

- Faculté des sciences
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Hydrochemical and microbial processes (3GH2166)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en hydrogéologie et géothermie	Cours: 40 pg	Voir ci-dessous	4

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Automne

Equipe enseignante

Hunkeler Daniel
Wirth Stefanie
Junier Pillar

Objectifs

At the end of the course students will

- know the most important chemical compounds found in groundwater
- be familiar with the sources and processes that control the concentration of these compounds
- be familiar with methods to sample groundwater and quantify the concentrations of these compounds
- be able to quantify important processes/reactions that control the concentrations for equilibrium conditions (e.g. acid-base reaction, solubility, gas-water exchange)
- be able to deduce information about the functioning of a groundwater flow system from hydrochemical data

Contenu

Introduction

- Units, typical composition of natural waters

Processes that control chemical composition of groundwater

- Dissolution of gas
- Acid-base reactions
- Dissolution of minerals (carbonates, silicates)
- Surface processes: Sorption and ion exchange
- Interaction with natural organic compounds
- Redox processes

Methods to sample and analyze groundwater

Tools to evaluate hydrochemical data

- PHREEQC
- AQUACHEM

Case studies that illustrate factors that control chemistry of groundwater use of hydrochemistry to investigate function of groundwater flow systems

Forme de l'évaluation

Written exam of 2h duration.

Documentation

PPT handout
Script describing the key hydrochemical processes

Forme de l'enseignement

Lectures, case studies, computer labs.

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