

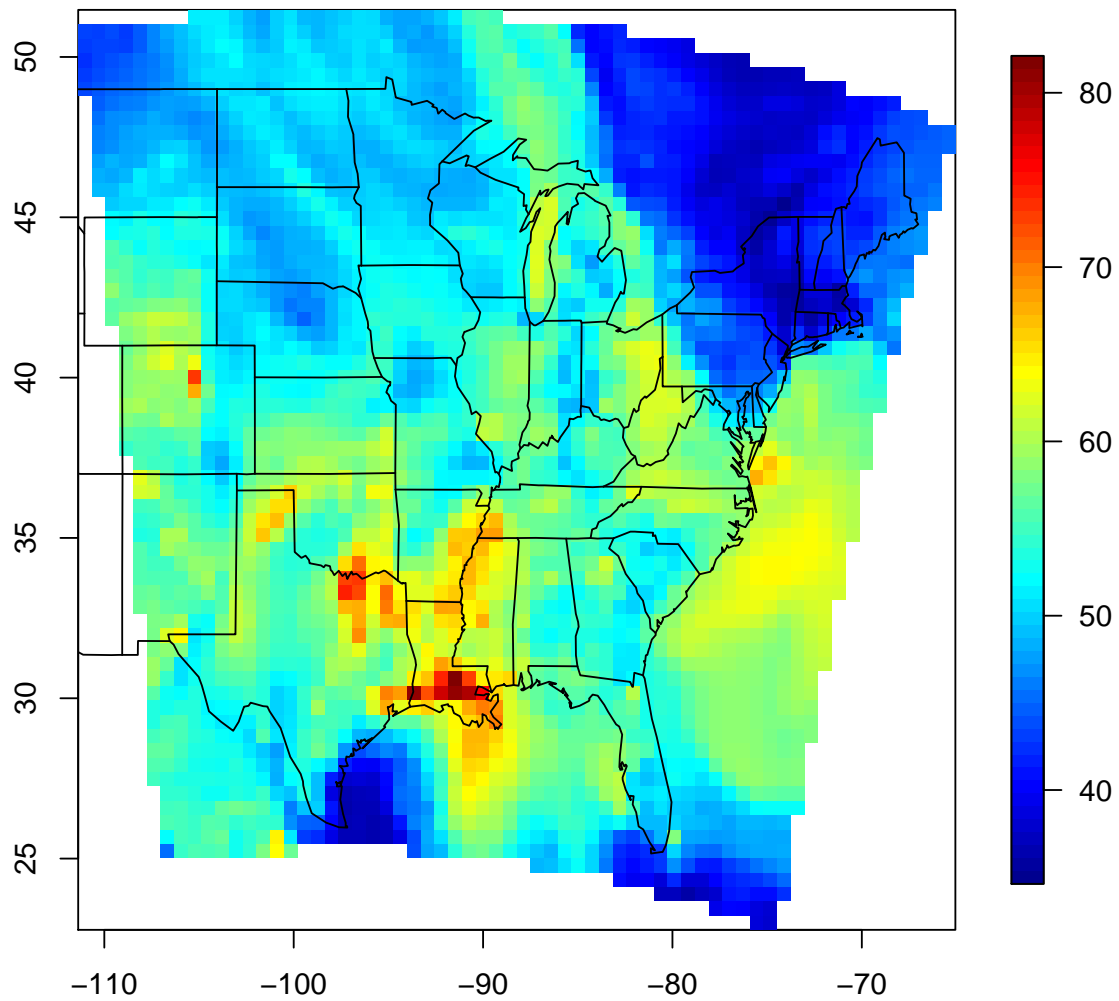
Stat536 Midterm - Ozone Data

Arthur Lui

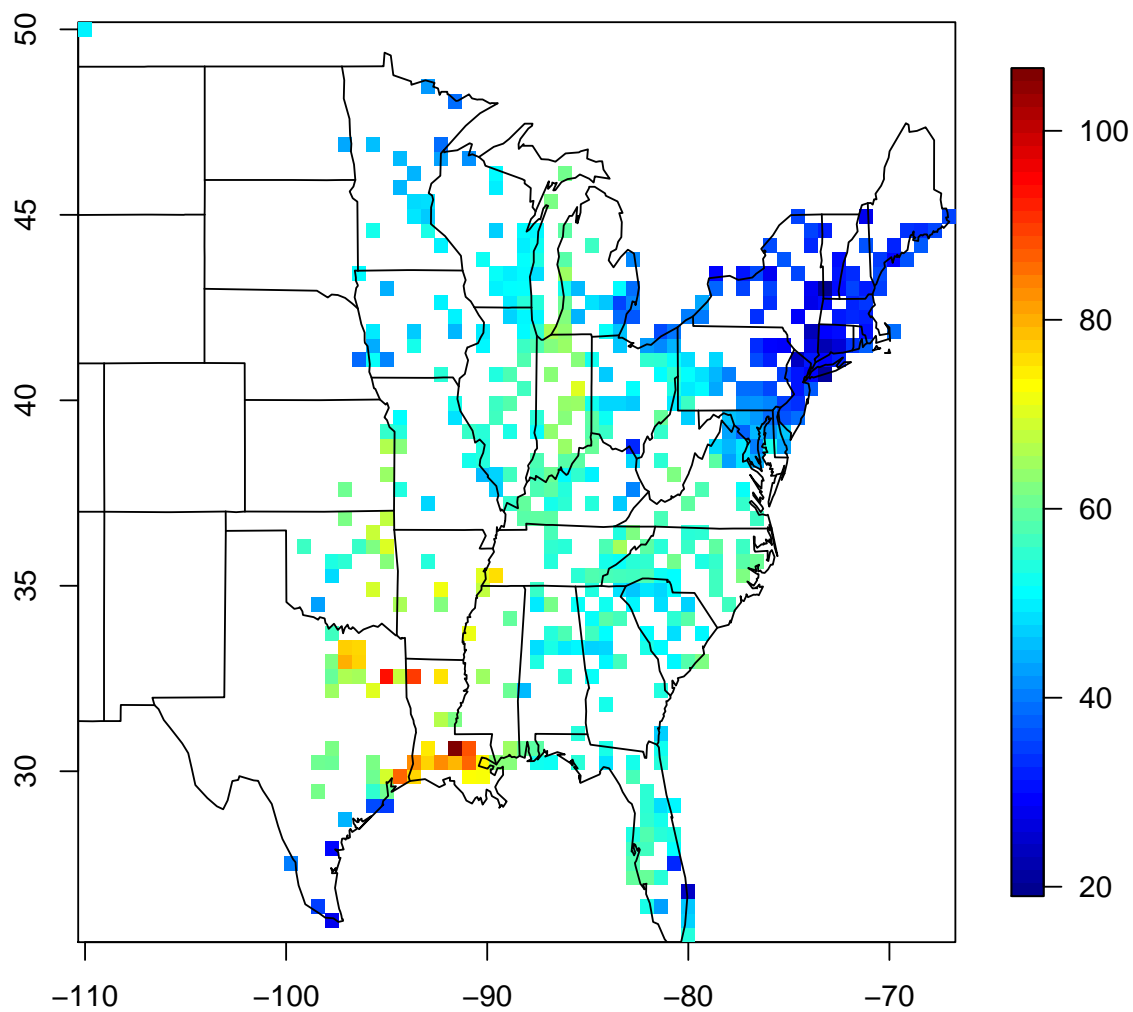
4 March 2014

1 Introduction: Problem Statement & Goals

CMAQ



OZone



2 Method & Model

2.1 Brief Description of method / models used

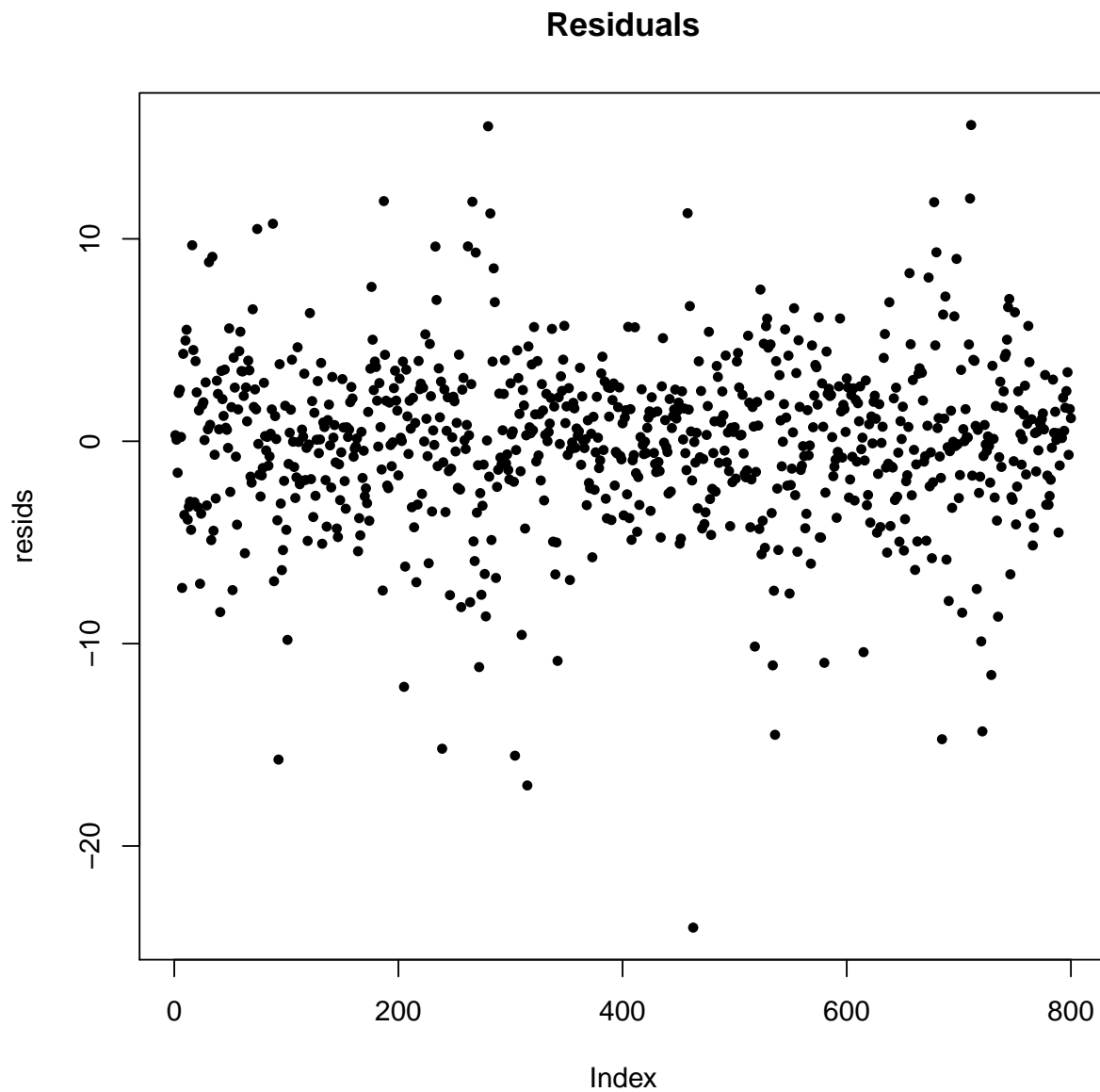
2.2 Assumptions

3 Model Justification

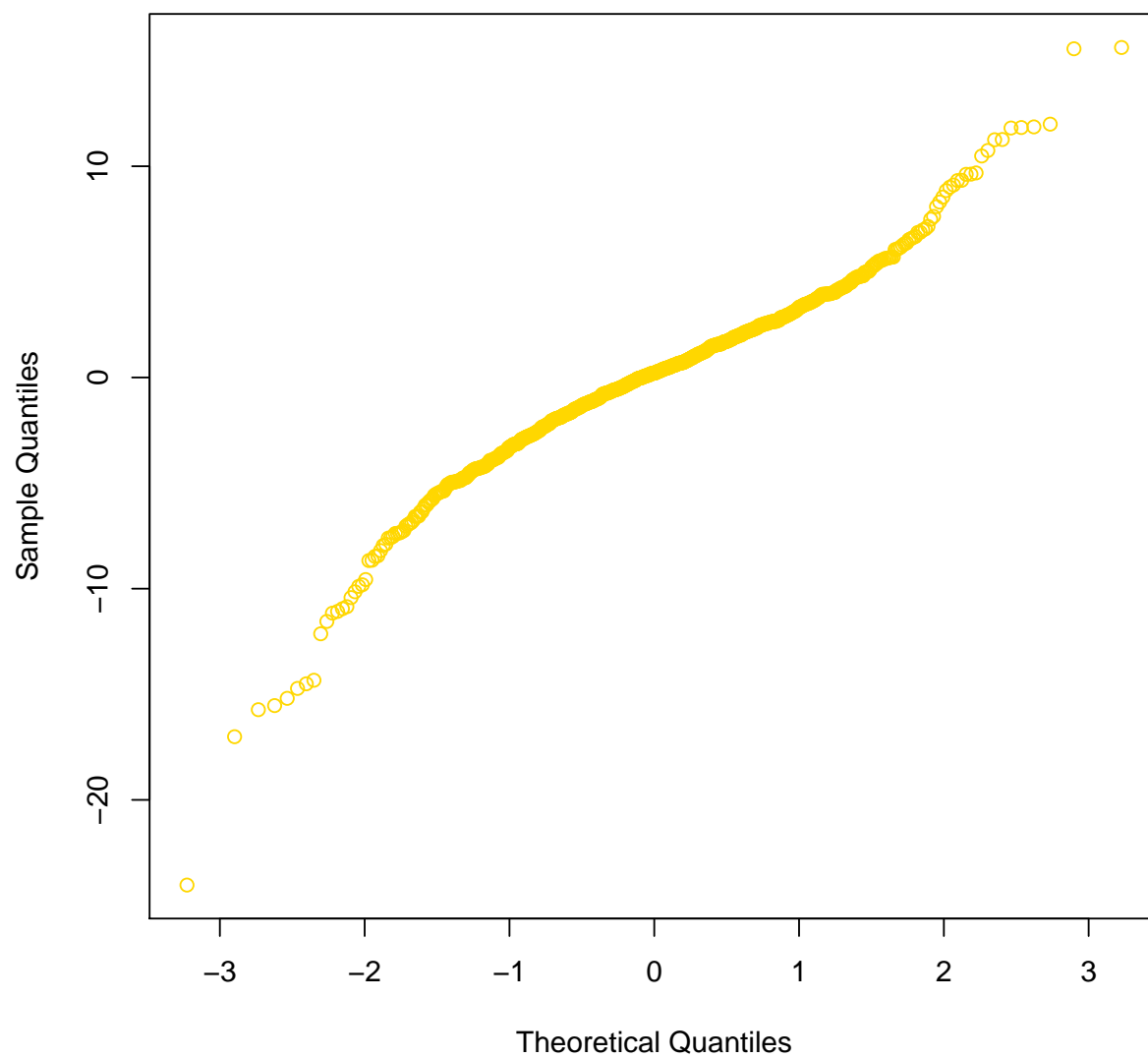
3.1 Why choose a Gaussian Process?

3.2 How does the GP solve the problem?

3.3 Are Assumptions Justified?



Normal Q–Q Plot



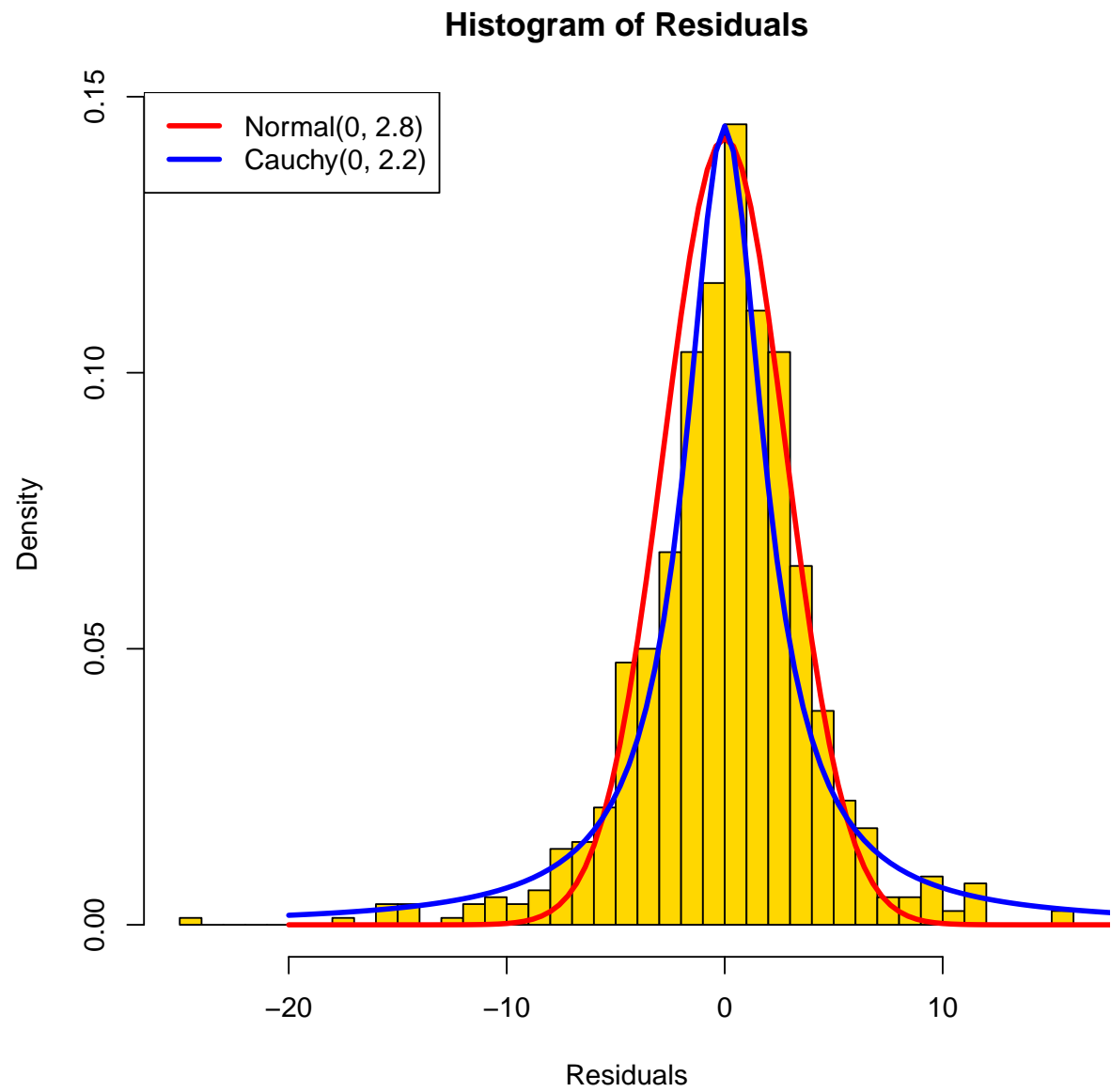


Table 1: Parameter Estimates			
	Estimates	CI.Lo	CI.Hi
β_0	7.93766	1.29157	14.58375
β_1	-0.11039	-0.26032	0.03954
β_2	0.20544	0.06538	0.34549
β_3	0.08400	-0.04960	0.21761
β_4	0.20130	0.06727	0.33534
β_5	-0.11577	-0.24077	0.00924
β_6	0.17512	0.05527	0.29497
β_7	0.14480	0.01922	0.27037
β_8	0.09521	-0.01989	0.21031
β_9	0.06374	-0.06132	0.18880
β_{10}	0.04647	-0.06892	0.16187

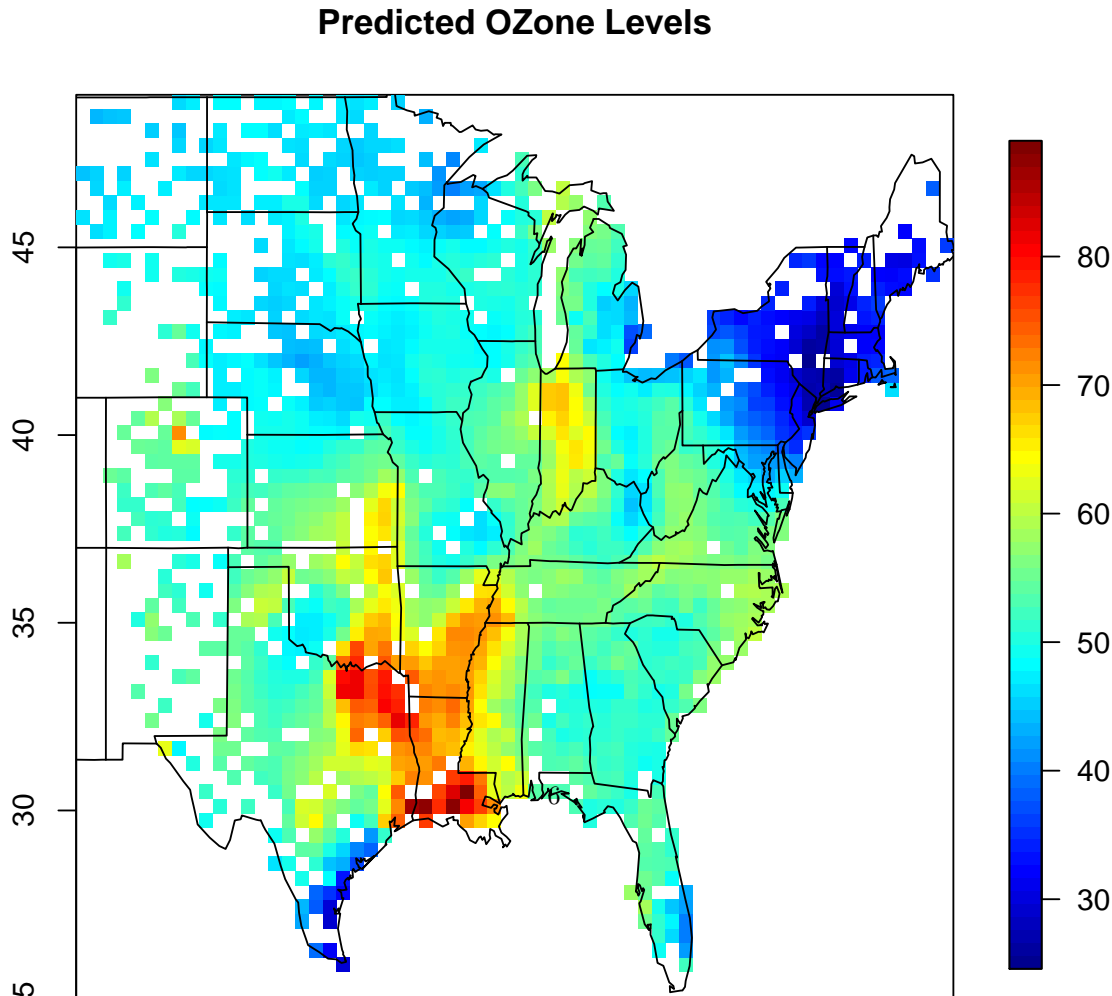
Table 2: Coverage and MSE			
	Estimate	CI.Lower	CI.Upper
Coverage	0.931	0.913	0.949
MSE	20979.047	11019.079	30939.014

4 Results

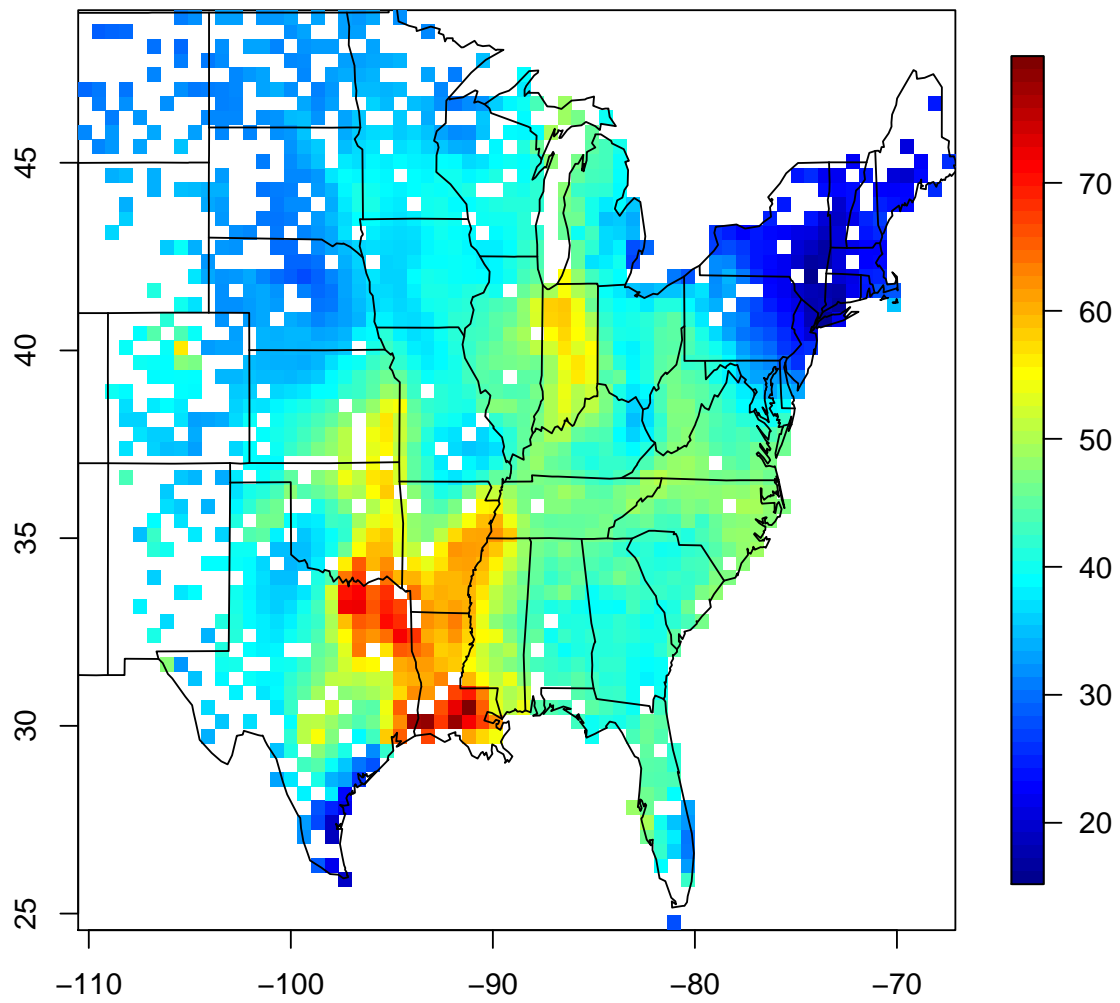
4.1 Estimates of Parameters and CI

4.2 Coverage & MSE

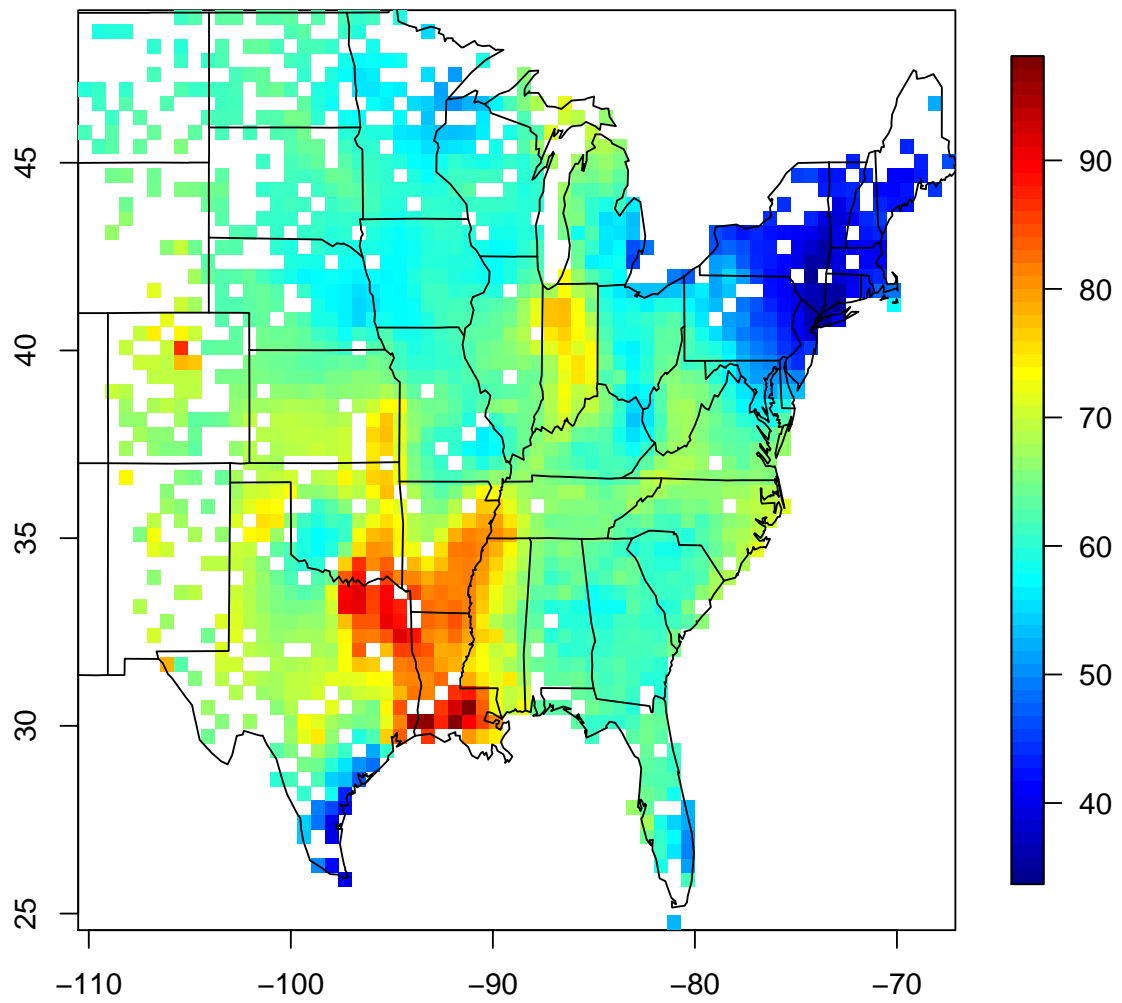
4.3 Predictions & Uncertainties



Predicted OZone Levels Lower

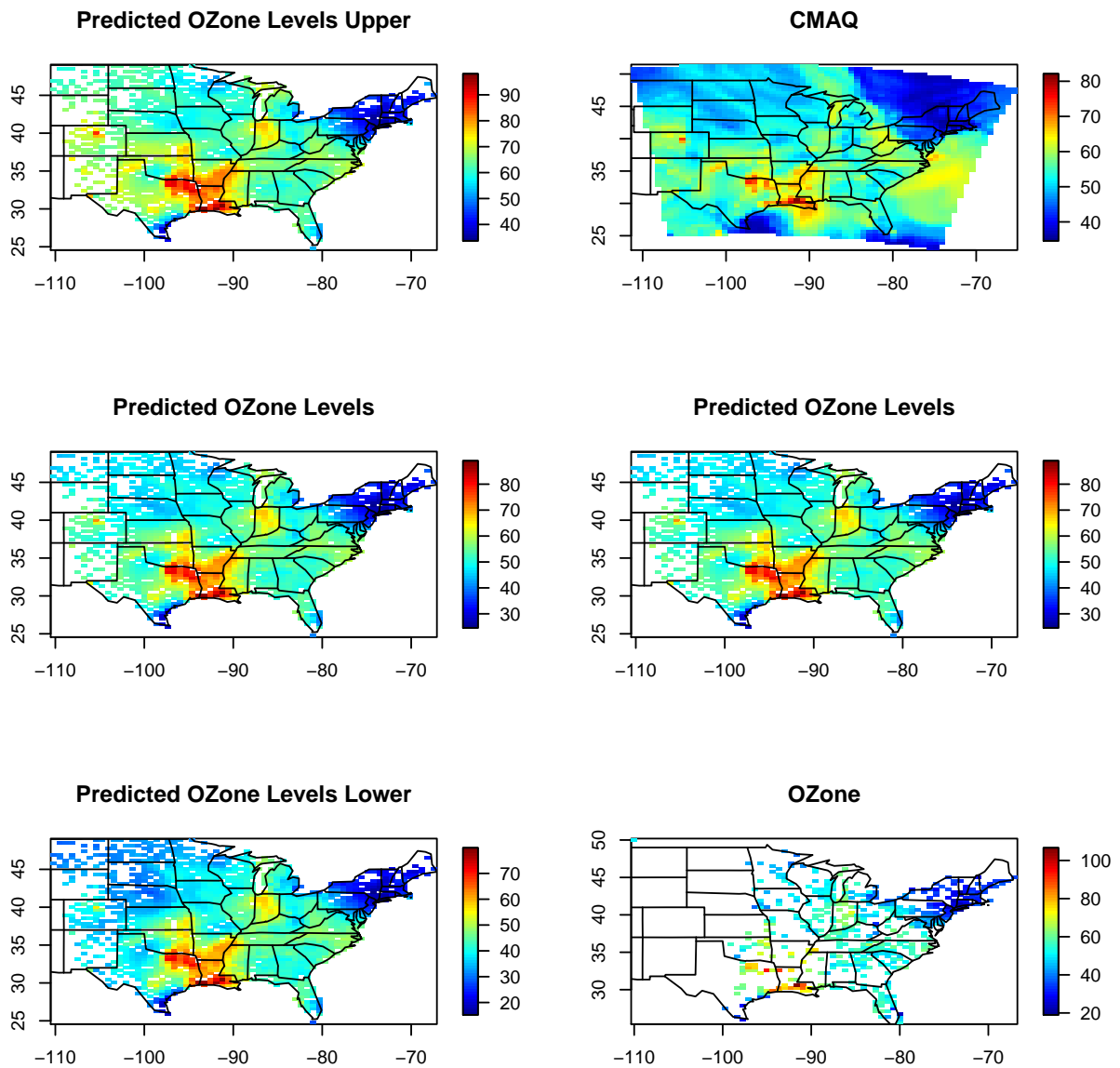


Predicted OZone Levels Upper



4.4 Interpretation

4.5 Summary of Main Points



5 Conclusion

5.1 Potential Alternative Approaches

5.2 Shortcomings of GP or the way covars were chosen

5.3 Further Investigation