R training 11-14-12

packages used: gsl lhs ~~sp~~ maptools gstat shapefiles astsa tseries spsurvey lattice raster plyr reshape2 ggplot2 fields smatr ~~Foo~~ Rcolorbrewer

Session 1: Simulation: Simulation.pptx, ~~Session1Sim.~~ SimPresentation.R has code from 5th 25th 26th

"curve" command instead of plot?

q = quantile = inverse CDF → Computes percentiles ← eg qgamma c(0.05, 25)

hist(rnorm(1000, mean=8, sd=2.5)) ← histogram plotting 1000 random values, normal distribution

d, p, q, r in front of a distribution name
eg rweibull, qnorm
d = pdf, p = CDF, q = inverse CDF, r = generate random variates (e.g.) within distribution

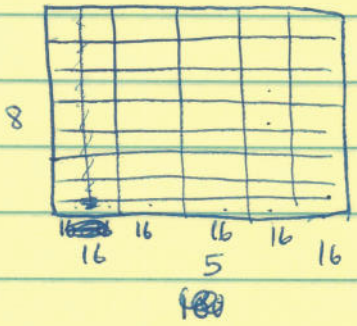
prob = 1/(1:5) with n=5 assigns likelihoods ~~the~~ where

Sample - Replace = TRUE allows reuse of values
Replace = FALSE shuffles values without reuse

Within the distributions, specifications within:
eg. gamma [shape, rate (or scale)]

base # breaks on gauge density
vary # breaks across data sources

10,000 km² / 40 gauges , each gauge ~250 km²



$1.6x \cdot x = 10{,}000$

$1.6x^2 = 10{,}000$

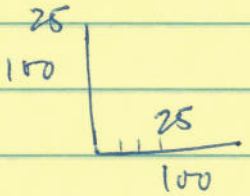
$x^2 = 6250$

$x = 79.05$ $\quad 79 \div 5 =$ 16 km

$1.6x = 126.49$ $\quad 127 \div 8 =$ 16 km

average separation distance bt gauges is ~16km
or if evenly distributed, pixels would be 16×16

radar = 4×4



~625 pixels

WRF = 12×12

gauges
max separation distance
= 250 km
250 ÷ 16 = 16 bins
÷ 2 = 8 bins

R training - Graphics 11-14-12

mar = specified in bottom, left, top, right
thickness specified in relative line units

if there are lots of points, pdf/eps will be huge (retains all info)

plot will override par

"unique" command identifies unique attributes

★ GG PLOT
data must be data.frame
faceting = grouping
themes allow for saving settings to reuse graphics code

"fortunes" = geeky R jokes package

R training - SPATIAL 11-15-13

packages sp gstat maptools shapefiles
ggmap

rm (list = ls()) ← removes any objects
getwd()
~~file → change directory~~ Tools → Set working directory
setwd("~/Dropbox/etc...")

@ references slot in shapefile data frame
options(digits = 3) limits display digits to 3, default is 7

ggplot option "alpha" controls transparency
drawPoly allows manual creation of polygon on the map → will save polygon w. spatial information

SPPLOT spplot(readShp, "zmsl")

or zcol = "i"

r-spatial.sourceforge.net/gallery/ has lots of plot examples with code

R training – CORRELATION

Use ACF2 instead of ACF for time series analysis
→ astsa package

gls regression procedure allows incorporation of correlation structure, determined by ARMA, etc.

There are spatial correlation structures available for specification within gls → these are in the nlme library

- there are space-time correlation structures elsewhere