



Phenoclim

***a scientific and educational
project on climate change
in the Alps***

Floriane Macian

floriane@crea.hautesavoie.net

**Alpine Ecosystems Research Center (CREA)
Chamonix Mont-Blanc - France**



The Alpine Ecosystems Research Center (CREA)

A french NGO aiming at :

- Leading research programs on high altitude environments
- Acting to increase public understanding of science



Studying phenology...

Phenology

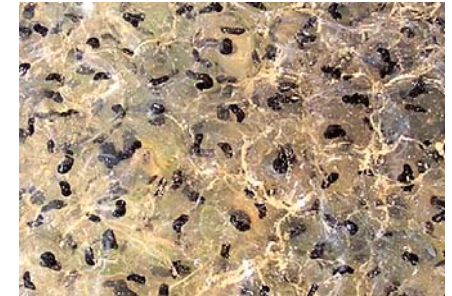
is the study of the timing of life cycle events in plants and animals.



flowering



Bird migration



Eggs laying



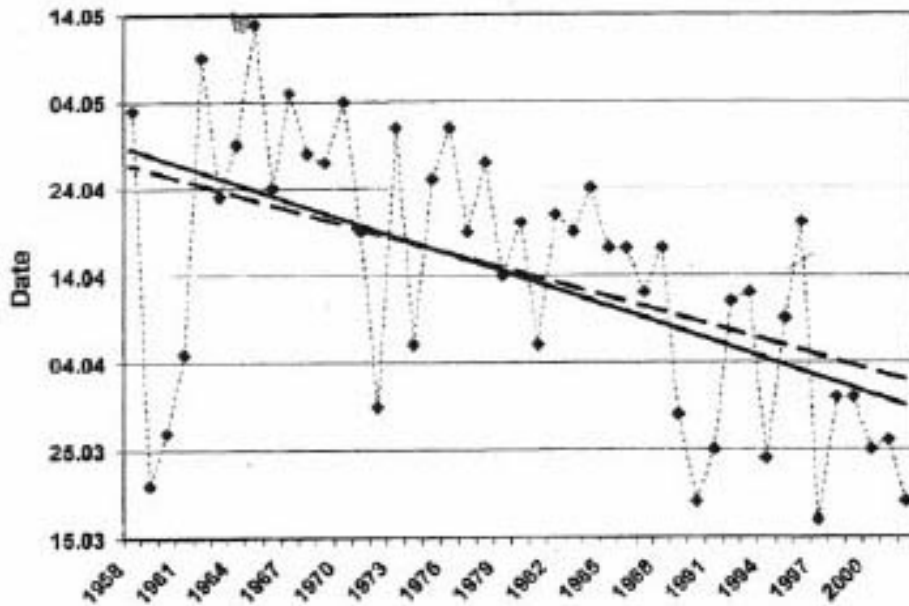
Temperature

Is a key indicator for flora and fauna

➔ Using Phenology as a way to study the impact of climate change on plants and animals

... to increase our understanding

Larch budburst date (Switzerland)



The Alps are an especially sensitive environment

- ➔ long-term data are lacking to improve modeling and better understand consequences of climate change on alpine ecosystems
- ➔ need to develop a long-term monitoring network

The Phenoclim Project

→ Ask Alps citizens to monitor plants in order to measure how climate impacts on the timing of life cycle events in the long term

For scientific purposes



For educational purposes

Protocol

10 species studied :



Type of plants	Species	Scientific name
<u>Trees</u>	Spruce	<i>Picea abies</i>
	European Larch	<i>Larix decidua</i>
	Silver Birch	<i>Betula pendula</i>
	Downy Birch	<i>Betula pubescens</i>
	Ash	<i>Fraxinus exelsior</i>
<u>Shrubs</u>	Rowan	<i>Sorbus aucuparia</i>
	Hazel	<i>Corylus avellana</i>
<u>Herbaceous</u>	Common Lilac	<i>Syringa vulgaris</i>
	Primrose	<i>Primula veris</i>
	Colt's foot	<i>Tussilago farfara</i>

→ Common in the Alps and easily recognizable by non-specialists

→ Present on a large range of altitude

→ Studied as climate change indicators in Europe

3 species monitored per study sites with 3 labelled individuals

Protocol

Phenological observations :

→ Spring :



Budburst



Flowering



Leaf unfolding

→ Autumn :



Leaf colouring



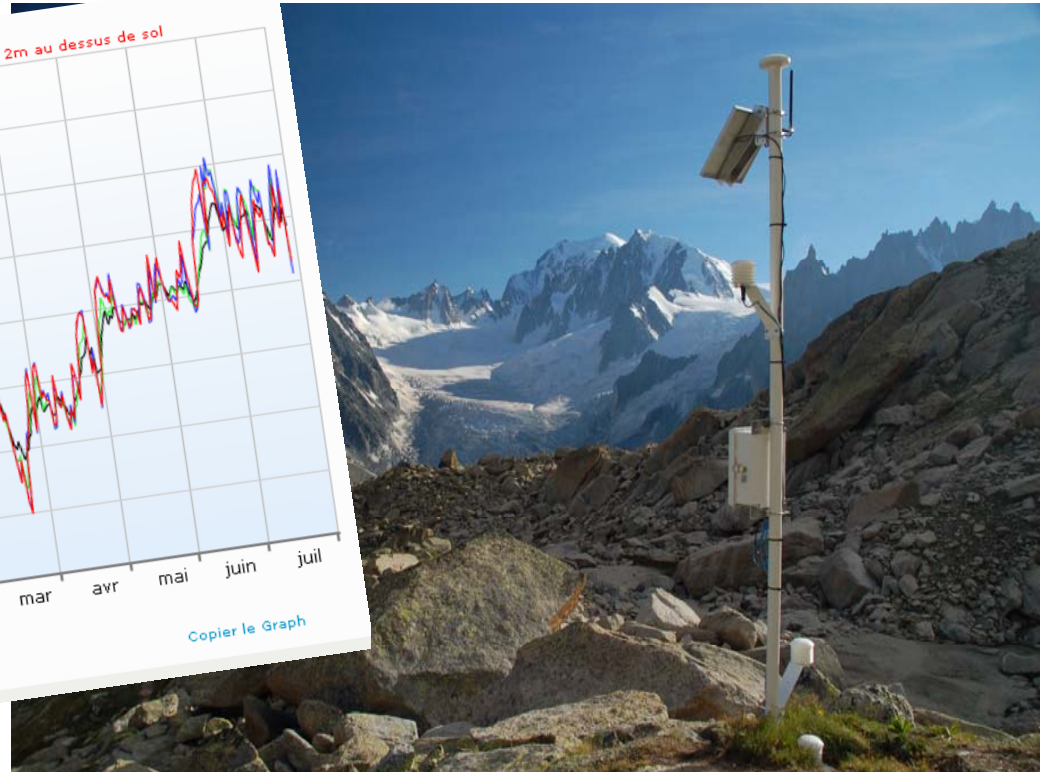
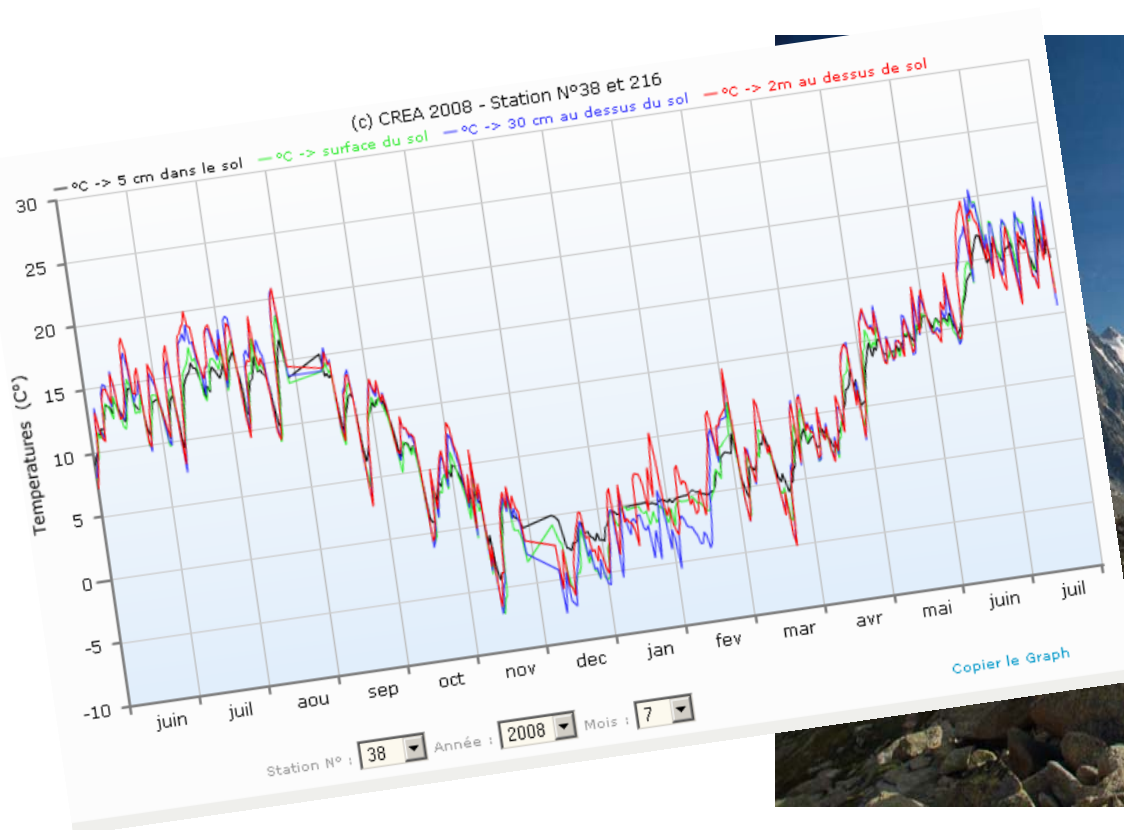
Leaf fall

Observations carried out **every week**

Protocol

Meteorological data : a network of 60 temperature stations, specially designed for the project, providing :

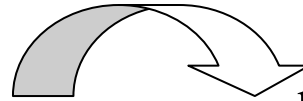
- ➔ **Temperature data**
- ➔ **Information on snow depth and duration**



How does it work ?



1. Registration



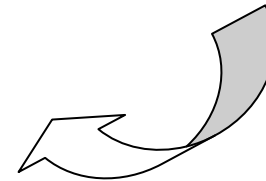
2. Field protocol + pedagogical material



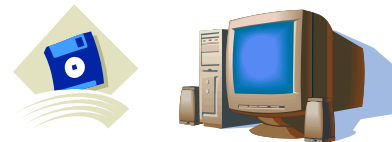
3. Choice of the study site



4. Seasonal observations



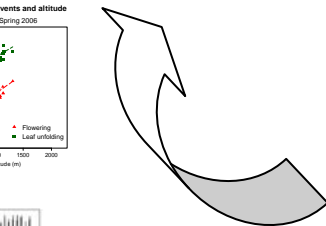
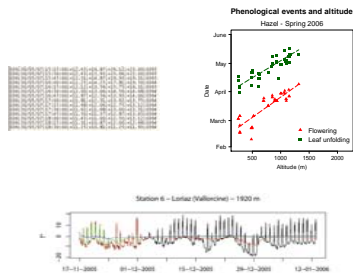
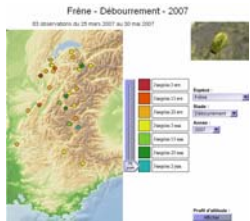
5. Data recording



6. Analysis by the CREA

Phénoclim website
www.crea.hautsavoie.net

7. Results on the website



Who's taking part in Phenoclim ?

Individuals



Schools

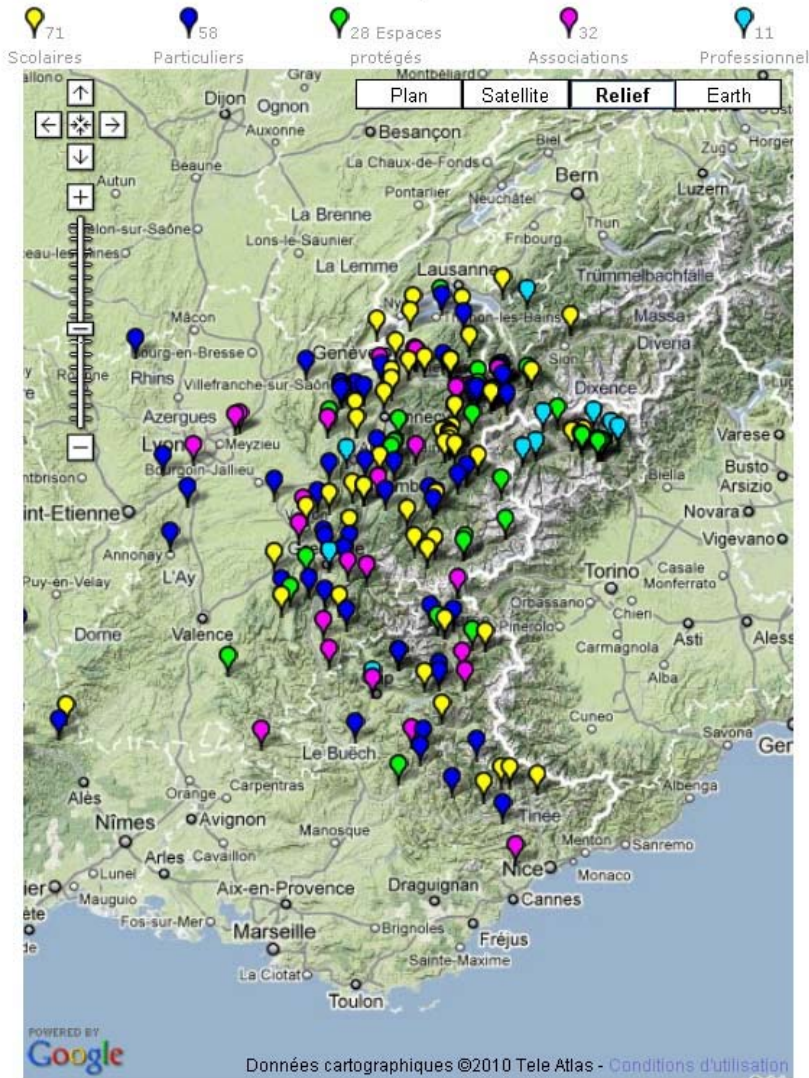


NGOs (mainly environmental organisations)



Protected areas





14 protected areas already involved in the program :

- 4 national parks : Ecrins (FR), Vanoise (FR), Mercantour (FR), Cévennes (FR)
- 6 regional/natural parks : Queyras (FR), Vercors (FR), Bauges (FR), Chartreuse (FR), Mont Avic (IT), Servizio Aree protette (IT)
- 7 natural reserves : Marais de Lavours (FR), Hauts plateaux du Vercors (FR), Asters (Dranse, Sixt, Passy, Contamines, bout du lac, FR)
- 2 alpine botanical gardens : Lautaret (FR), Champex (CH)

➔ In 2010, **200 Phenoclim study sites** are followed by volunteers in France, Italy and Switzerland

A global project for protected areas

➔ Long-term monitoring
(technical staff)

*2 monitoring sites
along an altitudinal
gradient in Vanoise
national park*



Modane (1100 m)



L'Orgère (1900 m)

➔ Public involvement
(schools, visitors)



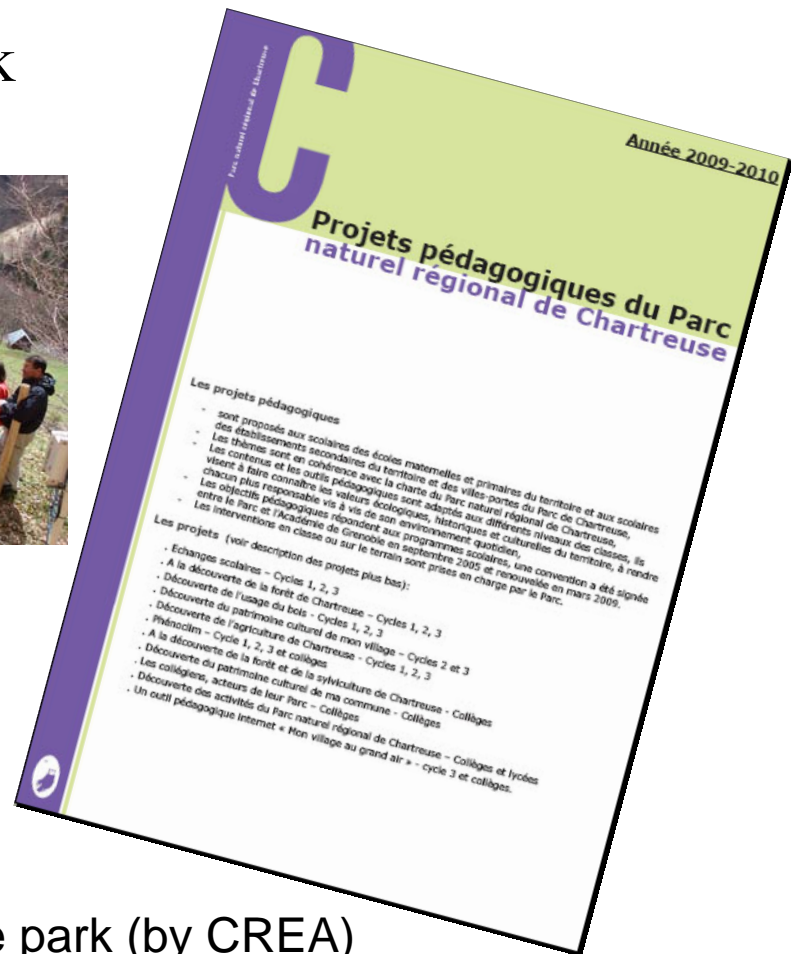
*Park employees go into schools to help them
participating to the Phenoclim project which is used
as an educational tool*



*An information board next
to a temperature station*

Cooperation between CREA and parks

➔ Example in Chartreuse Regional Park



A 3-steps organisation :

- Phenoclim training for the persons working for the park (by CREA)
- Presentation of the Phenoclim project to schools (by the park)
- Educational activities for « Phenoclim schools » (by the park)

8 schools in Chartreuse for the 2010-2011 season

Cooperation between CREA and parks

What does the CREA :

- a person from CREA is always available to give advices on Phenoclim to the parks
- all the educational tools related to Phenoclim are available on our website (educational activities) or on demand (exhibition, information board...)
- employees from the parks can be trained by CREA to be able to use the Phenoclim project with schools
- CREA highlights parks involvment on its website (partnership)
- CREA is responsible for the good functioning of the website on which observations are sent (and can help all schools encountering problems with the use of it)

Some educational objectives of Phenoclim

- Develop nature observation with children
- Make climate change concrete by watching some of its effects
- Raise public awareness on climate change issue
- Discover research and what is a scientific approach
- Develop the use of Internet tools in schools
- Offer a school project dealing with various subjects (biology, geography, mathematics, citizens education...)
- Create an alpine network of parks and schools working on the Phenoclim project