

Biogeochemical Cycles in the Ocean

Synopsis

Origins and history of the elements during the formation of the Earth. Total cycles of the major and other elements, their role in productivity and food web structure, their importance in climatic changes.

Aims

- To provide an overview of the biogeochemical cycles in the ocean and how they have governed and govern the Earth system.

Objectives

At the end of the Unit, you should:

- understand the principal biogeochemical cycles which govern the Earth system and to acquire the basic concepts for their modelling.
- understand the origin and the evolution of the principal biogeochemical phenomena which govern the Earth system

Key Skills Acquired

At the end of the Unit, you should be able to:

- Undertake basic modelling of biogeochemical cycles

Programme

1. Origins of the elements and their history during the formation of the Earth.
2. Description of the large reservoirs and the major biogeochemical phenomena.
3. Global cycles of the major elements intervening in the constitution of the organic matter (C, N, O, P) are analyzed. Concepts of characteristic times and the aspects of modeling of these cycles are also approached.
4. Biogeochemical cycles of other elements (Fe, S), their role in the productivity and the food

web structure, their importance in the context of the climatic changes.

5. Importance of the biogeochemical cycles, in the structuring of the ecosystem: case of the Antarctic Ocean
6. Disturbance of the carbon cycle: oceanic acidification.
7. Two practical work days including 1 day at sea. Practical work will take place according to the availabilities of the R.V. Belgica.

Learning & Teaching (20 hr Th; 2x10 hr; field work)

- 20 meetings of 2h of theoretical course. Dates to be fixed with the students.

Teaching Staff

B Delille (Coord.); A Mouchet

Semester : 1

Timetable slot: To be advised

ECTS: 6

Level: Optional

Bibliography

Power-point available on <http://www.co2.Ulège.ac.be/student/> address

Assessment

- Examination: 75-50%
- Written Report: 25-50%

Course Evaluation

By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Co-ordinator. A full external review by the ULiège Academic Quality & Standards Committee.

