# R 3.4.1

require(moments)

require(tseries)

####################################

### script for basic statistics ###

####################################

basic\_stats <- function(ts0) {

 ts <- as.numeric(ts0)

 hh <- c("Basic statistics: "," Nobs =", formatC(length(ts), width=8) )

 print.noquote(hh)

 hh <- c("Min= ", formatC( min(ts), digits = 5, width= 8, format = "fg") ,

 "Max= ", formatC( max(ts), digits = 5, width= 8, format = "fg") )

 print.noquote(hh)

 hh <- c("Mean= ", formatC( mean(ts), digits = 5, width= 8, format = "fg") ,

 "StDev= ", formatC( sd(ts) , digits = 5, width= 8, format = "fg") )

 print.noquote(hh )

 hh <- c("Skewness=",formatC( skewness(ts), digits = 5, width= 8, format = "fg") ,

 "Kurtosis=",formatC( kurtosis(ts), digits = 5, width= 8, format = "fg") )

 print.noquote(hh)

 jarque.bera.test(ts)

 }

#####################################

plot\_ser\_fit\_res.ts <- function(ser,model,ser\_name,start\_year) {

## PLOT - Datenreihe (ser) , Fitted, Residuen:

# Period is determined by the model.

# If lags you loos obs at the beginning!

res <- ts(model$residuals, start= start\_year)

n\_res <- length(res)

end\_year <- start\_year + n\_res - 1

observed <- ts(ser, start= start\_year, end= end\_year)

fitted <- ts(model$fitted, start= start\_year)

null <- ts(rep(0,n\_res), start= start\_year, end= end\_year)

#

op <- par(mfrow=c(2,1))

par(mar=c(0, 4, 4, 2) +0.1)

plot.ts(observed, ylab= ser\_name, xlab="")

par(new=TRUE)

plot.ts(fitted, xlab="", ylab="", col="blue", axes=FALSE)

title(c("observed and fitted, residuals"))

#

par(mar=c(5, 4, 2, 2) +0.1)

plot.ts(res, col="red")

lines(null, xlab="", ylab="", lty=3)

par(op)

#

 }

#######################################