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# Estimation of annual aridity index (PE/P)
ts_obs_y <- SeriesAggreg(x = ts_obs[, c("Date", "Ptot", "Evap")],
                        Format = "%Y",
                        ConvertFun = c("sum", "sum"),
                        YearFirstMonth = 10)
ts_obs_y$Arid <- ts_obs_y$Evap / ts_obs_y$Ptot

# Identification of wetter and dryer hydrological years
barplot(height = ts_obs_y$Arid,
        names.arg = format(ts_obs_y$Date, format = "%Y"),
        xlab = "time [yr]", ylab = "aridity index [-]",
        col = "royalblue")

# Wet and dry periods
per_wet <- c("2016-10-01", "2017-09-30")
per_dry <- c("2000-10-01", "2001-09-30")

# Calibration over the wet and the dry periods
cal_wet <- CalGR(PrepGR = prep,
                CalCrit = "KGE",
                CalPer = per_wet,
                verbose = TRUE)
cal_dry <- CalGR(PrepGR = prep,
                CalCrit = "KGE",
                CalPer = per_dry,
                verbose = TRUE)

# Get parameter values at the end of the calibration step
param_dry <- GetParam(cal_dry)
param_wet <- GetParam(cal_wet)

# Get criteria values at the end of the calibration step
crit_cal_dry <- GetCrit(cal_dry)
crit_cal_wet <- GetCrit(cal_wet)

# Evaluation over the wet and the dry periods
eva_wet <- SimGR(PrepGR = prep,
                Param = cal_dry,
                SimPer = per_wet,
                EffCrit = "KGE",
                verbose = TRUE)
eva_dry <- SimGR(PrepGR = prep,
                Param = cal_wet,
                SimPer = per_dry,
                EffCrit = "KGE",
                verbose = TRUE)

# Get criteria values
crit_eva_dry <- GetCrit(eva_dry)
crit_eva_wet <- GetCrit(eva_wet)

# Cleveland dot plot of the criteria
dotchart(c(crit_eva_dry, crit_cal_dry, crit_eva_wet, crit_cal_wet),
        labels = c("eva (dry)", "cal (dry)", "eva (wet)", "cal (wet)"),
        col = rep(c("darkorange", "deepskyblue3"), each = 2), pch = 19,
        xlab = "KGE [-]")

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