Note on homework 5

Assume mean zero and fit Matern model with nugget

iteration = 14
Parameter:
[1]  0.7344918 8.6485997 -1.8645833 -22.0000000
Function Value
[1] 73.69171
Gradient:
[1] -1.197122e-06 -4.073014e-07 5.006235e-06 2.349959e-08

Relative gradient close to zero.
Current iterate is probably solution.

Hessian is unstable because of nugget being almost zero. So now get rid of nugget.

iteration = 14
Parameter:
[1]  0.7344919 8.6485997 -1.8645833
Function Value
[1] 73.69171
Gradient:
[1] -1.042224e-06 -4.070056e-07 4.687201e-06

Relative gradient close to zero.
Current iterate is probably solution.

temp1=temp$estimate
temp2=matrix(v,ncol=1) %*% matrix(v,nrow=1)
tenp2=temp2*temp$hessian

> sqrt(diag(solve(temp2)))
[1] 4.479441e-01 1.488043e+03 2.242523e-02

You see the spatial range is very large (the unit is miles). This is because the true mean is not zero. Actually the covariance is isotropic but due to the mean (not zero) but since you are asked to assume mean is being zero, the likelihood somehow things that the covariance structure is nonstationary. I will discuss on this homework more in details during our next class (November 3rd).