Section 3.4.2 - River Flood

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```
####################
# Setup

# Loading allocation results
load(file="results/allocations_RWL.RData")

error.bar <- function(x, y, upper, lower=upper, length=0.1,...){
  arrows(x,upper, x, lower, angle=90, code=3, length=length, ...)
}

# Plotting colors
coul <- brewer.pal(6, "Dark2")
coul[3]="cornflowerblue"

RWL.names=c("Q","Ks","Zv","Zm","L","B")

meanShap.RWL=colMeans(Shaps.RWL)
meanShap.flood=colMeans(Shaps.flood)
meanPME.RWL=colMeans(PMEs.RWL)
meanPME.flood=colMeans(PMEs.flood)

quantilesShap.RWL = apply(Shaps.RWL, 2, function(x) quantile(x, probs=c(0.95,0.05)))
quantilesShap.flood = apply(Shaps.flood, 2, function(x) quantile(x, probs=c(0.95,0.05)))
quantilesPME.RWL = apply(PMEs.RWL, 2, function(x) quantile(x, probs=c(0.95,0.05)))
quantilesPME.flood = apply(PMEs.flood, 2, function(x) quantile(x, probs=c(0.95,0.05)))
```

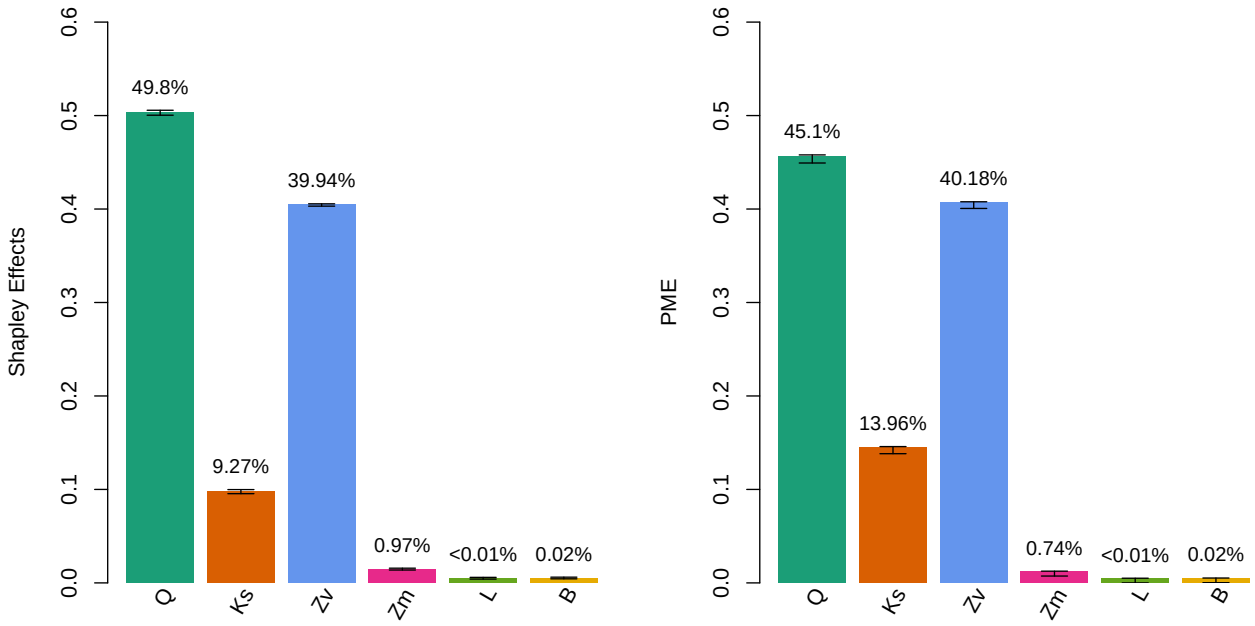
River Water Level Model

```
par(mar=c(5,4.5,1,1),
    mfrow=c(1,2))


a=barplot(height=c(meanShap.RWL)+0.005,
        names=RWL.names,
        col=coul,
        ylim=c(0,0.6),
        ylab="Shapley Effects",
        cex.names=1,
        cex.lab=1,
        xaxt="n",
        border=F)
```

```
 text(a, par("usr")[3], labels = RWL.names , srt = 60, adj = c(1.1,1.1), xpd = TRUE, cex=1)
 perc<-paste(round(meanShap.RWL*100, 2), "%", sep="")
 perc[5]="<0.01%"
 text(a, par("usr")[3]+.5, y=(quantilesShap.RWL[1,]+0.03), labels = perc, xpd = TRUE, cex=0.9)
error.bar(a, meanShap.RWL, upper=quantilesShap.RWL[1,]+0.005,
          lower=quantilesShap.RWL[2,]+0.005)


a=barplot(height=c(meanPME.RWL)+0.005,
        names=RWL.names,
        col=coul,
        ylim=c(0,0.6),
        ylab="PME",
        cex.names=1,
        cex.lab=1,
        xaxt="n",
        border=F)
 text(a, par("usr")[3], labels = RWL.names , srt = 60, adj = c(1.1,1.1), xpd = TRUE, cex=1)
 perc<-paste(round(meanPME.RWL*100, 2), "%", sep="")
perc[5]="<0.01%"
 text(a, par("usr")[3]+.5, y=(quantilesPME.RWL[1,]+0.03), labels = perc, xpd = TRUE, cex=0.9)
error.bar(a, meanPME.RWL, upper=quantilesPME.RWL[1,]+0.005,
          lower=quantilesPME.RWL[2,])
```



Flood Model

```
par(mar=c(5,4.5,1,1),
    mfrow=c(1,2))


a=barplot(height=c(meanShap.flood)+0.005,
        names=RWL.names,
```

```
        col=coul,
        ylim=c(0,0.5),
        ylab="Shapley Effects",
        cex.names=1,
        cex.lab=1,
        xaxt="n",
        border=F)
 text(a, par("usr")[3], labels = RWL.names , srt = 60, adj = c(1.1,1.1), xpd = TRUE, cex=1)
 perc<-paste(round(meanShap.flood*100, 2), "%", sep="")
 text(a, par("usr")[3]+.5, y=(quantilesShap.flood[1,]+0.03), labels = perc, xpd = TRUE, cex=0.9)
 error.bar(a, meanShap.flood, upper=quantilesShap.flood[1,]+0.005,
          lower=quantilesShap.flood[2,]+0.005)


a=barplot(height=c(meanPME.flood)+0.005,
        names=RWL.names,
        col=coul,
        ylim=c(0,0.5),
        ylab="PME",
        cex.names=1,
        cex.lab=1,
        xaxt="n",
        border=F)
 text(a, par("usr")[3], labels = RWL.names , srt = 60, adj = c(1.1,1.1), xpd = TRUE, cex=1)
 perc<-paste(round(meanPME.flood*100, 2), "%", sep="")
#perc[5]="<0.01%"
 text(a, par("usr")[3]+.5, y=(quantilesPME.flood[1,]+0.03), labels = perc, xpd = TRUE, cex=0.9)
 error.bar(a, meanPME.flood, upper=quantilesPME.flood[1,]+0.005,
          lower=quantilesPME.flood[2,]+0.005)
```