1) Scripts to make maps

library("maps")

library("ggplot2")

Lon=c(-75.45,-76.3, -70.4,-70.65,-71.25,-71.3,-71.4,-72, -80)

Lat=c(37.65,37.25, 41.9,41.5, 41.4,41.5,41.65, 41.25, 25.8)

survey\_plotting2 <- data.frame(Lon,Lat)

xlims <- range(pretty(survey\_plotting2$Lon))

ylims <- range(pretty(survey\_plotting2$Lat))

ggplot(survey\_plotting2,aes(Lon,Lat))+borders(xlim=xlims,ylim=ylims,fill="lightgrey",colour = "lightgrey")+coord\_quickmap(xlim=c(-85,-55),ylim=c(24,46))+theme\_bw()+geom\_point(cex = 3,col="red")

2) Scripts to make the PCA

Location=c("SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","SA","WH", "WH","WH","WH","WH", "WH", "WH","WH","WH","WH", "WH","WH","WH","WH", "WH", "WH","WH","WH","WH", "WH", "WH","WH","WH","WH","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA","FA", "FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","FW","GC","GC","GC","GC","GC","GC","GC","EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "EP", "WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","WA","GP","GP","GP","GP","GP","GP","GP","GP","GP","GP" ,"MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI", "MI" )

coordinate\_1=c(.04,0,.03,.01,0,.04,.05,.04,.05,.04,.03,.04,.01,.07,.01,.03,.04,.04,.04,0,.01,.04,.04,.03,.03,.01,.03,.06,0,.04,.02,.05,.05, .04,.04,.05,.02,.04,.05,.03,.06,.01,.05,.03,.03,.02,.03,.01,.04,.03,.04,.04,.03,.07,.03,.03,.02,.03,.03, .03, .01,.03,.03,.05,.02,0, .05, -.01,.04,.03,.03, .03,.05,.04,.01,.04,.04, .02,.04,.03,.02,.04,.02,.04,.05, .04,.03, .03,.03,.02,.03, .02,.03, .05,.03, .01,.06,.03,.02, .03, .05,.02,.03,.01,.01, .03,.05,.02,.02,.03,.04,.02,.01,.01,.03,.06,.01,-.01,.06,.01,.05,.05,.03, .03,.02,.03,.01,.04,.02,.02,.02,.05,.02,0,.01,.04,.05,.02,.02,.04, -.08,0,.01, .01,-.01,-.07,-.03, -.02,0,.05,-.09,.02,.01,-.02,.01,-.03,.03,0,.01,.02,.01,0,-.09,-.12,-.03,-.09,-.07,-.04,-.03,-.07,-.05,-.07,-.24, -.17,-.24, -.23,-.22,-.24,-.25,-.23,-.24,-.23,-.24,-.23,-.21,-.2,-.2)

coordinate\_2=c(.02,.01,.03, -.01,.07, .04,-.07,.04,.04,.04,.04,.02,.01,0,-.03,-.03,.08,.02,.06,.05,.05,-.02,.03,-.06,0,.05,.04,.03,.01,.02,.04,0,-.01, 0,.05,.06,0,.1,.02,.01,.03,-.02,0,-.03,.08,-.03,-.01,.03,.01,-.01,.09,0,.02,-.01,-.01,.01,0,.02,-.03,.04,.02,.03,.05,.03,.06,.1,-.02,-.01,.06,.03,.02,-.02,.03,.03,.02,.01,.03,.02,-.05,.04,-.07,.06,.05,0,-.03,.08,-.01,0,.03,-.02,.01, .02,.04,-.08,.01,.01,0,.02,.02,-.02,.04,0,.03,-.01,.07,.01,0,-.01,.04,-.02,.02,.03,.04,.02,.03,.03,.06,-.02,.03,0,-.04,.02,.04,.02,.03,.01,-.02,.05,.02,-.02,.05,-.01,-.02,.02,.03,.04,.02,.05,.05,.08,-.22,.02,.03,-.04,-.01,-.13,0,-.01,-.11,.03,-.24,-.09,-.07,-.14,-.05,-.12,-.1,-.04,-.16,-.02,-.04,-.09,-.25,-.27,-.14,-.28,-.26,-.18,-.11,-.14,-.2,-.22,.06,.13,.05,.01,.05,.05,.08,.13,.05,.1,.09,.09,.1,.07,.15 )

MNE<-data.frame(Location,coordinate\_1,coordinate\_2)

ggplot(MNE,aes(x=coordinate\_1,y=coordinate\_2,fill=Location,shape=Location))+scale\_fill\_manual(values=c("darkblue","steelblue","dodgerblue2","cyan","purple","red","lightblue","darkmagenta","blue"))+scale\_shape\_manual(values=c(24,24,24,24,23,25,24,23,24))+geom\_point(size=4, alpha=0.7)+theme(panel.border = element\_rect(colour = "black", fill=NA, size=1), panel.background = element\_blank(), plot.title=element\_text(color="blue", size=14, face="bold"),axis.title.y = element\_text(colour="grey20",size=12,face="bold"),axis.text.x = element\_text(colour="grey20",size=12,face="bold"),axis.text.y = element\_text(colour="grey20",size=12,face="bold"), axis.title.x = element\_text(colour="grey20",size=12,face="bold")) +xlab("coordinate 1 (29.49%)")+ylab("coordinate 2 (8.59%)")

3) Script to make a Structure plot

DATA=c(0,1, .05,.95, .01,.99, 0,1, .06,.94, 0,1,0,1,0,1,0,1,0,1, .01,.99, .01,.99, .02,.98,0,1,.06,.94, .01,.99, 0,1,0,1,0,1, .03,.97,.02,.98,0,1, .01,.99, 0,1, .01,.99, .01,.99, .01,.99, 0,1,.03,.97,0,1, .01,.99, 0,1,0,1,.01,.99, 0,1,0,1,.04,.96,0,1,0,1, .01,.99, 0,1, .01,.99, 0,1, .01,.99, .01,.99, .01,.99, .01,.99, .02,.98,0,1, .01,.99, 0,1,0,1, .01,.99, 0,1, .01,.99, .01,.99,.01,.99, 0,1, .01,.99, .03,.97, .01,.99, 0,1, .01,.99,.06,.94,0,1,.08,.92,0,1, .01,.99, .01,.99, .01,.99, 0,1,0,1, .01,.99, 0,1, .01,.99, .02,.98,0,1, .01,.99, .01,.99, 0,1, .01,.99, 0,1,0,1,0,1, .01,.99, .04,.96, .01,.99, .01,.99, .01,.99, .01,.99,.02,.98, .01,.99, 0,1, .01,.99, .02,.98,0,1, .01,.99, .01,.99, 0,1,0,1, .01,.99, .01,.99, .02,.98, .01,.99, .02,.98,0,1, .01,.99, .02,.98,0,1, .01,.99, .01,.99, .02,.98, .01,.99, .01,.99, 0,1,.01,.99, .08,.92,0,1,.02,.98,0,1,0,1, .01,.99,0,1, .01,.99, .01,.99, .02,.98,0,1, .01,.99, .01,.99, .01,.99, 0,1,0,1,.02,.98,.05,.95,0,1,0,1, .01,.99, .01,.99, 0,1, .42,.58,.05,.95,.04,.96,.04,.96,.08,.92,.39,.61,.23,.77,.19,.81,.08,.92,0,1,.4,.6,.02,.98,.05,.95,.21,.79,.05,.95,.23,.77,.01,.99,.08,.92,.18,.82,.03,.97,.05,.95,.06,.94,.49,.51,.48,.52,.21,.79,.44,.56,.39,.61,.25,.75,.22,.78,.38,.62,.33,.67,.36,.64,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0)

DATA\_STR=matrix(DATA,ncol=186)

rownames(DATA\_STR)= c("K1","K2")

barplot (DATA\_STR, space=c(0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0,0, 0,0,0.5, 0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0,0, 0,0,0,0, 0.5, 0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0,0, 0,0,0,0,0, .5, 0,0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0,0, 0,0,0,0, .5, 0,0,0,0,0,0, .5,0,0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0, .5, 0, 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0, 0,0, 0.5, 0,0,0,0,0,0,0,0,0, 0.5, 0,0,0,0,0,0,0,0,0,0,0,0,0,0), las=2, main="STRUCTURE + MIAMI (K=2)", col=c("salmon","lightskyblue" ), cex.names=.4)