CHAPTER 3

Examples of Applications in Climate

A number of examples of the use of time series tools in the context of climate problems are found in the list below.

- Wunsch, C., On sharp spectral lines in the climate record and the millennial peak. *Paleoceano.*, 15, 417-424, 2000.
- Wunsch, C., The spectral description of climate change including the 100KY energy, *Clim. Dyn.*, DOI 10.1007/s00382-002-0279-z, 2002.
- Wunsch, C. and D. E. Gunn, A densely sampled core and climate variable aliasing, *Geo-Mar. Letts.*, 23(1), DOI: 10.1007/s00367-003-0125-22003, 2003..
- Huybers, P. and C. Wunsch, Rectification and precession signals in the climate system, *Geophys. Res. Letts*, 30, 19, 2011,doi:10.1029/2003GL017875, 2003
- Wunsch, C., Greenland—Antarctic phase relations and millennial time-scale climate fluctuations in the Greenland cores, *Quaternary Sci. Revs.* 22, 1631-1646, 2003.
- Wunsch, C. Quantitative estimate of the Milankovitch-forced contribution to observed climate change. Quat. Sci. Revs., 23/9-10, 1001-1012, 2004.

1. References

- Amos, D. E. and L. H. Koopmans 1962 Tables of the Distribution of the Coefficient of Coherence for Stationary Bivariate Gaussian Processes. Sandia Corp. Monograph, SCR-483, xx pp.
- Bendat, J. S. and A. G. Piersol, 1986 Random Data. Analysis and Measurement Procedures, Second Edition, 566 pp., Wiley-Interscience, New York.
- Bracewell, R. N. 1978 The Fourier Transform and Its Applications. 444 pp McGraw-Hill, New York.
- Chapman, M. R. and N. J. Shackleton, 2000 Evidence of 550-year and 1000-year cyclicities in North Atlantic circulation patterns during the Holocene. *The Holocene*, 10, 287-291.
- Claerbout. J. F. 1985 Fundamentals of Geophysical Data Processing, with Applications to Petroleum Prospecting. Blackwell, Palo Alto Ca., 274 pp.
- Clemens, S. C. and R. Tiedemann 1997 Eccentricity forcing of Pliocene-Earth Pleistocene climate revealed in a marine oxygen-isotope record. *Nature*, 385, 801-804.
- Cramér, H. 1946 Mathematical Methods of Statistics. 574 pp. Princeton U. Press, Princeton.
- Davenport, W. B. Jr. and W. L. Root 1958 An Introduction to the Theory of Random Signals and Noise. 393 pp. McGraw-Hill, New York
- Freeman, H. 1965 Discrete-Time Systems. An Introduction to the Theory. 241pp. John Wiley, New York.
- Garrett, C. J. R. and W. H. Munk 1972 Space-time scales of internal waves. *Geophys. Fl. Dyn.*, 3, 225-264
- Groves, G. W. and E. J. Hannan 1968 Time series regression of sea level on weather,. *Revs. Geophys.*, 6, 129-174.
- Hamilton, J. D. 1994 Time Series Analysis, 793 pp. Princton Un. Press.
- Hannan, E. J. 1970 Multiple Time Series. 536 pp. John Wiley, New York.
- Hurrell, J. W., Decadal trends in the North Atlantic oscillation regional temperatures and precipitation. Science, 269, 676-679.
- Jackson, D. D., 1975 Classical Electrodynamics, 2nd ed., 848 pp., John Wiley, New York.
- Jenkins, G. M. and D. G. Watts 1968 Spectral Analysis and Its Applications. 525pp Holden-Day, San Francisco.
- Jolliffe, I. T. 1986 Principal Component Analysis. 271 pp Springer-Verlag, New York.
- Jury, E. I. 1964 Theory and Application of the z-Transform Method. 330.pp John Wiley, New York.
- Körner, T. W. 1988 Fourier Analysis. 591pp Cambridge Un. Press, Cambridge.
- Levinson, N. 1947 The Wiener RMS (root mean square) error criterion in filter design and prediction. *J. Math. Phys.*, 25, 261-278 (reprinted as an Appendix to Wiener, 1949).
- Liebelt, P. B. 1967 An Introduction to Optimal Estimation, 273pp. Addison-Wesley, Reading, Mass.
- Lighthill, M. J. 1958 Fourier Analysis and Generalized Functions. 79 pp Cambridge Un. Press.
- McCoy, E. J., A. T. Walden, and D. B. Percival 1998. Multitaper spectral estimation of power law processes *IEEE Trans. Signal Processing*, 46, 655-668.

- Moore, M. I. and P. J. Thomson 1991 Impact of jittered sampling on conventional spectral estimates. *J. Geophys. Res.*, 96, 18,519-18,526.
- Munk, W. H. and G. J. F. MacDonald 1960 *The Rotation of the Earth: A Geophysical Discussion* 323pp., Cambridge University Press, Cambridge 323pp.
- Parke, M. E., R. H. Stewart, D. L. Farless and D. E. Cartwright 1987 On the choice of orbits for an altimetric satellite to study ocean circulation and tides. *J. Geophys. Res.*, 92, 11,693-11,707.
- Percival, D. B. and A. T. Walden 1993 Spectral Analysis for Physical Applications. Multitaper and Conventional Univariate Techniques. 583 pp Cambridge Un. Press, Cambridge.
- Percival, D. B. and A. T. Walden, 2000 Wavelet Methods for Time Series Analysis. Cambridge Un. Press, Cambridge 594 pp.
- Press, W. H., B. P. Flannery, S. A. Teukolsky, and W. T. Vetterling 1992 *Numerical Recipes*, 2nd ed., Cambridge U. Press, Cambridge.
- Priestley, M. B. 1982 Spectral Analysis and Time Series. Volume 1: Univariate Series. Volume 2: Multivariate Series, Prediction and Control. 890pp plus appendices (combined edition) Academic, London.
- Stephenson, D. B., V. Pavan, and R. Bojariu 2000 Is the North Atlantic Oscillation a random walk? *Int. J. Climatol.*, **20**, 1-18.
- von Storch, H. and F. W. Zwiers 1999. Statistical Analysis in Climate Research. Cambridge U. Press, Cambridge.
- Thomson, P. J. and P. M. Robinson 1996 Estimation of second-order properties from jittered time series.

 Annals Inst. Stat. Maths., 48, 29-48.
- Tiedemann, R., M. Sarnthein, and N. J. Shackleton 1994. Astronomic time scale for the Pliocene Atlantic O1080 and dust flux records of Ocean Drilling Proram site 659. *Paleoceanog.*, 9, 619-638.
- Tukey, J. W. 1984 Styles of spectrum analysis. in, A Celebration in Geophysics and Oceanography 1982.

 In Honor of Walter Munk, SIO Reference Series 84-5, La Jolla Ca, 100-103.
- Vautard, R. and M. Ghil 1989 Singular spectrum analysis in nonlinear dynamics with applications to paleoclimatic time-series, Physica D, 35, 395-424.
- Wiener, N. 1949 The Extrapolation, Interpolation and Smoothing of Stationary Time Series, 163 pp The Technology Press of MIT and J. Wiley, New York.
- Wunsch, C. and A. E. Gill 1976 Observations of equatorially trapped waves in Pacific sea level variations *Deep-Sea Res.*, 23,371-390.
- Wunsch, C. and D. Stammer 1998 Satellite altimetry, the marine geoid and the oceanic general circulation.

 Ann. Revs. Earth Plan. Scis., 26, 219-254.
- Wunsch, C. 1991 Global-scale sea surface variability from combined altimetric and tide gauge measurements. *J. Geophys. Res.*, 96, 15,053-15,082.
- Wunsch, C. 1996 The Ocean Circulation Inverse Problem . 437 pp. Cambridge University Press, Cambridge.

- Wunsch, C. 1997 Wunsch, C. 1997 The vertical partition of oceanic horizontal kinetic energy *J. Phys. Oc.*, 27, 1770-1794.
- Wunsch, C. 1999 The interpretation of short climate records, with comments on the North Atlantic and Southern Oscillations. *Bull. Am. Met. Soc.*, 80, 245-255.
- Wunsch, C. 2000 On sharp spectral lines in the climate record and the millennial peak. Paleoceanog., 5, 417-424.
- Yaglom, A. M. 1962 An Introduction to the Theory of Stationary Random Fields. 235 pp. R. A. Silverman, translator Prentice-Hall, Englewood Cliffs, NJ.