



GEOCHEMISTRY OF CONTAMINANTS

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For many decades, humans have released numerous synthetic organic chemicals to the environment in order to control pests and pathogens for instance or in order to develop useful materials. Many of those organics are pollutants. The objectives of the course are to understand the underlying processes that drive the cycle and fate of these compounds in the environment. On one hand, the physicochemical characteristics of the pollutants make them partition between air, water and organic (biotic) phases and tend to equilibrium. These partition mechanisms are water-air exchange, sorption/desorption to particles and sediment, uptake/deposition by organisms (bioconcentration). Second, the class describes how the transport processes of the phases (currents, sedimentation, winds) tend to unbalance the systems and drive the fluxes of pollutants one way or the other.

GOALS OF THE COURSE:

1. Understanding the processes mediating the cycling and fate of organic contaminants in natural systems.
2. Discussing papers, encouraging discussion of current hypothesis and paradigms in the field of organic geochemistry of contaminants.

The course will be composed of 6 sessions of 4 h. Each session will include 2 h of lecture and 2 h of discussion of literature.

Subjects to be addressed:

- Global cycle of contaminants
- Sources of main contaminants
- Impact in coastal systems
- Trends and perspectives in the context of climate change
- Determination of contaminant abundances and analytical aspects

Group activities will be developed in order to enhance discussion and exchange in areas that are of global importance, allowing the understanding of biogeochemical cycles in a broader context.

The latest analytical advancements will be discussed as well as their more recent achievements in the context of environmental sustainability of coastal systems.

Students will have the chance to do a brief oral presentation of a relevant topic followed by group discussion.