

Analysis Rainfall

PAZ

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Lab parameters and field constants

```
if (MAC) {
  if (WIN){
    path = file.path("C:/Users/DayTimeChunks/Documents/PhD/HydrologicalMonitoring")
  } else {
    path = file.path("/Users/DayTightChunks/Documents/PhD/HydrologicalMonitoring")
  }
} else {
  path = file.path("D:/Documents/these_pablo/Alteckendorf2016/HydrologicalMonitoring")
}
source(file.path(path, "global.R"))
```

Packages

```
# Plotting functions
library("scales")
library("tidyr")
```

```
## Warning: package 'tidyr' was built under R version 3.3.3
```

```
library("dplyr")
library("reshape")
library("zoo") # na.approx()
```

Rainfall

Note: Not for TSS This was not the source for BEACH input, this was only to analyse Alteck's Pluviometer, which has only rainfall from March 2016 onward.

```
rain = read.csv2(file.path(path, "Data/sixMinutePluvioAlteck2016.csv"), header = F)
head(rain)
```

```
##           V1 V2
## 1 25/03/2016 05:38 0.2
## 2 25/03/2016 05:44 0.0
## 3 25/03/2016 05:50 0.0
## 4 25/03/2016 05:56 0.0
## 5 25/03/2016 06:02 0.0
## 6 25/03/2016 06:08 0.0
```

```

rain$V1 <- as.character(rain$V1)
rain$Date = as.POSIXct(strptime(rain$V1,
                                "%d/%m/%Y %H:%M", tz="EST") )

rain$DayMoYr = as.POSIXct(strptime(rain$V1,
                                "%d/%m/%Y", tz="EST") )

# Check number of NA values
CHECK0 = FALSE
if (CHECK0){
  sum(is.na(rain$Date))
  naDates = rain[is.na(rain$Date) == TRUE,]
}

rainDay <- rain %>%
  group_by(DayMoYr) %>%
  dplyr::summarize(Rain.mm = sum(V2))

```

Prepare Rainfall Time Series (TSS)

```

if (FALSE) {
  rainDay$time = seq.int(nrow(rainDay))
  rain_tss = rainDay[,c("time", "Rain.mm")]
  #rain_tss = rbind(c("2016-03-25 to 2016-07-11", NA), rain_tss)
  write.table(rain_tss, "BEACH_R/rain_mmday.tss", sep="\t", row.names = F)
}

```

Analyse Rainfall Monthly Values

```

rainDay$Month <-
  ifelse(rainDay$DayMoYr >= as.POSIXct("2016-03-24 00:30:00", tz = "EST") &
    rainDay$DayMoYr < as.POSIXct("2016-04-01 00:00:00", tz = "EST"), "March",
    ifelse(rainDay$DayMoYr >= as.POSIXct("2016-04-01 00:00:00", tz = "EST") &
      rainDay$DayMoYr < as.POSIXct("2016-05-01 00:00:00", tz = "EST"), "April",
      ifelse(rainDay$DayMoYr >= as.POSIXct("2016-05-01 00:00:00", tz = "EST") &
        rainDay$DayMoYr < as.POSIXct("2016-06-01 00:00:00", tz = "EST"), "May",
        ifelse(rainDay$DayMoYr >= as.POSIXct("2016-06-01 00:00:00", tz = "EST") &
          rainDay$DayMoYr < as.POSIXct("2016-07-01 00:00:00", tz = "EST"), "June"
        )
      )
    )

rainDay$Wet = ifelse(rainDay$Rain.mm > 0, 1, 0)
rainDay$Dry = ifelse(rainDay$Rain.mm == 0, 1, 0)

rainSumm <- rainDay %>%
  group_by(Month) %>%
  dplyr::summarize(WetDays = sum(Wet),
    DryDays = sum(Dry),
    MeanP = mean(Rain.mm),

```

```
StdP = sd(Rain.mm),  
TotP = sum(Rain.mm))  
  
rainSumm$Prct = rainSumm$WetDays/(rainSumm$WetDays+rainSumm$DryDays)
```