BD anal

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General Anlysis of BD data collected. mutliple methods and projects

Data import and prep

## [1] "File downloaded from https://nrcs.box.com/s/tomz9nl719v1e7r4y84d9rv7tn1vnnpz"

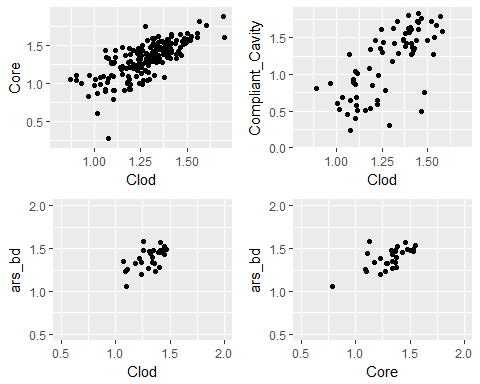
## ####Data Prep

#############  
BD <- read\_csv('BD\_compare.csv' , col\_types = "cccccccnnccnnnnncccccccc")  
  
#when there is not project substitute the first word in the submit project name (extract from 1 to the first blank)  
BD$DSP\_Project <- ifelse(!is.na(BD$DSP\_Project), BD$DSP\_Project,   
 substr(BD$submit\_proj\_name,1, regexpr(" ",BD$submit\_proj\_name)-1))  
  
BD$BD\_diff <- BD$Clod - BD$Core  
  
BD$CROP <- ifelse(BD$Crop != "NA", BD$Crop, substr(BD$lay\_field\_label3, 1,4))

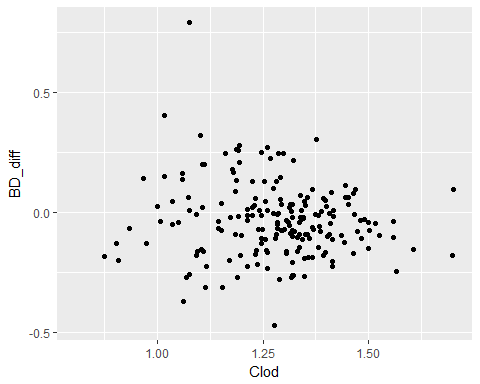
## SUMMARY PLOTS

#### properties should be selectable via dropdown menu

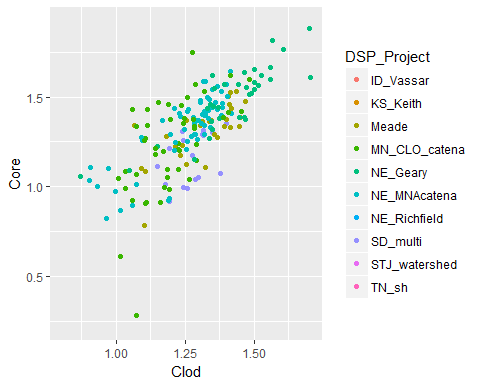
#scatter plots of BD methods  
  
grid.arrange(   
 BD %>% ggplot(aes(x = Clod, y = Core)) + geom\_point(),  
 BD %>% ggplot(aes(x = Clod, y = Compliant\_Cavity)) + geom\_point(),  
 BD %>% ggplot(aes(x = Clod, y = ars\_bd)) + geom\_point() + scale\_x\_continuous(limits = c(0.5,2)) +  
 scale\_y\_continuous(limits = c(0.5, 2)),  
 BD %>% ggplot(aes(x = Core, y = ars\_bd)) + geom\_point()+ scale\_x\_continuous(limits = c(0.5,2)) +  
 scale\_y\_continuous(limits = c(0.5, 2)),  
ncol = 2)



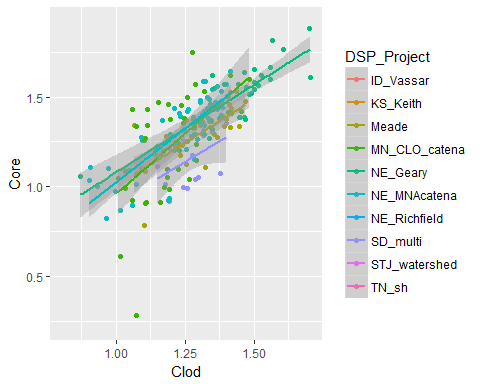
BD %>% ggplot(aes(x = Clod, y = BD\_diff)) + geom\_point()



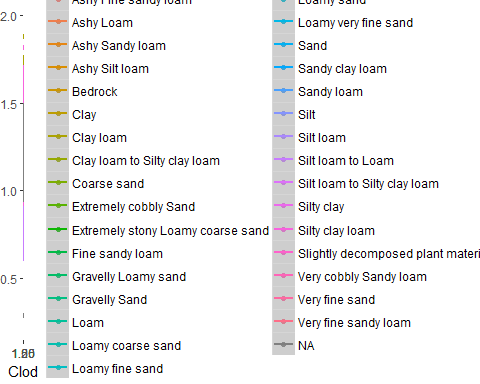
BD %>% ggplot(aes(x = Clod, y = Core)) + geom\_point(aes(color = DSP\_Project))



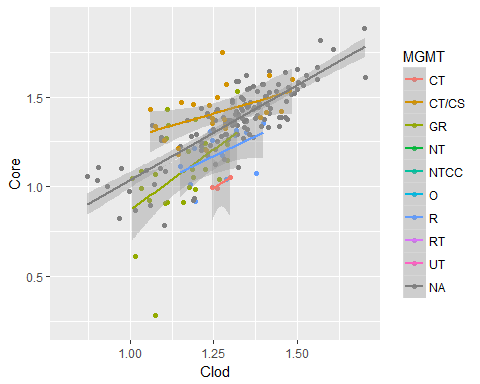
BD %>% ggplot(aes(x = Clod, y = Core, color = DSP\_Project)) + geom\_point() + geom\_smooth(method = "lm")



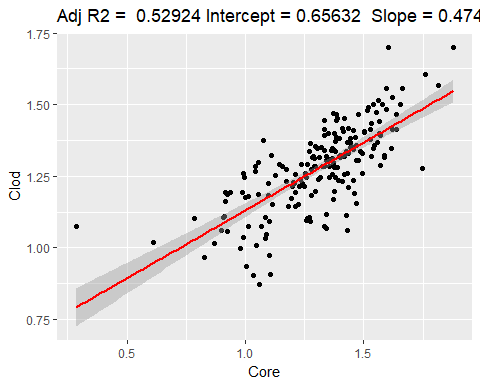
BD %>% ggplot(aes(x = Clod, y = Core, color = texture\_description)) + geom\_point() + geom\_smooth(method = "lm")



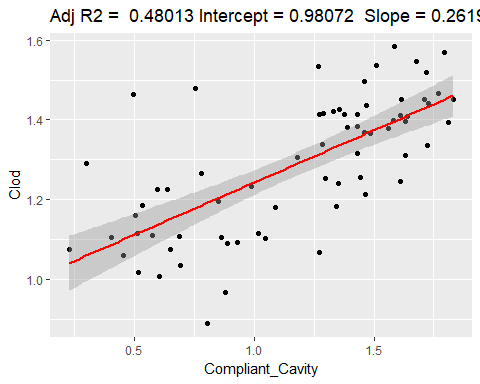
BD %>% ggplot(aes(x = Clod, y = Core, color = MGMT)) + geom\_point() + geom\_smooth(method = "lm")



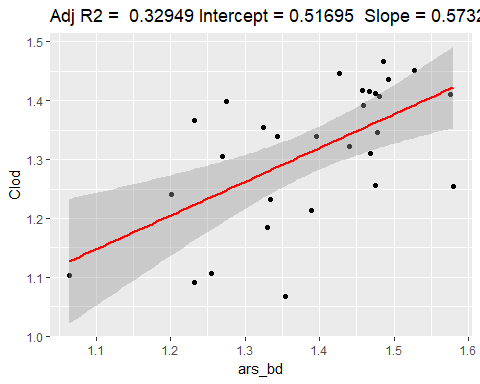
#function to add regression equations  
 ggplotRegression <- function (fit) {  
   
 require(ggplot2)  
   
 ggplot(fit$model, aes\_string(x = names(fit$model)[2], y = names(fit$model)[1])) +   
 geom\_point() +  
 stat\_smooth(method = "lm", col = "red") +  
 labs(title = paste("Adj R2 = ",signif(summary(fit)$adj.r.squared, 5),  
 "Intercept =",signif(fit$coef[[1]],5 ),  
 " Slope =",signif(fit$coef[[2]], 5),  
 " P =",signif(summary(fit)$coef[2,4], 5)))  
}  
  
 fit1 <- lm(Clod ~ Core,BD)  
 ggplotRegression(fit1)



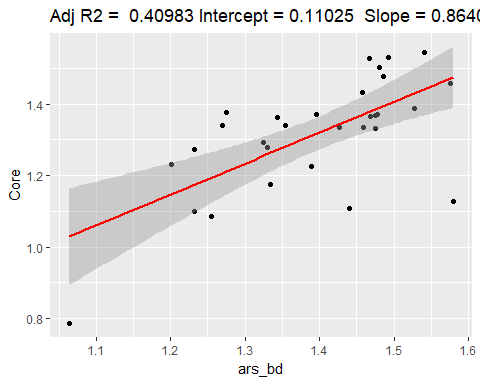
fit2 <- lm(Clod ~ Compliant\_Cavity, BD)  
 ggplotRegression(fit2)



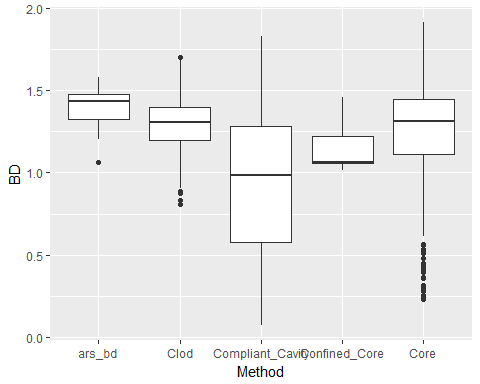
fit\_ars <- lm(Clod ~ ars\_bd, BD)  
 ggplotRegression(fit\_ars)



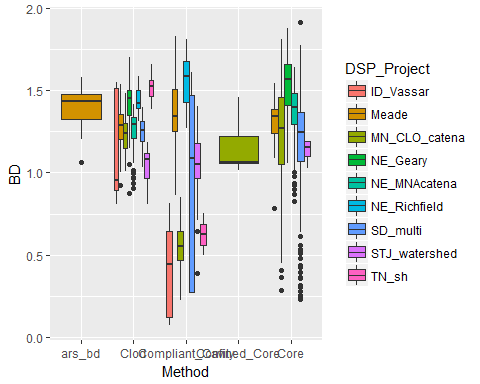
fit\_cores <- lm(Core ~ ars\_bd, BD)  
 ggplotRegression(fit\_cores)



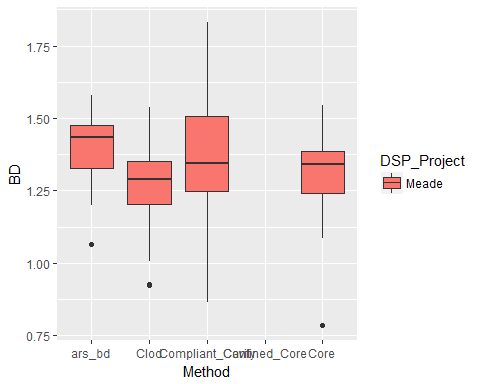
bd <- BD %>%   
 mutate(Clod\_compare = Clod) %>%  
 gather(key = "Method", value = "BD", -c(lab\_proj\_name:texture\_description, DSP\_Project:Clod\_compare))  
  
  
bd %>% ggplot(aes(y = BD, x = Method)) + geom\_boxplot()



bd %>% ggplot(aes(y = BD, x = Method)) + geom\_boxplot(aes(fill = DSP\_Project))



bd %>% filter(DSP\_Project == "Meade") %>%  
 ggplot(aes(y = BD, x = Method)) + geom\_boxplot(aes(fill = DSP\_Project))



bd %>%  
 ggplot(aes(y = BD, x = Method)) + geom\_boxplot(aes(fill = DSP\_Project)) + facet\_wrap(~DSP\_Project) +  
 theme(axis.text.x = element\_text(angle = 45, hjust = 1))

