Module name	**Environmental and Climate Remote Sensing**
Module number	CMS-TRK-ES4
Senior Lecturer	Prof. Dr. Matthias Forkel matthias.forkel@tu-dresden.de
Qualification objectives	Students are familiar with the physical foundations of satellite-based remote sensing, as well as typical satellite systems, Earth observation products and methods for quantifying processes and changes in the climate system and the global water and carbon cycle. They are aware of advanced approaches to the interpretation of satellite data, in particular change analysis, land cover classification and derivation of land surface parameters. Students can plan, discuss and apply remote sensing options and methods for climate and environmental monitoring issues.
Contents	The content of the module shall include physical bases for optical and microwave remote sensing, characteristics of satellite sensors for environmental observation, theoretical bases for deriving essential climatic variables such as soil moisture, CO2, leaf area index, photosynthesis, biomass, and forest fires. Other content includes selected methods of time-series and change analysis to derive land surface properties and land cover classification and their implementation in a script-based programming language.
Forms of teaching and learning	The module includes lectures of 2 SWS, exercises of 1 SWS and self-study. The language of the lectures and exercises will be English.
Eligibility for participation	Knowledge of the basics of remote sensing 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 a non-public oral test performance as an individual test lasting 15 minutes. The language of the exam will be German or English, at the student's choice.
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 winter semester.
Workload	The total workload is 150 hours.
Duration of the module	The module covers 1 semester.