Module name	**Statistical Learning for Earth System Sciences**
Module number	CMS-TRK-ED1
Senior Lecturer	Prof. Dr. Jakob Zscheischler jakob.zscheischler@tu-dresden.de
Qualification objectives	Students are familiar with the basic concepts of statistical learning. They can explain and apply the differences between different approaches to statistical learning. They can also implement these concepts in the programming language R and apply them to new issues.
Contents	The module covers the basic concepts of statistical learning, including regression, classification, dimensionality reduction, bias-variance trade-off and multiple testing. Further content will be the discussion and deepening of the concepts presented and their application to data examples from Earth System Sciences.
Forms of teaching and learning	The module includes lectures of 2 SWS, exercises of 1 SWS and self-study. The teaching language of lectures and exercises may be German or English and will be specifically determined by the teacher at the beginning of each semester and announced in the usual manner.
Eligibility for participation	Knowledge of mathematics, statistics and probability theory at bachelor's level is required.
Usability	In the Masters Course Computational Modeling and Simulation, the module is an optional module in the Track Computational Environmental Science and Engineering, to be selected in accordance with Annex 2 to the Specific Examination Regulations. The module cannot be chosen in the Master's Course Computational Modeling and Simulation if this or a module with substantially the same content from a Course with which the entry conditions under § 3 of the Studienordnung have been met has already been completed. The module provides the pre-requisites for the modules it designates under the pre-requisites for participation.
Conditions for the award of credits	Credits are awarded when the module test is passed. The module test consists of 30 hours of domestic work. The language of the test will be English.
Credits and marks	The module allows 5 credit points to be obtained. The module score corresponds to the test performance score.
Frequency of the module	The module is offered every summer semester.
Workload	The total workload is 150 hours.
Duration of the module	The module covers 1 semester.