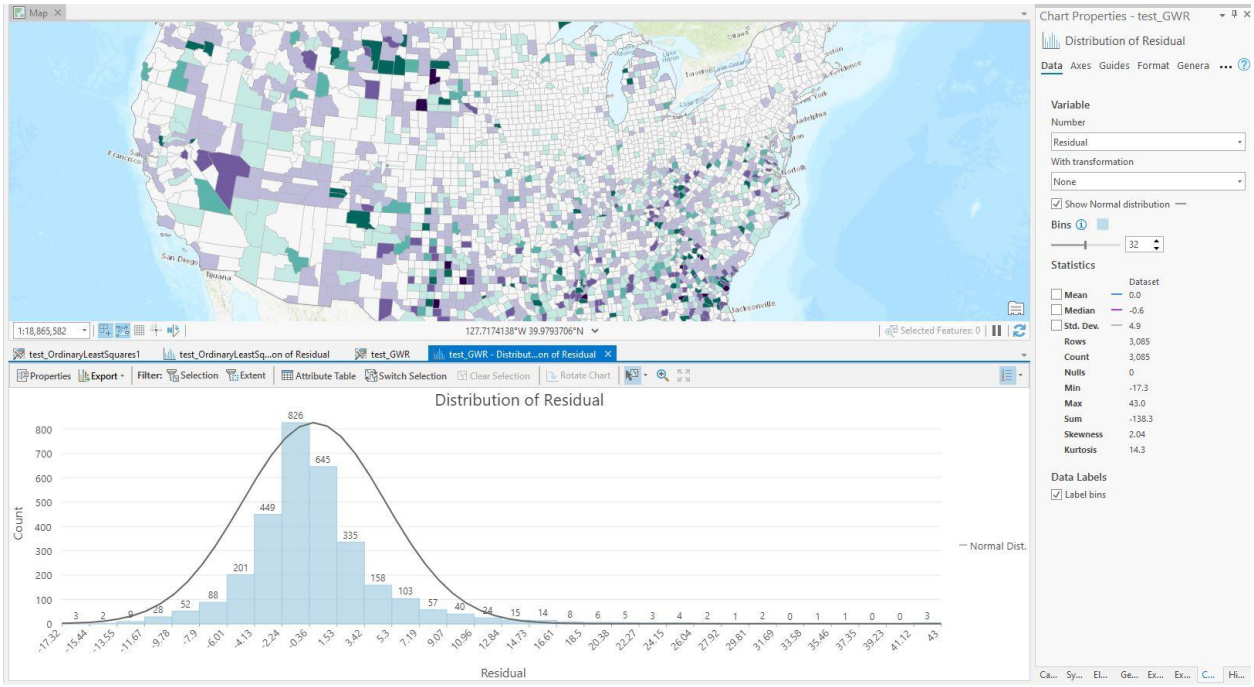
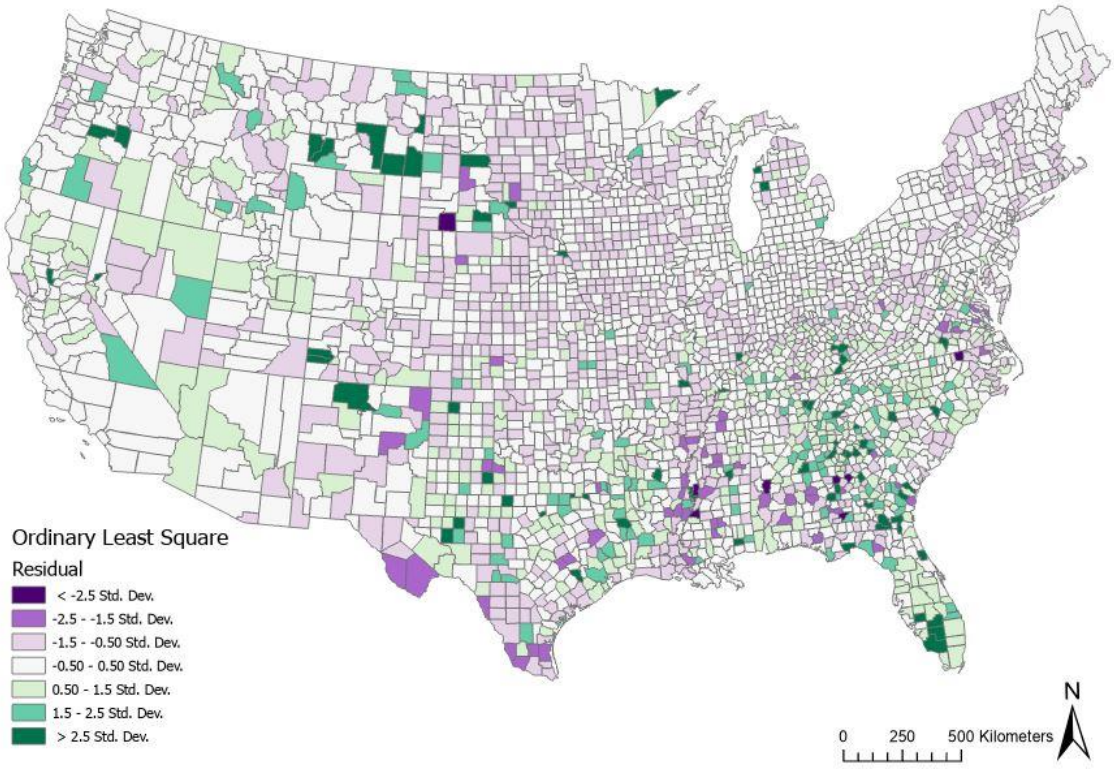
GEOG 579
Lab 5
8/15/2021

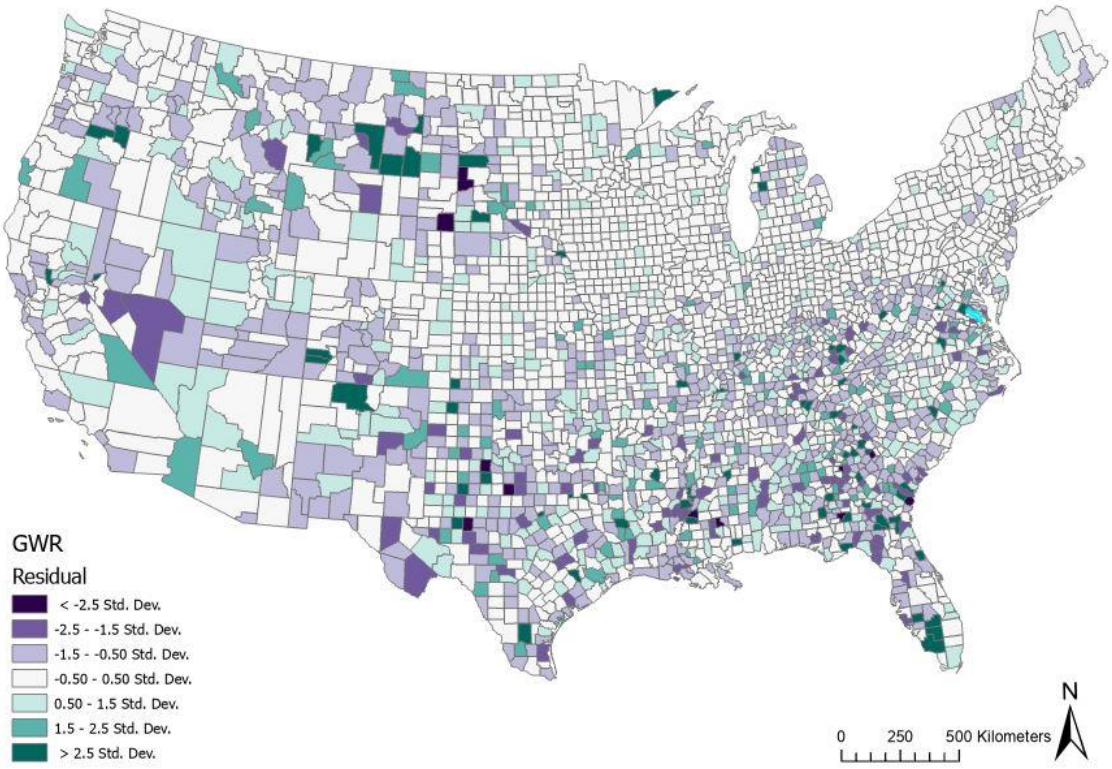
1. I used homicide rate over count since it measures the frequency of an event per population unit. I chose to use the HR of 1970.
2. I chose to use resource deprivation, precent that is unemployed, median income, and below poverty. On average crime and murders do have a connection to these variables.
3. The Kernel type specifies whether the kernel is constructed as a fixed distance or if it is allowed to vary in extent as a function of feature density. The bandwidth specifies how the extent of the kernel will be determined. The neighborhood size specifies whether the neighborhood used is constructed as a fixed distance or allowed to vary in spatial extent depending on the density of the features.
4. For both the OLS regression and GWR histograms seem to have a normal distribution with the mean close to near zero. Both histograms are tall and narrow, with some outliers forming a right tail. The first image is the OLS and the second image is the GWR



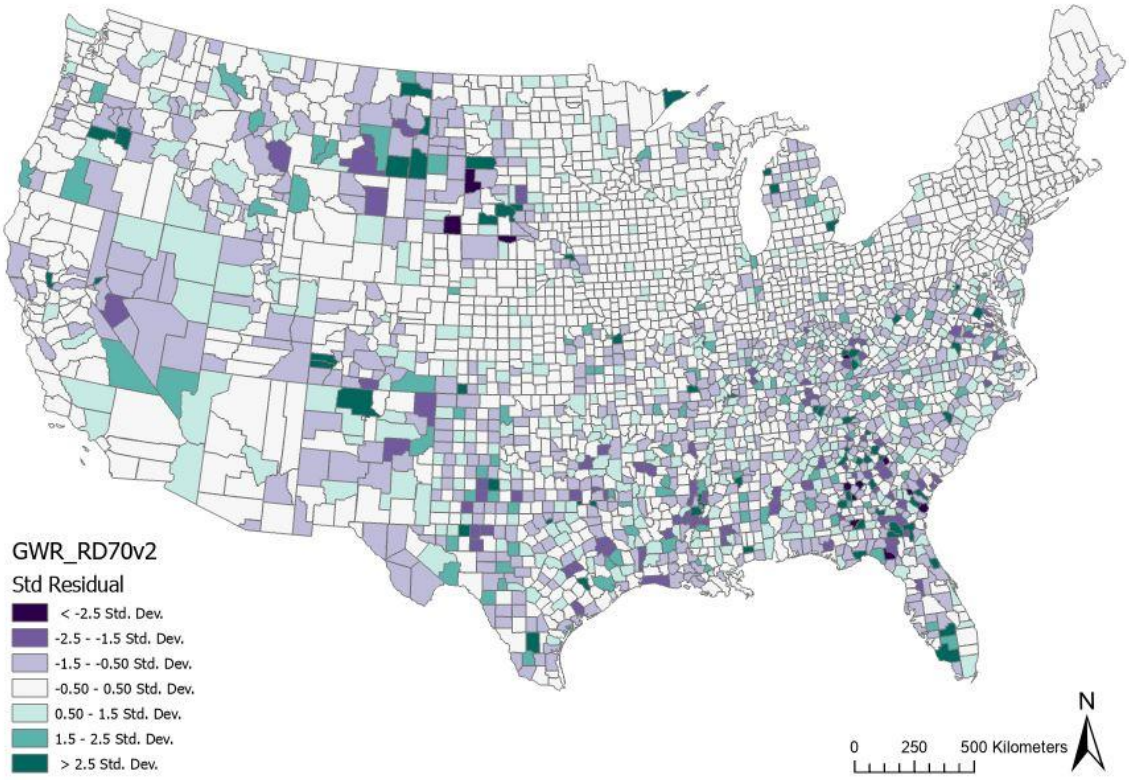


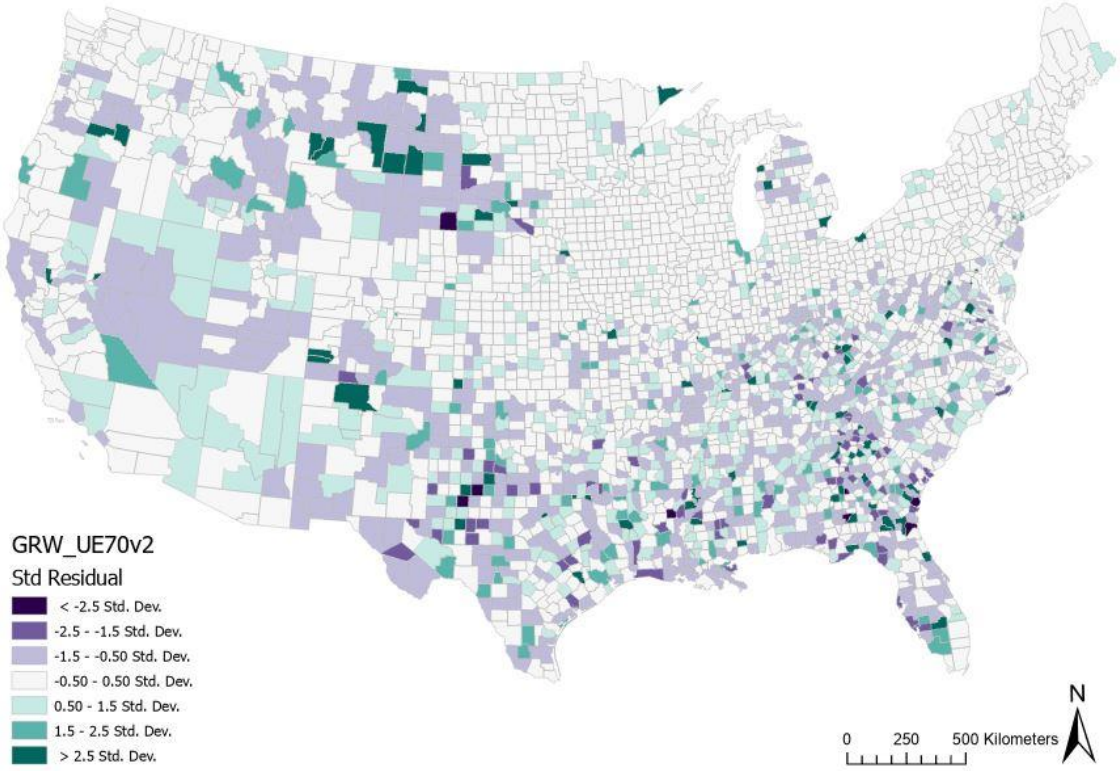
5. The first image in this question is the map for the OLS and the second is the GWR. Both maps of the 1970s show spatial of high and low residuals in mostly southern states and what is more often seen politically as Red states. In the GWR there seems to be more areas between -1 and 1 standard deviation in the mid-west, north-east, and west coast areas than in the OLS map. The R2 of the GWR is pretty much near 0 and would seem to be the more accurate map to use.

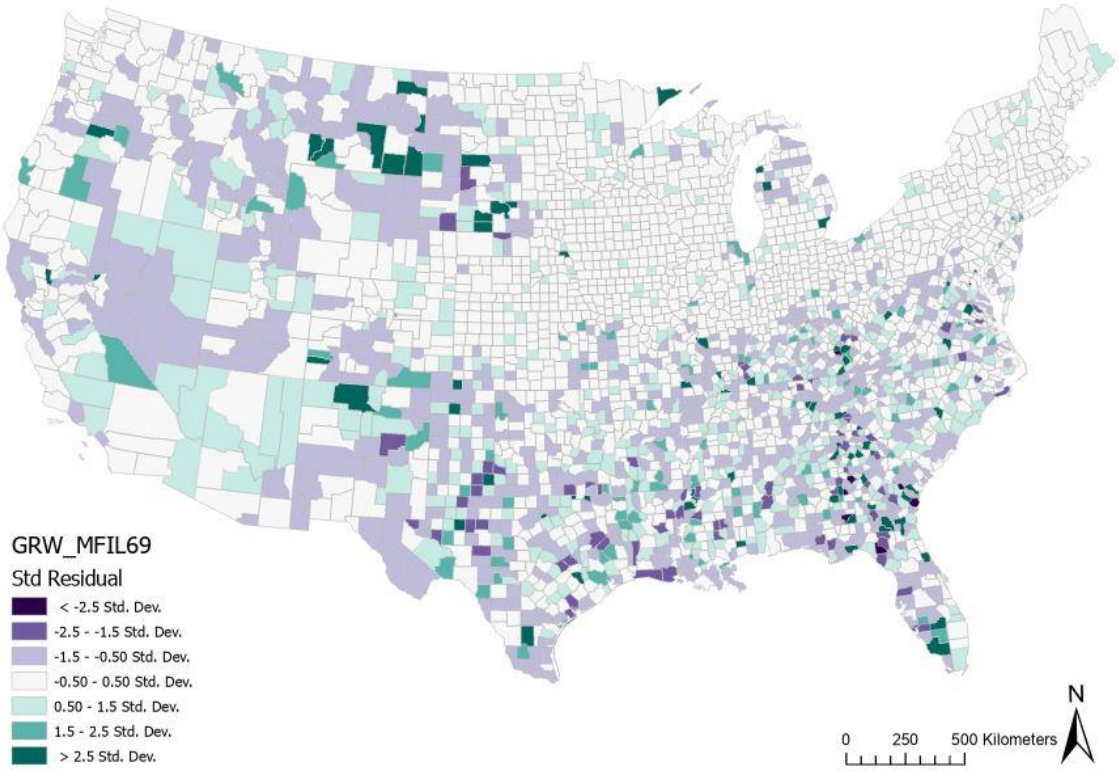

Ordinary Least Square
Residual
< -2.5 Std. Dev.
-2.5 - -1.5 Std. Dev.
-1.5 - -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
1.5 - 2.5 Std. Dev.
> 2.5 Std. Dev.
N
0
250
500 Kilometers

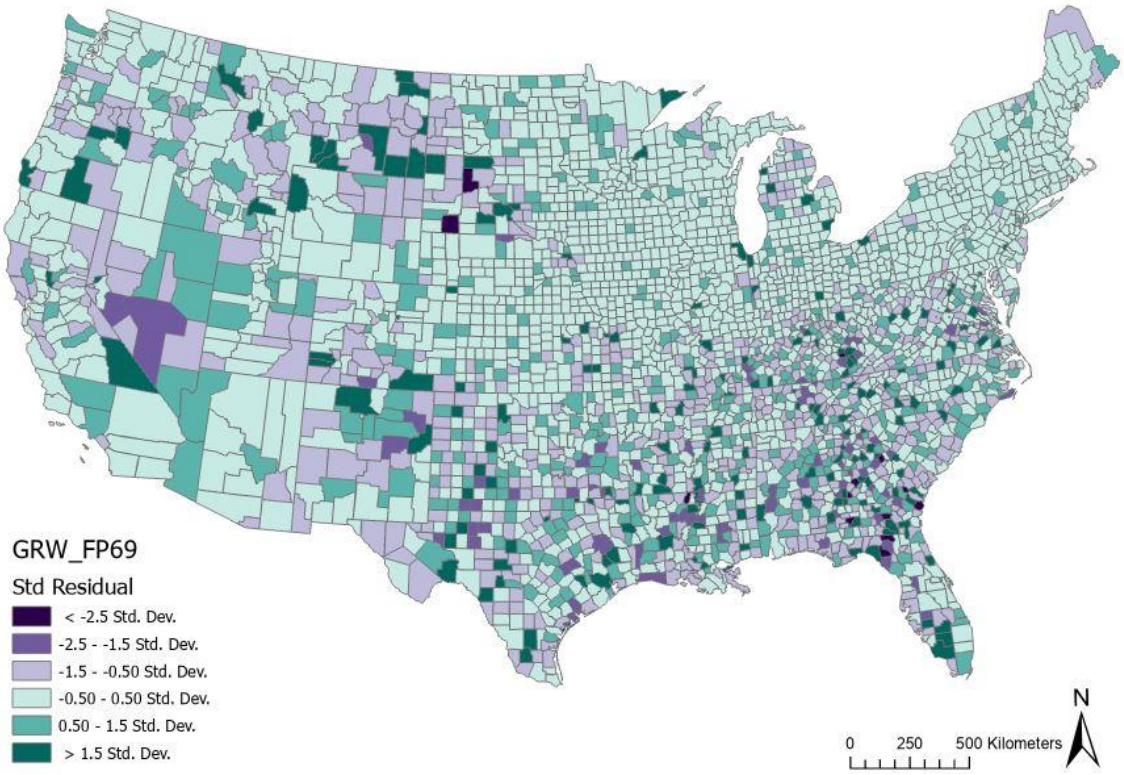


6. For the independent variables I used the resources deprivation/affluence component, percent of unemployed, median family income, percent of families below the poverty line for 1970 against the dependent variable of homicide rates for 1970. The images below are in order of how I presented it earlier in this question. We can see that images of the independent variables follow the same clustering as the GWR image of question 5. There is clustering in the southern states and politically red states. The variables that I chose do seem to have a correlation with homicides of the 1970s.


GWR_RD70v2
Std Residual
< -2.5 Std. Dev.
-2.5 - -1.5 Std. Dev.
-1.5 - -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
1.5 - 2.5 Std. Dev.
> 2.5 Std. Dev.
N
0
250
500 Kilometers


GRW_UE70v2
Std Residual
< -2.5 Std. Dev.
-2.5 - -1.5 Std. Dev.
-1.5 - -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
1.5 - 2.5 Std. Dev.
> 2.5 Std. Dev.
N
0
250
500 Kilometers


GRW_MFIL69
Std Residual
< -2.5 Std. Dev.
-2.5 - -1.5 Std. Dev.
-1.5 - -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
1.5 - 2.5 Std. Dev.
> 2.5 Std. Dev.
N
0
250
500 Kilometers


GRW_FP69
Std Residual
< -2.5 Std. Dev.
-2.5 - -1.5 Std. Dev.
-1.5 - -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
> 1.5 Std. Dev.
N
0
250
500 Kilometers