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## MOUNTAINS IN A CHANGING WORLD, GRENOBLE

Université Grenoble Alpes' Summer program

June 22 – July 10, 2020



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Welcome to **Grenoble**, capital of the French Alps, nestled at the heart of three valleys, at the confluence of the **Drac** and the **Iser** Rivers, where the **Chartreuse**, the **Vercors** and **Belledonne mountain ranges** meet. A metropolitan town with a population of half a million, where one in 5 people are associated to the University and its research, where businesses range from very traditional to high tech innovative small and medium enterprises. Here within the Université Grenoble Alpes, a large community of researchers, and project leaders focus on Mountains either as their central piece of observation terrain or on concepts applicable to this terrain. Mountains are at the core of our DNA as a university community and we are proud to reflect on this with this program, that we invite you to share with us.

In the next **three weeks**, a story will unfold, which takes its roots deep at the heart of the Earth, where powerful forces come to play, that generate movement and disruption, where mountains are thrust and grow, where the sun, the wind and water erode the flanks of these structures, leaving behind traces of what was. For millions of years, this has been the backdrop for the development of flora and fauna, which have had to adapt to harsh conditions, temperature ranges, extreme cold, radiations and low pressures. For thousands of years, Humans have also made it their domain, captured the water, settled along banks and in the valleys as well as higher up. They have exploited the trees, fed on nature and created activities for their economic survival and enjoyment.

Today this world is undergoing **multiple changes (climate, population, political...)**. **Where are we now**, in terms of physical, sociological, political and social environments and **where are we heading** as a complex interactive system made of living and inanimate elements?

Allow us to walk you through this story. <sup>2</sup>

<sup>1</sup> Photo credits \*Station Alpine Joseph Fourier, Maxime Rome \*\*Université Grenoble Alpes

<sup>2</sup> Some details of this Agenda are subject to changes in topics or dates

**Objective Week 1: Understanding the Physical Environment (June 22<sup>nd</sup> - 26<sup>th</sup>, 2020)**

From the Bastille, take a visual tour of the physical surroundings, observe the landscape and the urban development and understand how this environment served as the backdrop to a rich history

This will be a first introduction to the physical world and some fundamental notions to understand it. Geologists will walk you back in time to the movements that initiated the rise of the Alps. They will give you some keys to what you are seeing (plate tectonics, seismology, the Alpine orogenesis).

We'll then take you on a **3-day field trip** with geographers, sociologists, geologists and biologists, who will teach you how to see and describe these elements, provide you with measured data, explain how the mineral and living elements interact, and contextualize adaptation of species.

On this field trip you will have the opportunity to:

- Hike to the Chenaillet Ophiolites
- Acquire basic knowledge on powers at play, seismology, geodynamics
- Spend a night in the city of Briançon
- Map out the geological transect up to the Lautaret Pass
- Visit the University Botanical Garden at 2000 m altitude
- Spend a night in an active mountain shelter ([Villar d'Arène](#))
- Understand the need for these shelters for scientific and touristic purposes, meeting with shelter keepers and understanding their role
- Get a feel for how the plant and animal kingdoms have adapted to high altitudes
- Be introduced to notions of alpine ecology and forestry
- Understand how changes have impacted animal populations and the work around balancing man's needs and the existence of wildlife
- Showcase some very disturbing extinctions and endangered species as opposed to the development of new populations (bears, wolves, birds, caterpillar, mosquitoes...)
- See how borders (physical and political) can impact change

**WARNING**

During this 3-day field trip, you will do some hiking. Although, the hiking trails are of intermediate level, we remind you that it is at high altitudes (above 2000 m) and hence requires adapted clothing and fitness conditions. **Hiking shoes and warm wind and rain protective clothing are mandatory.**

Hikes will not exceed 4 hours per day (with stops) and will be of medium difficulty.

After we return to Grenoble, we will work around the Mountain Shelters project and watch and debate around a short film from the [Science and Mountains film festival](#) (held every year in Grenoble).



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**Objective Week 2: Understanding the Impact of “Man”<sup>3</sup> (June 29<sup>th</sup> - July 3<sup>rd</sup>, 2020)**

Travel forward, millions of years have passed. Life has evolved from very primitive forms to more specialized beings that include mammals and in particular humans. In the past tens of thousands of years, humans have started to settle in this area. They have started dominating and controlling nature for their own benefit. They have exploited resources, created habitats that corresponded to their needs, and developed a social and political organization within which they could prosper. It is the era of “Man”. During this week you will acquire key notions and reflect on:

- Understanding who the first settlers were and see some of their traces (rock art, artifacts)
- Defining the characteristics, the needs and context of “Man” in the Alps
- The need for physiological adaptation
- Apprehending a specific example, The Chartreux monks, a need for silence and meditation
- Building defense systems in the case of wars or threats
- Designing urban plans adapted to slopes
- Managing mountain-related risks, reducing human impact
- Adapting local economies to the environment: for example, touristic resources
- The Anthropocene
- Political, economic and social perspectives on Grenoble as a Metropolis, its responsibility and action range

**Day Field trip in the Chartreuse:** the Monastery, the Regional Natural Park, military forts

**Day Field trip in the Vercors:** During this field trip you will meet local stakeholders, politicians, and businesses whose common aim is to develop Tourism within the Vercors range. You will get a feel for the challenges they meet, in terms of space, borders, climate change, population diversification, environmental policies and local politics.



**Objective Week 3: Changes, Where are we Now, Where are we Going (July 6<sup>th</sup> - 10<sup>th</sup>, 2020)**

We are on the edge of threatening times. A number of changes have taken place since “Man” has occupied this area. Populations are shifting; urban dwellers are seeking rural dwellings with new forms of activities and work constraints. Young rural generations are leaving the countryside and moving to bigger cities. Traditional agriculture is receding. Our consumerism has led us to over production and over consumption. Our resources are diminishing faster than they are created. The level of pollution has reached levels never before attained. By exploiting nature to his own advantage, “Man” has disturbed the balance that existed in nature for millions of years - this over a few centuries. This is wreaking havoc in all aspects of life and catastrophic processes seem to be engaged. The world, as we knew it, is facing a major challenge of human-activity induced climate change. Temperatures are rising at a rate that we cannot control. The effects are visible everywhere, and our mountains collectively demonstrate this. Will our capacity to adapt (as living beings dependent on food and water resources) be sufficient to survive? What will we need to change ? Where are we heading?

<sup>3</sup> “Man” is to be understood here and throughout the text as a non-gender specific representative of Humankind.

In this last week, we will sum up what we have touched upon in the previous two weeks with some very notable case studies of change on mountains everywhere. We will seek the expertise of **Intergovernmental Panel on Climate Change (IPCC) consultants** to give us perspectives, predictions and pathways to hope.

**This week's learning will be highlighted by a series of case studies:**

- Rock fall in hazardous mountain zones: the visible impact of political decisions
- How rivers were dominated for both navigation and energy and the resulting impacts
- Atmospheric pollution in the Alps
- Global warming, measures on mountains
- Pollution of Aquifers: the case of the Himalayas
- Glaciology: effects of temperature changes
- Little time left, the last glaciers: a Heritage project "Ice Memory"

**Field trip:** Observe the retreat of glaciers in Chamonix at the foot of the Mont Blanc, ride the [Montenvers](#) train to the famous "Mer de Glace".



**Come and enjoy this program that will contribute to your global reflection and understanding of a changing world!**

**Extra-curricular activities you might be interested in during June and July**

- June and July are festival months (Brass band, short film, Music (June 21<sup>st</sup>), street art, European theater for youth, Le Grand Son...). Stroll through town and enjoy activities everywhere
- Visit neighbouring towns: Annecy and Aix-les-Bains for their lakes, Lyon and its historical monuments, St-Antoine-l'Abbaye, Avignon and the theater festival...
- Simply visit our open air markets and taste local products (wine, cheese, ...)
- July 14<sup>th</sup>: Bastille Day, Celebrations all over France, fireworks
- Go to the Chateau de Vizille and its celebration of the French Revolution
- And many more: Cabaret Frappé, l'Eté Oh Parc,

**Last but certainly not least!**

Grenoble is 1.5hr Geneva, 3hrs from Paris, 4hrs from Torino, 5hrs from the French Riviera, by train and/or bus.

⇒ **Deadline for application:** March 30<sup>th</sup>, 2020 on [Mountains in a Changing World, Grenoble](#)

⇒ **Contact:** [summerschool@univ-grenoble-alpes.fr](mailto:summerschool@univ-grenoble-alpes.fr)

⇒ **Fees:** € 1550 without arranged housing or €2250 with housing for three weeks - including social activities and some meals.