

# Ingenieurhydrologie Modellierung

|Blaney-Criddle.r

```
t <- c(0:35);  
d <- 0.85;  
k <- 1.90;  
E <- (0.142*t+1.095)*(t+17.8)*k*d;  
plot(t, E);
```

## Lineare Regression rechnen

|Lin-Regr.r

```
#' ---  
#' title: "Lineae Regression"  
#' author: "C. Kuells"  
#' date: "9. Mai, 2015"  
#' ---  
x <- c(-2, -1, -0.8, -0.3, 0, 0.5, 0.6, 0.7, 1, 1.2)  
y <- c(1.9, 0.6, 0.5, 0.8, -0.4, -0.9, -0.7, -0.1, -1.7, -0.2)  
fm <- lm(y ~ x)  
#+ fig.width=5, fig.height=5  
plot(x, y, xlim = c(-3, 3), ylim = c(-3, 3), pch = 19)  
fitted.values(fm)  
residuals(fm)  
#+ fig.width=5, fig.height=5  
plot(x, y, xlim = c(-3, 3), ylim = c(-3, 3), pch = 19)  
abline(fm, col = "red")
```

## Datein einlesen

```
wd <- getwd()  
setwd("C:\\HydroPro\\R+")  
klima <- read.csv(file="c:/HydroPro/R+/fuhrsbuettel.txt", header=TRUE,  
sep=";", na.string="-999")  
summary(klima)  
attach(klima)
```

## Kontrollstrukturen

```
if (bed1 < eps)
  return(a1 + a2)
else {
  return()
}
```

```
for (i in 1:length(N)) {
  if (N[i] <= Va)
    return(Nc[i] <- 0.0)
  else {
    return(Nc[i] <- N[i]-Va)
  }
}
```

## Erstes Modell

```
setwd("C:\\HydroPro\\R+")

klima <- read.csv(file="fuhlsbuettel.txt", header=TRUE, sep=";")
# Fehlwerte richtig einlesen

summary(klima)
attach(klima)
N <- NIEDERSCHLAGSHOEHE
Nc <- N
Flaeche <- 640 # km2
A <- 0.08 # Abflusskoeffizient
Va <- 10 # mm Anfangsverlust

for (i in 1:length(N)) {
  if (N[i] <= Va) {
    Nc[i] <- 0.0
  } else {
    Nc[i] <- N[i]-Va
  }
}

Q <- Nc*A*(Flaeche*1000000)*1/1000*1/86400 # Einheitenumwandlung Flaechen m2
-> km2, Volumen l-> qm, Zeit Tag -> Sekunde
plot(Q, ylim = c(0, 10))
```

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