

Technical Short Course

**Statistics and Mathematical Methods for Geoscientists
with Special Focus on Climatology**

Institute of Meteorology and Climate Research
KIT/IMK-IFU, Garmisch-Partenkirchen
October 7-11, 2013

Contents

Descriptive statistics, stochastic modelling, extreme value statistics, geostatistics (interpolation algorithms), EOF, PCA, CFA, statistical downscaling (mainly transfer functions), multiple regression, canonical correlation, generalized linear models, weather pattern classification (focus: clusteranalytical approaches)

Lecturers

*From the University of Augsburg, Institute of Physical Geography
and Quantitative Methods:*

Prof. Dr. Jucundus Jacobeit (lecturer in charge)
Dr. Christoph Beck
Dr. Elke Hertig
Dr. Andreas Philipp
Dr. Joachim Rathmann

*From the Karlsruhe Institute of Technology, Institute of Meteorology and Climate
Research - Atmospheric Environmental Research:*

Dr. Patrick Laux
Dr. Stefanie Vogl

Who can participate?

The course is directed primarily at graduate students and postdocs. The number of participants is limited to 30 persons.

Requirements: basic knowledge in mathematics/statistics and programming, proficiency in English

Registration and application

There is no tuition fee. However, participants must cover travel and accomodation costs. For application please send a cover letter with statement of motivation and CV to the MICMoR Coordination Office.

MICMoR Coordination Office, KIT/IMK-IFU, Kreuzeckbahnstraße 19, 82467 Garmisch-Partenkirchen
E-mail: info@micmor.kit.edu | Website: www.micmor.kit.edu

Date: Monday, 7 October 2013, 9 a.m. – Friday, 11 October 2013, 5 p.m. (5 full days)
Venue: Karlsruhe Institute of Technology (KIT), Institute of Meteorology and Climate Research
 – Atmospheric Environmental Research (IMK-IFU), Garmisch-Partenkirchen



	Monday, 7 October 2013	Tuesday, 8 October 2013	Wednesday, 9 October 2013	Thursday, 10 October 2013	Friday, 11 October 2013
9 am – 10.30 am	Introduction Descriptive Statistics (Vogl)	Interpolation Methods 2 (Vogl/Laux)	EOF, PCA, CFA (Jacobeit)	Weather Pattern Classification 1 (Beck/Philipp)	Statistical Downscaling 1 (Hertig)
10.30 am – 11 am	Coffee Break				
11 am – 12.30 pm	Stochastic Models - Basics (Vogl)	Extreme Value Statistics (Laux)	EOF, PCA, CFA (Jacobeit)	Weather Pattern Classification 2 (Beck/Philipp)	Statistical Downscaling 2 (Hertig)
12.30 pm – 2 pm	Lunch				
2 pm – 3.30 pm	Interpolation Methods 1 (Vogl/Laux)	Stochastic Models – Advanced Methods (Vogl)	Practical Exercises (Rathmann)	Practical Exercises (Philipp/Beck)	Practical Exercises (Beck/Hertig)
3.30 pm – 3.45 pm	Coffee Break				
3.45 pm – 5 pm	Interpolation Methods 1 (Vogl/Laux)	Stochastic Models – Advanced Methods (Vogl)	Practical Exercises (Rathmann)	Practical Exercises (Philipp/Beck)	Practical Exercises (Beck/Hertig)
7 pm	Ice Breaker				

What to bring: Each participant should bring his own laptop with R installed.

For further reading: Wilks, D.S. (2006): Statistical Methods in the Atmospheric Sciences, Academic Press.
 von Storch, H.; Zwiers, F.W. (2001): Statistical Analysis in Climate Research, Cambridge University Press.
 Jolliffe, I.T. (2002): Principal Component Analysis, Springer.