54th Practical Online Course in Climate Time Series Analysis 15–19 December 2025

This Online Course in Climate Time Series Analysis is tailored for postdocs and advanced PhD students working at the interface of climate science and time series analysis. No prior formal training in statistics is required; familiarity with basic mathematics is assumed. The course also appeals to established researchers wishing to update their knowledge or acquire new statistical techniques. Participants typically come from climatology, ecology, econometrics, environmental sciences, geosciences, hydrology, meteorology, chemistry or physics, as well as related sustainability fields.

Accessible and well-supported: intensive online delivery with live-chat support and guided exercises. Key concepts are revisited across modules to consolidate understanding.

What makes it different from other online courses? First, you have streaming access to carefully designed, recorded and edited lecture videos throughout the course and until the end of the two-month feedback period. You can pause and rewatch as needed, and you retain the slide deck for study. Second, daily live-chat sessions via a video platform during the course enable you to prepare questions and obtain comprehensive answers. Third, original analysis software – built to extract the most from noisy climate time series and documented in peer-reviewed publications – expands your analytical toolkit. Fourth, a two-month feedback period after the course (via email and, where appropriate, an online meeting) preserves the interactive mode of shared data analysis, allowing you to pursue real applications, including on your own data. Details below and on the registration page.

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Module (Lecture/Tutorial)	Themes
01–02 Introduction (L, T)	Climate variables, time series, statistics, notation, dating, climate equation, interpolation, temporal spacing, autocorrelation, scatterplot, distributional shape, histogram, paleoclimatology, proxy data, documentary data
03–04 Persistence Models (L, T)	AR(1) process, autocorrelation estimation, bias, even and uneven spacing, AR(2) process, other processes
05 Bootstrap Confidence Intervals (L)	Error bars, standard error, variance, standard deviation, mean, root mean squared error, confidence interval, Monte Carlo experiment, bootstrap principle, Moving Block Bootstrap resampling, hypothesis testing, Eemian
06–07 Regression I (L, T)	Linear regression, least squares, nonlinear regression (ramp, break), nonparametric regression, smoothing, climate model output, instrumental period, Pliocene, Northern Hemisphere Glaciation, Arctic river runoff
08–09 Spectral Analysis (L, T)	Spectrum, spectrum estimation, periodogram, WOSA, multitaper estimation, Lomb–Scargle method, speleothems, Holocene, monsoon, solar cycles
10–11 Extreme Value Time Series (L, T)	Risk, POT, block extremes, GEV & GP distributions, Poisson process, maximum likelihood, kernels, Cox–Lewis test, heavy tails, river floods, paleo hurricanes
12–13 Correlation (L, T)	Pearson's and Spearman's measures, river runoff, unequal timescales
14–15 Regression II (L, T)	Proxy variable, errors-in-variables regression, calibration, prediction, lagged regression, instrumental period, Pleistocene, climate sceptics
16 Future Directions (L)	Timescale modelling, novel estimation problems, higher dimensions, climate models, optimal estimation

408 Slides
16 h Video
16 Modules
11 Tools
1 Book
1 Teacher

Scholarships available: €800 net (regular €1200; + VAT where applicable).

https://www.climate-risk-analysis.com/courses/time-series/54th-Online-Course-in-Climate-Time-Series-Analysis.html