

Module	<b>Climate Systems and Climate Modelling</b>
Module Number	MHSE 27 (BIW-MA-ABCD-06)
Responsible lecturer	Prof. Dr. Matthias Mauder matthias.mauder@tu-dresden.de
Qualification Objectives	The students are able to recognize the complex and scale-dependent relationships between the climate system components and describe them on the basis of characteristic phenomena and are able to apply special climate models in a scale-appropriate and problem-related manner.
Contents	The module includes in-depth specialist content on the functioning and methods of describing the climate system components, their interactions on all spatial scales and their modelling in climate models. Further contents of the module are components of the climate system, in particular properties, scale dependence and interactions, description of the components, establishment and application of climate models including exemplary use of corresponding models.
Teaching and Learning	3 SWS lecture, 1 SWS exercise, self-study.
Requirements for participation	Knowledge of the essential physical processes in the atmosphere and hydrosphere at bachelor's level as well as knowledge of physics and mathematics at baccalaureate level, basic course, are required.
Applicability	The module is one of three elective modules in the Master's program in Water Security and Global Change, two of which must be chosen. The module is one of 17 elective modules in the Master's program in Hydro Science and Engineering, of which modules totaling 50 credit points are to be chosen.
Requirements for the award of credit points	The credit points are earned when the module examination is passed. The module exam consists of a written exam of 90 minutes. The exam language is English.
Credit Points and Grades	5 credit points can be earned through the module. The module grade corresponds to the grade of the examination.

Frequency of Module	The module is offered every winter semester.
Effort	The total workload is 150 hours.
Duration of the module	The module lasts one semester.
Literature accompanying the module	Kabat, P. (ed.), 2004: Vegetation, Water, Humans and the Climate. McGuffie, K., Henderson-Sellers, A., 2013: A Climate Modelling Primer. Oke, T.R., 1987: Boundary Layer Climates.