```r
# Catchment data loading
data("X031001001", package = "airGRdatasets")

# Observed daily time series
ts_obs <- X031001001$TS

# Catchment elevation distribution
hypso <- X031001001$Hypso

# Temporal subset
is_per <- ts_obs$Date >= as.POSIXct("1999-01-01", tz = "UTC") &
  ts_obs$Date <= as.POSIXct("2009-12-30", tz = "UTC")
ts_obs <- ts_obs[is_per, ]

# Data processing for GR4J (without snow module)
prep_snow_n <- PrepGR(DatesR     = ts_obs$Date,
                      Precip     = ts_obs$Ptot,
                      PotEvap    = ts_obs$Evap,
                      Qobs       = ts_obs$Qmmd,
                      HydroModel = "GR4J",
                      CemaNeige  = FALSE)

# Data processing for GR4J with snow module
prep_snow_y <- PrepGR(DatesR     = ts_obs$Date,
                      Precip     = ts_obs$Ptot,
                      PotEvap    = ts_obs$Evap,
                      Qobs       = ts_obs$Qmmd,
                      TempMean   = ts_obs$Temp,
                      ZInputs = median(hypso),
                      HypsoData = hypso,
                      NLayers = 5,
                      HydroModel = "GR4J",
                      CemaNeige  = TRUE)

# Calibration using NSE score (without snow module)
cal_snow_n <- CalGR(PrepGR  = prep_snow_n,
                    CalCrit = "NSE",
                    WupPer  = c("1999-01-01", "2000-12-31"),
                    CalPer  = c("2001-01-01", "2009-12-30"),
                    verbose = TRUE)

# Calibration using NSE score (with snow module)
cal_snow_y <- CalGR(PrepGR  = prep_snow_y,
                    CalCrit = "NSE",
                    WupPer  = c("1999-01-01", "2000-12-31"),
                    CalPer  = c("2001-01-01", "2009-12-30"),
                    verbose = TRUE)

# Combination of observed and simulated streamflow
tab_cal <- data.frame(Date        = cal_snow_n$OutputsModel$DatesR,
                      QObs        = cal_snow_n$Qobs,
                      Qsim_snow_n = cal_snow_n$OutputsModel$Qsim,
                      Qsim_snow_y = cal_snow_y$OutputsModel$Qsim)

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

# Graphical comparison between simulated and observed streamflow regimes
col_snow <- c("black", rep("orangered", 2))
lty_snow <- c(1, 1:2)
matplot(y = tab_cal_reg[, grep("^Q", colnames(tab_cal))],
        xlab = "time [months]", ylab = "flow [mm/d]",
        type = "l", lty = lty_snow, lwd = 2, col = col_snow)
legend("topright",
       legend = c("Qobs", "Qsim without snow mod.", "Qsim with snow mod."),
       lty = lty_snow, lwd = 2, col = col_snow)
```