Geogg124
TERRESTRIAL CARBON: MODELLING and MONITORING

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Aims of course

The Terrestrial Carbon: modelling and monitoring module aims:

To outline the role of vegetation in the carbon cycle and the wider climate system

To outline how the vegetation carbon cycle can be modelled and use the models in prediction

To provide the linkages between the models and remote sensing observations (radiative transfer)

To enable the students to use remote sensing (and other) data to constrain, test and criticise the models

To expose the students to modern statistical methods in combining data and models

Content of the course

The module will cover:

- The role of vegetation in the climate system
- Terrestrial vegetation dynamics modelling
- Remote sensing of vegetation
- Radiation interactions with vegetation
- Model inversion in remote sensing
- Concepts and maths of data assimilation
- Using remote sensing data to constrain and test vegetation dynamics models

Assessment

2 hour unseen exam, 100% of the assessment.

Format

The module will be delivered through:

Lectures (2 hour sessions providing concepts, contexts, and critiques)

Computer laboratory work (extended practical sessions progressing technical aspects of model implementation and options hands-on experience of relevant software). Practicals will initially be based around specific vegetation models and EO radiative transfer schemes, but also include advanced concepts such as data assimilation.

Moodle resources (hosting reading lists, lecture handouts, datasets, guides and practical support materials)

Learning outcomes

At the end of the module, students should:

- Appreciate the role of vegetation in the carbon cycle and the climate system
- Appreciate the role, strengths and weaknesses of models of global vegetation processes
- Understand the factors affecting remote sensing measurements of vegetation (radiative transfer theory)
- Understand how to use models and observations in combination to improve estimates of carbon fluxes and pools
- Have an understanding of data assimilation

Course web page

Moodle … but mainly

http://www2.geog.ucl.ac.uk/~plewis/geogg124