```r
# Catchment data loading
data("B222001001", package = "airGRdatasets")
ts_obs <- B222001001$TS

# Data processing for GR4J (with Q for calibration)
prep <- PrepGR(DatesR     = ts_obs$Date,
               Precip     = ts_obs$Ptot,
               PotEvap    = ts_obs$Evap,
               Qobs       = ts_obs$Qmmd,
               HydroModel = "GR4J",
               CemaNeige  = FALSE)

# Calibration using NSE score on raw Q
cal_raw <- CalGR(PrepGR  = prep,
                 CalCrit = "NSE",
                 transfo = "",
                 WupPer  = c("1999-01-01", "2001-12-31"),
                 CalPer  = c("2002-01-01", "2016-12-31"))

# Calibration using NSE score on sqrt(Q)
cal_sqrt <- CalGR(PrepGR  = prep,
                  CalCrit = "NSE",
                  transfo = "sqrt",
                  WupPer  = c("1999-01-01", "2001-12-31"),
                  CalPer  = c("2002-01-01", "2016-12-31"))

# Calibration using NSE score on log(Q)
cal_log <- CalGR(PrepGR  = prep,
                 CalCrit = "NSE",
                 transfo = "log",
                 WupPer  = c("1999-01-01", "2001-12-31"),
                 CalPer  = c("2002-01-01", "2016-12-31"))

# Combination of simulated streamflow
tab_sim_trsf <- data.frame(Date       = cal_raw$OutputsModel$DatesR,
                           QSIM_rawQ  = cal_raw$OutputsModel$Qsim,
                           QSIM_sqrtQ = cal_sqrt$OutputsModel$Qsim,
                           QSIM_logQ  = cal_log$OutputsModel$Qsim)
tab_sim_trsf <- merge(x = ts_obs[, c("Date", "Qmmd")],
                      y = tab_sim_trsf,
                      by = "Date",
                      all.y = TRUE)

# Computation of regime streamflow
tab_sim_reg <- SeriesAggreg(tab_sim_trsf,
                            Format = "%m",
                            ConvertFun = rep("mean", ncol(tab_sim_trsf) - 1))

# Graphical comparison between simulated and observed streamflow regimes
col_trsf <- c("black", rep("orangered", 3))
lty_trsf <- c(1, 1:3)
matplot(y = tab_sim_reg[, -1],
        xlab = "time [months]", ylab = "flow [mm/d]",
        type = "l", lty = lty_trsf, lwd = 2, col = col_trsf)
legend("bottomleft",
       legend = c("Qobs", "Qsim", "sqrt(Qsim)", "log(Qsim)"),
       lty = lty_trsf, lwd = 2, col = col_trsf)
```