Course Description
This course focuses on state-of-the-art techniques and methods for estimating terrestrial information from remote sensing observations. The specific topics cover a wide range of advanced remote sensing algorithms for estimating:

1. Surface radiation budget;
2. Biophysical variables;
3. Water cycle components.

Each topic follows the same template:
- Introduction to basic concepts and fundamental principles
- Review of practical algorithms with a comprehensive list of references
- Detailed descriptions of representative algorithms and case studies
- Surveys of current products, spatiotemporal variations of the variable
- Identification of future research directions

The presentation of each topic is grouped into three components:
- C1: Conventional methods: ground/field measurements
- C2: Remote sensing methods: physical and statistical models for remote sensing estimation
- C3: Case studies (selected).

The instructor will give lectures on C1 and C2 based on the textbook. A student group (usually made of two students) will give a presentation for selected case studies (C3) based on assigned journal articles. The student group is also responsible for leading class discussions on the assigned topic.

ENVI IDL Practice
Hands-on tutorials on IDL (Interactive Data Language) programming will be distributed with the six labs. Students will learn the powerful program language (IDL) from scratch.

Prerequisites
GOG502 (or ATM315) and GOG484 (or ATM335), or equivalent, in other words, basic remote sensing and statistical knowledge equivalent to one introductory remote sensing course and one elementary statistical course.