

## UMR A 42 - INRA / USMB

Faculty : UFR Sciences and Mountain

PhD school: Science and Engineering of Systems, of Environment and of Organisation (SISEO)

### FIELD OF TRANSVERSAL SKILLS

Fundamental Sciences, Earth sciences and Environmental

### KEY WORDS

Limnology • Ecology • Biogeochemistry • Microbiology • Ichthyology • Ecotoxicology • Lakes • Watersheds • Anthropisation • Trophic System • Global change

### SECTORS

Water quality • Agriculture • Management and planning of natural environments

## PRESENTATION

CARTEL UMR is a shared Research Unit between INRA and Université Savoie Mont Blanc studying alpine aquatic ecosystems in the context of global change (climate, anthropogenic pressures). Founded in 1999, the UMR has developed knowledge on the functioning of alpine lakes and their watersheds, while creating bio indicators for the ecology and evolution of the aquatic environment quality. The Unit has also worked on improving fisheries management.

## RESEARCH THEMES

The research of the UMR CARTEL is organised around following departments:

### • Two research themes:

- Aquatic Biodiversity: causality and functional consequences
- Lake meta ecosystems and global change

### • Technical Labs

- Biodiversity, molecular biology, levies, chemistry...

### • The Alpine Lake Observatory: the SOERE OLA

- Sustainable monitoring of the chemical and biological status of large French alpine lakes (Lake Geneva, Annecy, Bourget) and of small mountain lakes

## KEY DATA\*

- **13** researchers and professors (including emeritus)
- **23** administrative and technical staff
- **10** PhD students et post-doctoral students

\* Academic year 2014-2015

## SPECIFIC EQUIPMENT AND EXPERTISE

- Port and boats samples
- Sampling equipment (water, phytoplankton and zooplankton)
- Multi parameter probes
- Analytical Laboratories equipped with water chemistry, molecular biology, microscopy
- Experimental fish farming
- External experimental channels
- Collections of biological samples
- Experimental room illuminated and thermostated

## PhD STUDENTS SKILLS

Algal Ecology • Ecotoxicology • Ichthyology • Lake food web • Microbiology and Molecular Biology • Paleolimnology • Modelling • Processing of statistical data (R, SSD...)

## NETWORKS / PARTNERSHIPS

### Academic cooperations

FLAME Research Federation (Université Savoie Mont Blanc) • FREE-Alpes Research Federation • University of Geneva • University of Lausanne • University of Irkutsk (UNESCO Chair in Water Resources) • IRSTEA • Blaise Pascal University (Clermont-Ferrand) • EPFL

### Institutional cooperations

CIPEL (International Commission for the Protection of Lake Geneva) • SILA (Lake of Annecy's Intermunicipal syndicate) • CISALB (Inter-union committee for remediation of Lake Bourget) • ZABR (Rhône basin's atelier area)

## INTERNATIONAL RELATIONS

- Member of GLEON: Global Lake Ecosystem Network (international)
- Netlake COST French Representative (European)
- Member of the European Network of Intercalibration for the Water Framework Directive Fish Monitoring
- Host international post-doctoral students (Canada, India, Russia, Czech Republic, Chili...)
- Mission of a senior researcher to UQAM (Montreal - Quebec, Canada)
- Involvement in a French-Swiss Masters Network