

Description of R codes for Comparing Time Series with Annual Cycles

test.nested.cycle.univariate.R

generates synthetic data and calls `diff.ar.cycle`.

diff.ar.cycle.R

tests if two time series come from the same stochastic model, where the time series contains periodic and serially correlated components. The main relevant output is `dev.table` and `AICm` for the two models. There are other output variables which are used for checking purposes, but generally can be ignored. An example of the deviance table is given below:

```
1 > source('test.nested.cycle.univariate.R')
2
3      deviance crit(chisq) pval(chisq)      alpha      crit(F)      pval(F)      F-value
4 D[0:1]; equal variance  0.4942722    5.701292  0.48202772 0.01695243  7.378021  0.23863299  1.2530663
5 D[1:2]; equal AR model  0.6347443   10.198449  0.88843440 0.01695243 12.701228  0.91675516  0.1693801
6 D[2:3]; equal cycle    14.3012447   15.461973  0.02644627 0.01695243 18.233146  0.05916021  2.1239644
7 D[0:3]; total          15.4302613   18.307038  0.11714489 0.05000000      NA      NA      NA
```

timeseries2ar.cycle.R

creates `y` and `X` appropriate for $ARX(p, H)$ (called by `diff.ar.cycle.R`).

diff.regression.nested.R

performs the nested testing procedure (called `diff.ar.cycle.R`).

aicm.R

computes `AICm` for the $ARX(p, H)$ model (called `diff.ar.cycle.R`).