

# Master in Environmental Science and Management

## Focus Environmental Science

This Master programme uses an interdisciplinary approach, relying on both natural and human sciences (ecology, geology, economy, law, etc.). Furthermore, it is structured around environmental domains (water, soil, air, etc.), economic sectors (agriculture, industry, energy, etc.), and environmental issues (climate change, waste, etc.).

### Bloc 1 | M-ENVIE | MA-ENVI

## Tronc commun (avec la finalité Gestion de l'environnement)

ENVI-F405 **Climat: sciences et politiques** | Frank PATTYN (Coordinator) and Louise Knops  
 5 credits [lecture: 40h] second term French

ENVI-F409 **Economie écologique** | Thomas BAULER (Coordinator)  
 5 credits [lecture: 24h, practical work: 12h] second term French

ENVI-F437 **Systèmes biologiques** | Sonia VANDERHOEVEN (Coordinator)  
 5 credits [lecture: 36h] first term French

ENVI-F452 **Environmental impact analysis and management** | Wouter ACHTEN (Coordinator)  
 5 credits [lecture: 24h, practical work: 12h, project: 24h] first term English/French

## Cours spécifiques: Observation et modélisation du système Terre

ENVI-F526 **Sciences de l'atmosphère et changements climatiques** | Pierre-François COHEUR (Coordinator) and Cathy CLERBAUX  
 5 credits [lecture: 36h, project: 24h] second term French

ENVI-F527 **Matière et énergie dans l'environnement: analyse, transport et instabilités** | François FRIPIAT (Coordinator) and Anne DE WIT  
 5 credits [lecture: 36h, practical work: 24h] second term French

GEOG-F400 **The Earth system and its interactions** | François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE  
 5 credits [lecture: 36h, tutorial classes: 24h] first term English

GEOG-F425 **Télé-détection** | Eléonore WOLFF (Coordinator)  
 5 credits [lecture: 30h, practical work: 30h, project: 10h] first term French

GEOL-F428 **Earth System Modeling** | Pierre REGNIER (Coordinator), Sandra ARNDT, Alizée Roobaert and Sebastiaan VAN DE VELDE  
 5 credits [lecture: 24h, practical work: 24h] first term French

## Options dirigées

Choisir 20 crédits partagés entre les deux blocs.

*A total of 15 credits chosen from the following*

### Module Glaciologie-atmosphère-climat

Le cours GEOG-F502 est à choisir en Bloc 2

*A total of 15 credits chosen from the following*

ENVI-F451 (optional) **Télé-détection des variables climatiques et environnementales** | Pierre-François COHEUR (Coordinator), Sophie Bauduin and Lieven CLARISSE  
 5 credits [lecture: 36h, project: 40h] second term English/French

GEOG-F408 (optional) **Modélisation en géosciences : glaciologie et climatologie** | Frank PATTYN (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 24h] 📅 first term 🗨️ French

GEOG-F410 (optional) **Paléoclimatologie** | François FRIPIAT (Coordinator)  
5 credits [lecture: 36h, practical work: 12h] 📅 second term 🗨️ French

GEOG-F502 (optional) **Questions approfondies de glaciologie-atmosphère-climat** | François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE  
5 credits [lecture: 8h, tutorial classes: 24h] 📅 academic year 🗨️ French  
Ce cours est à choisir en bloc 2

## Module Géosphère-hydrosphère-biosphère

*A total of 15 credits chosen from the following*

BIOL-F4005 (optional) **Social-ecological systems** | Farid DAHDOUH-GUEBAS (Coordinator)  
5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] 📅 first term 🗨️ English

GEOL-F2001 (optional) **Introduction à la minéralogie et à la pédologie** | Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE  
5 credits [lecture: 28h, practical work: 12h, field trips: 12h] 📅 first term 🗨️ French

GEOL-F4002 (optional) **Volcanology** | Karen FONTIJN (Coordinator) and Corentin CAUDRON  
5 credits [lecture: 24h, field trips: 16h, project: 30h] 📅 second term 🗨️ English

GEOL-F414 (optional) **Eléments d'hydrogéologie** | Philippe Orban (Coordinator) and Pascal Goderniaux  
5 credits [lecture: 24h, practical work: 24h, field trips: 12h] 📅 first term 🗨️ French

GEOL-F432 (optional) **Interactions biosphère-géosphère: réponse environnementale et climatique** | Steeve BONNEVILLE (Coordinator), Goulven GILDAS LARUELLE and Pierre REGNIER  
5 credits [lecture: 30h, field trips: 24h] 📅 second term 🗨️ French

# Master in Environmental Science and Management

## Focus Environmental Science

### Bloc 2 | M-ENVIE | MA-ENVI

## Tronc commun (avec la finalité Gestion de l'environnement)

ENVI-F403 **Socio-environmental Dynamics** | Maria MANCILLA GARCIA (Coordinator)

🕒 5 credits [lecture: 24h, practical work: 12h] 📅 first term 🗣️ English

ENVI-F510 **Droit de l'environnement** | Chiara ARMENI (Coordinator)

🕒 5 credits [lecture: 24h] 📅 first term 🗣️ French

MEMO-F529 **Mémoire de fin d'études** | François FRIPIAT (Coordinator)

🕒 20 credits [mfe/tfe: 240h] 📅 first and second terms

## Cours spécifiques: Observation et modélisation du système terre

GEOG-F500 **Apprentissage du mémoire** | François FRIPIAT (Coordinator) and Frank PATTYN

🕒 5 credits [practical work: 48h] 📅 second term 🗣️ French

## Options dirigées

Compléter le module choisi en bloc 1 en prenant 5 crédits en bloc 2 (20 crédits partagés entre les 2 blocs).

Au maximum 40 crédits à choisir parmi:

*Up to 40 credits chosen from the following*

### Module Glaciologie-atmosphère-climat

*A total of five credits chosen from the following*

ENVI-F451 (optional) **Téledétection des variables climatiques et environnementales** | Pierre-François COHEUR (Coordinator), Sophie Bauduin and Lieven CLARISSE

🕒 5 credits [lecture: 36h, project: 40h] 📅 second term 🗣️ English/French

GEOG-F408 (optional) **Modélisation en géosciences : glaciologie et climatologie** | Frank PATTYN (Coordinator)

🕒 5 credits [lecture: 24h, tutorial classes: 24h] 📅 first term 🗣️ French

GEOG-F410 (optional) **Paléoclimatologie** | François FRIPIAT (Coordinator)

🕒 5 credits [lecture: 36h, practical work: 12h] 📅 second term 🗣️ French

GEOG-F502 (optional) **Questions approfondies de glaciologie-atmosphère-climat** | François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE

🕒 5 credits [lecture: 8h, tutorial classes: 24h] 📅 academic year 🗣️ French

Ce cours est à choisir en bloc 2

### Module Géosphère-hydrosphère-biosphère

*A total of five credits chosen from the following*

BIOL-F4005 (optional)	<b>Social-ecological systems</b>   Farid DAHDOUH-GUEBAS (Coordinator) ⌚ 5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] 📅 first term 🗨 English
GEOL-F2001 (optional)	<b>Introduction à la minéralogie et à la pédologie</b>   Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE ⌚ 5 credits [lecture: 28h, practical work: 12h, field trips: 12h] 📅 first term 🗨 French
GEOL-F4002 (optional)	<b>Volcanology</b>   Karen FONTIJN (Coordinator) and Corentin CAUDRON ⌚ 5 credits [lecture: 24h, field trips: 16h, project: 30h] 📅 second term 🗨 English
GEOL-F414 (optional)	<b>Éléments d'hydrogéologie</b>   Philippe Orban (Coordinator) and Pascal Goderniaux ⌚ 5 credits [lecture: 24h, practical work: 24h, field trips: 12h] 📅 first term 🗨 French
GEOL-F432 (optional)	<b>Interactions biosphère-géosphère: réponse environnementale et climatique</b>   Steeve BONNEVILLE (Coordinator), Goulven Gildas LARUELLE and Pierre REGNIER ⌚ 5 credits [lecture: 30h, field trips: 24h] 📅 second term 🗨 French

## Cours optionnels

*A total of 20 credits chosen from the following*

BING-F301 (optional)	<b>Microbiologie générale et environnementale</b>   Isabelle GEORGE (Coordinator), Sigrid FLAHAUT and Cécile Thonar ⌚ 5 credits [lecture: 36h, practical work: 24h] 📅 second term 🗨 French
BING-F525 (optional)	<b>Modélisation des écosystèmes aquatiques</b>   Nathalie GYPENS (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 36h] 📅 first term 🗨 French
BING-Y001 (optional)	<b>Tracer Isotope Biochemistry</b>   Marc ELSKENS (Coordinator) and Steven Goderis ⌚ 6 credits [lecture: 24h] 📅 first term 🗨 English
BIOL-F4005 (optional)	<b>Social-ecological systems</b>   Farid DAHDOUH-GUEBAS (Coordinator) ⌚ 5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] 📅 first term 🗨 English
BIOL-F417 (optional)	<b>Marine ecology</b>   Anton Van De Putte (Coordinator) and Marc KOCHZIUS ⌚ 5 credits [lecture: 18h, practical work: 9h, field trips: 9h] 📅 first term 🗨 English
BIOL-F441 (optional)	<b>Ecotoxicologie</b>   Philippe DUBOIS (Coordinator) ⌚ 5 credits [lecture: 18h] 📅 second term 🗨 French
BIOL-F443 (optional)	<b>Plant responses to environmental stress</b>   Nathalie VERBRUGGEN (Coordinator) ⌚ 5 credits [lecture: 24h, project: 24h] 📅 first term 🗨 English
BIOL-F444 (optional)	<b>Plant-soil interactions</b>   Pierre Jacques MEERTS (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 first term 🗨 English
CHIM-F474 (optional)	<b>Chimie de l'environnement et risques chimiques</b>   Pierre-François COHEUR (Coordinator) and Laurence RONGY ⌚ 5 credits [lecture: 36h, tutorial classes: 12h, practical work: 12h] 📅 first term 🗨 French
ENVI-F451 (optional)	<b>Télé-détection des variables climatiques et environnementales</b>   Pierre-François COHEUR (Coordinator), Sophie Bauduin and Lieven CLARISSE ⌚ 5 credits [lecture: 36h, project: 40h] 📅 second term 🗨 English/French
ENVI-F455 (optional)	<b>Géoressources du sous-sol et environnement</b>   Corentin CAUDRON (Coordinator), Adel EL Gammal and Nadine MATTIELLI ⌚ 5 credits [lecture: 26h, tutorial classes: 6h, seminars: 12h, field trips: 16h] 📅 second term 🗨 French
ENVI-F529 (optional)	<b>Ressources: Genèse et environnement</b>   Nadine MATTIELLI (Coordinator), Corentin CAUDRON and Michel HUART ⌚ 5 credits [lecture: 22h, practical work: 6h, field trips: 12h] 📅 second term 🗨 French
ENVI-Y006 (optional)	<b>Metal biogeochemical cycle</b>   Yue GAO ⌚ 3 credits [lecture: 12h] 📅 second term 🗨 English



ENVI-Y008 <small>(optional)</small>	<b>Atmosphere and ocean : physics and dynamics</b>   Thierry FICHEFET (Coordinator) and François MASSONET 🕒 10 credits [lecture: 52,5h, tutorial classes: 7,5h] 📅 first term 🗨 French
ENVI-Y009 <small>(optional)</small>	<b>Introduction to the physics of the climate system and its modeling</b>   Hugues GOOSSE (Coordinator) and Francesco RAGONE 🕒 5 credits [lecture: 22,5h, tutorial classes: 22,5h] 📅 first term 🗨 French
GEOG-F211 <small>(optional)</small>	<b>Systèmes d'information géographique et projections</b>   Eléonore WOLFF (Coordinator), Michele D'ADDERIO and Julie DE SAEDELEER 🕒 5 credits [lecture: 24h, practical work: 36h, project: 40h] 📅 second term 🗨 French
GEOG-F408 <small>(optional)</small>	<b>Modélisation en géosciences : glaciologie et climatologie</b>   Frank PATTYN (Coordinator) 🕒 5 credits [lecture: 24h, tutorial classes: 24h] 📅 first term 🗨 French
GEOG-F410 <small>(optional)</small>	<b>Paléoclimatologie</b>   François FRIPIAT (Coordinator) 🕒 5 credits [lecture: 36h, practical work: 12h] 📅 second term 🗨 French
GEOG-F502 <small>(optional)</small>	<b>Questions approfondies de glaciologie-atmosphère-climat</b>   François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE 🕒 5 credits [lecture: 8h, tutorial classes: 24h] 📅 academic year 🗨 French  Ce cours est à choisir en bloc 2
GEOG-Y001 <small>(optional)</small>	<b>Travaux dirigés et modélisation climatique</b>   Pierre-Yves BARRIAT and Qiuzhen Yin 🕒 3 credits [lecture: 15h] 📅 first term 🗨 French
GEOG-Y004 <small>(optional)</small>	<b>Dynamics and modelling of glacial systems</b>   Philippe HUYBRECHTS (Coordinator) 🕒 6 credits [lecture: 26h, tutorial classes: 39h] 📅 second term 🗨 English
GEOG-Y005 <small>(optional)</small>	<b>Introduction à l'océanographie physique et météorologie marine</b>   Jean-Marie BECKERS 🕒 3 credits [lecture: 20h, tutorial classes: 10h] 📅 first term 🗨 French
GEOL-F2001 <small>(optional)</small>	<b>Introduction à la minéralogie et à la pédologie</b>   Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE 🕒 5 credits [lecture: 28h, practical work: 12h, field trips: 12h] 📅 first term 🗨 French
GEOL-F4002 <small>(optional)</small>	<b>Volcanology</b>   Karen FONTIJN (Coordinator) and Corentin CAUDRON 🕒 5 credits [lecture: 24h, field trips: 16h, project: 30h] 📅 second term 🗨 English
GEOL-F414 <small>(optional)</small>	<b>Eléments d'hydrogéologie</b>   Philippe Orban (Coordinator) and Pascal Goderniaux 🕒 5 credits [lecture: 24h, practical work: 24h, field trips: 12h] 📅 first term 🗨 French
GEOL-F432 <small>(optional)</small>	<b>Interactions biosphère-géosphère: réponse environnementale et climatique</b>   Steeve BONNEVILLE (Coordinator), Goulven Gildas LARUELLE and Pierre REGNIER 🕒 5 credits [lecture: 30h, field trips: 24h] 📅 second term 🗨 French
GEOL-F436 <small>(optional)</small>	<b>The Global Coastal Ocean on a Changing Planet</b>   Sandra ARNDT (Coordinator) and Pierre REGNIER 🕒 5 credits [lecture: 12h, practical work: 24h, field trips: 24h] 📅 second term 🗨 French
GEOL-F438 <small>(optional)</small>	<b>Géochimie isotopique de l'environnement : Concepts, applications, et méthodes</b>   Nadine MATTIELLI (Coordinator), François FRIPIAT and Steven Goderis 🕒 5 credits [lecture: 24h, practical work: 16h] 📅 second term 🗨 French
STAG-F026 <small>(optional)</small>	<b>Stage</b>   François FRIPIAT (Coordinator) 🕒 10 credits [work placement: 300h] 📅 academic year 🗨 French
TRAN-F201 <small>(optional)</small>	<b>Introduction aux enjeux de la durabilité</b>   Wouter ACHTEN (Coordinator) and Chiara ARMENI 🕒 5 credits [lecture: 24h] 📅 second term 🗨 French

