

Wavelet Methods for Time Series Analysis

Half-Day Workshop Presented at UNSW

Don Percival

Visiting Scientist, CSIRO/CMIS

Principal Mathematician, Applied Physics Laboratory

Professor, Department of Statistics

University of Washington

`don.percival@csiro.au`

`dbp@apl.washington.edu`

`http://faculty.washington.edu/dbp`

Overview of Workshop

- two sessions, each 1 hour and 45 minutes long
 - I: introduction to wavelets and wavelet transforms
 - II: wavelet-based statistical analysis of time series
 - wavelet variance (also known as wavelet spectrum)
 - wavelet-based signal extraction
 - wavelet-based decorrelation of time series
- R code demonstrating ideas from both sessions available at
<http://faculty.washington.edu/dbp/talks>

Resources

- overheads for workshop based partially on *Wavelet Methods for Time Series Analysis*, D. B. Percival and A. T. Walden, Cambridge University Press, Cambridge, UK, 2000 (softcover edition with corrections issued in 2006; translation into Chinese (available from China Machine Press) issued in 2006); when applicable, lower left-hand corner of overheads indicate relevant pages in WMTSA
- software in R (available from <http://cran.r-project.org/> except for latest version of `wavethresh`, which is available from <http://www.stats.bris.ac.uk/~wavethresh>)

`wavelets` (*)

`waveslim` (*)

`wavethresh` (†)

`wmtsa` (*)

- software in Matlab:

WaveCov: <http://www2.imperial.ac.uk/~bwhitche/software/> (*)

wavelab: <http://www-stat.stanford.edu/~wavelab/>

WMTSA: <http://www.atmos.washington.edu/~wmtsa> (*)

(*) indicates software compatible with conventions used in overheads and WMTSA book

(†) G. P. Nason, *Wavelet Methods in Statistics with R*, Springer, Berlin, 2008