

## Maximising the leverage of geoheritage research for effective sustainability policy and territorial management

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Mise en place d'un suivi des tannes à neige de Nifflon (Bellevaux, Haute-Savoie) - Geopark Chablais



## CASE STUDY

### CHABLAIS UNESCO GLOBAL GEOPARK, FRANCE

*Origin of the lakes of  
La Beunaz*

*The functioning of ice  
filled dolines of  
Nifflon*

*The nature and  
potential of the  
Reyvroz landslide*

#### Problem

- Low Earth science literacy
- Decision makers and stakeholders acting with limited consideration of geoscience issues
- Rapid implementation of environmental and sustainable policy, but has scope to better incorporate Earth sciences issues : heavily biodiversity focused

#### Observation

- Research projects regularly conducted in isolation from the local territory, the inhabitants and decision makers
- Limited local communication of results, limited pedagogy

#### Opportunity

- Rich research potential
- Territorial experts on the ground : UNESCO Global Geopark
- Complimentary Earth science communication and educational programmes

#### Proposed solution

- Early engagement between researchers and local decision makers
- Continued engagement prior, during, post research project
- Multichannel communication strategy managed by the UGGp : stakeholders, agencies, professional bodies, public..

#### Results

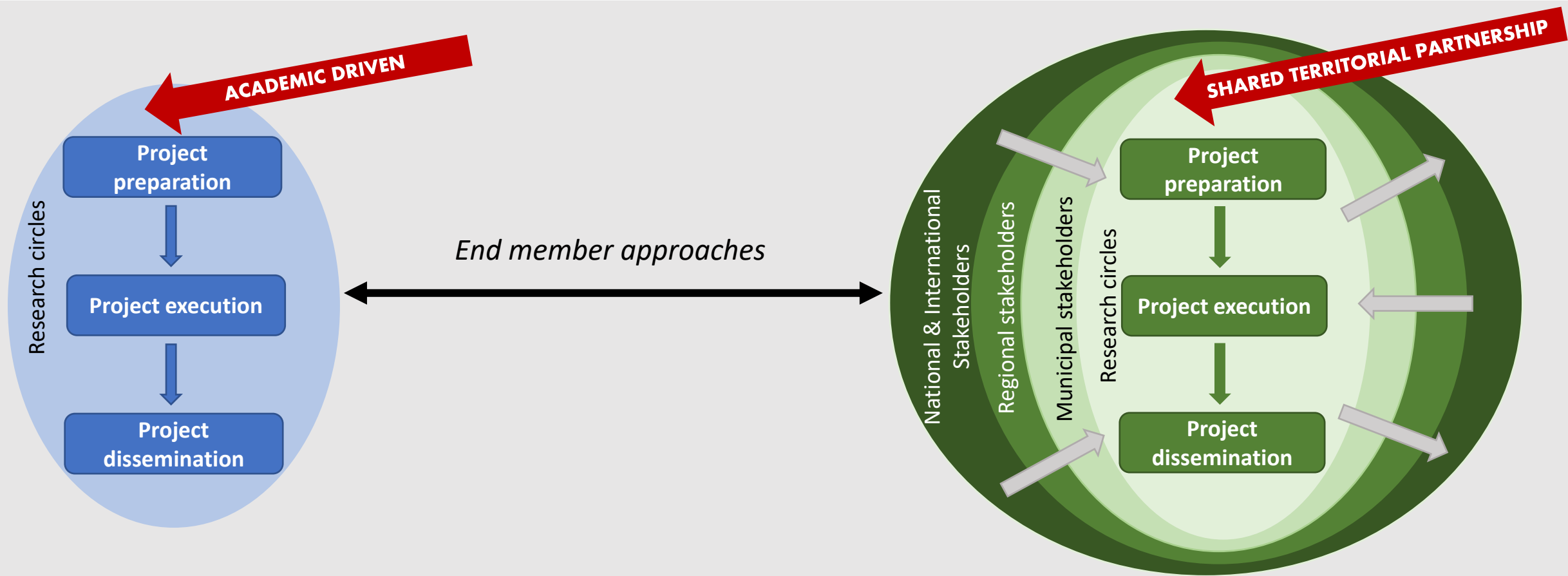
- Deeper understanding of Earth science questions by decision makers
- Stronger acceptance and endorsement of results
- Locally relevant, repeated science communication to a board audience

#### Conclusion

- Win-win research – territorial partnership
- Increased leverage of geoheritage results : scale & public
- Strengthening of Earth science understanding; a knowledge resource applicable to all aspects of territorial management and sustainable policy making <sup>2</sup>



*“Its not only research results that should be shared; the process of undertaking research must also be leveraged ...”*



Model derived from empirical observations made over 10 years within the Chablais UNESCO Global Geopark

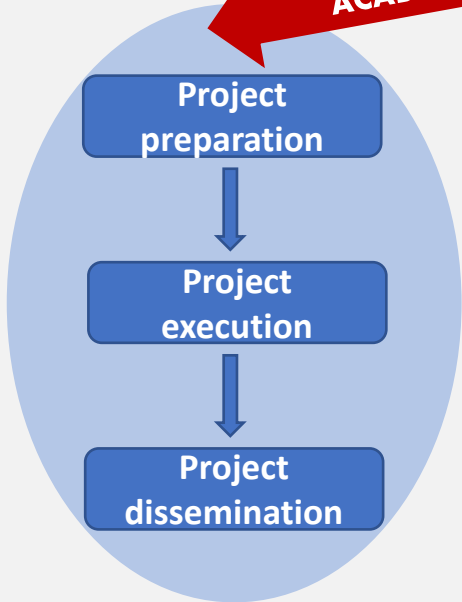
**Enhanced spheres of influence**

- ✓ Broad engagement
- ✓ Enriched project : scope and impact
- ✓ Reinforced dissemination
- ✓ Active Earth science advocacy : Improved Earth science literacy

**Result** Decision makers informed on geoscience issues

=> Empowered to deliver enhanced sustainable policy and territorial management systems, inclusive of Earth science issues

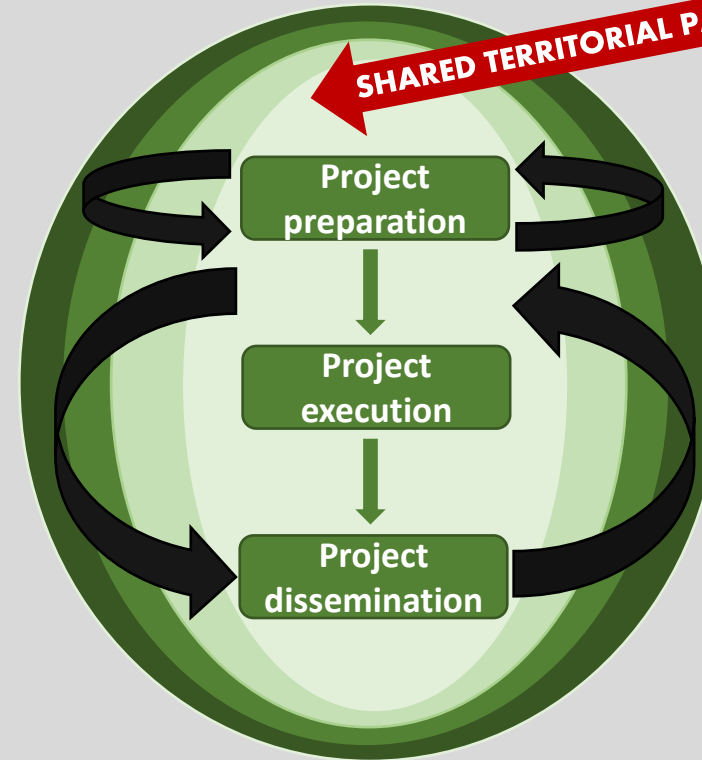
**ACADEMIC DRIVEN**



- **Defined** project scope
- **Limited** exchanges with territorial stakeholders
- Project results shared **predominantly in academic fora**

**Restrained sphere of influence**

**SHARED TERRITORIAL PARTNERSHIP**



- **Shared project conception** and scoping
- **Project facilitation** engaging the project with the territory (contacts, territorial insights, documentation)
- **Positive feedback loops** : Familiarisation through repetition, progressive knowledge sharing
- **Complementary multimedia dissemination** : Inhabitants, decision makers, socio-professionals, associations, government agencies, professional bodies, schools...

**Enhanced spheres of influence**

## Introduction

**Earth science as a discipline** and **geodiversity as a major sustainable development issue** are two topics that remain **poorly appreciated by both the public and decision makers** (Stewart I.S., Neild, T., 2013; Stewart, I., 2016, Whitchurch, A., 2019). This is further underlined by the need for promotional initiatives such as the recent 2021 proposal to the UNESCO Executive Board to create International Geodiversity Day.

Despite recent advances in geoscience communication, **decision makers continue to develop policies that strongly impact natural resource management and geoheritage, often with limited appreciation of Earth science issues.** Hence important geoscientific issues inadvertently become side-lined or even overlooked. This is also, surprisingly, often the case in the recent rapid implementation of environmental and sustainable development policies.

The Chablais UNESCO Global Geopark (UGGp), France is a territory with geological heritage of international significance that promotes sustainable development. The professional UGGp team have a mandate to preserve, manage and communicate the area's geological heritage and links with Man.

**In order to enrich sustainable policy and territorial management decisions, the Chablais UGGp seeks to cultivate deeper geoscience understanding amongst its local population, decision makers and stakeholders.** One of the ways this has been achieved has been through the establishment of early research partnerships addressing Earth science topics in the area such as at the origin of the lakes of La Beunaz<sup>1</sup>, the functioning of ice filled dolines of Niffion<sup>2</sup> and the nature and potential of the Reyvroz landslide<sup>3</sup>.

Engaging with different actors at an early stage ensures that decision makers have the opportunity to **follow, facilitate and enhance** research projects. Regular participation in projects incrementally **extends and reinforces their Earth science knowledge** and **sensitivity to core issues**, knowledge that can then be applied to future situations. Regular territorial engagement by researchers and complementary communication channels established by the UGGp team provides **a strong vector for dissemination and appropriation of research amongst decision makers, regional and national technical agencies, professional bodies, stakeholders and the local population.**

**These strong, early partnerships create positive feedback loops throughout a project life, and beyond,** with decision makers appropriating knowledge and establishing a heightened awareness to Earth science issues.

**This knowledge base then informs the development of wider sustainable policy and territorial management approaches : enriched content incorporates resource management, natural risk management, climate change and geoheritage factors.**

## Recommendations

- ✓ Build early partnerships between researchers and territorial specialists in geoscience
- ✓ Leverage off territorial insight and capitalise on partnership opportunities : project facilitation, meetings with decision makers, communication opportunities, partnership possibilities with local schools, colleges, associations ...
- ✓ Ensure the regular participation of local decision makers before, during and after research activities
- ✓ Share communication channels : each partner responsible for their target audience

## References

<sup>2</sup> Bosson, J.B., Salerno, M., Costes, G., 2019. Evolution des tannes de Niffion. Synthèse des recherches menées en 2019. Rapport. pp10.

<sup>3</sup> Lo Destro, C., 2019. Geomorphological analysis of Reyvroz Bas-plateau (Chablais UNESCO Global Geopark, France) and territorial vulnerability assessment in relation to les nœuds landslide. Dissertation. Turin University. pp 129.

<sup>1</sup> Pelé, V., 2017. Caractérisation approfondie de la structure géologique et du fonctionnement hydrogéologique du secteur du Mont Bénand et des lacs de la Beunaz. Mémoire de stage Master 2eme année. Université de Montpellier. pp 51.

Stewart, I.S., Nield, T., 2013. Earth stories: context and narrative in the communication of popular geoscience, Proceedings of the Geologists' Association 124, 699–712

Stewart, I., Sustainable geoscience. *Nature Geosci* **9**, 262 (2016). <https://doi.org/10.1038/ngeo2678>

Whitchurch, A., 2019. Editorial, Geoscientist, Magazine of the Geological Society of London, September 2019

## CASE STUDY

### CHABLAIS UNESCO GLOBAL GEOPARK, FRANCE

*The functioning  
of ice filled  
dolines of Nifflon*

## Project title

## Evolution of the Nifflon Dolines, Bellevaux

### Research objective

- ✓ Understand the functioning of the ice filled dolines
- ✓ Monitor the impact of a changing climate
- ✓ Raising awareness around the heritage value of the geosite

### Project actors

*Scientists* : JB Bosson, L Moreau, M Salerno, G Costes  
*Chablais UGGp* : S Justice  
*UGGp Guides* : JL Meynet, R Cordonnier  
*Public volunteers* : JC Rey, S Meynet  
*Politicians* : Mayor of Bellevaux, Mayor of Vailly  
*Techers and pupils* : La Versoie High School

### Project followers

Politicians from 62 municipalities of the Geopark  
 Local inhabitants  
 Visitors to the territory

### Duration

2017 – 2019 (*phase 1*)

### Results

Temperature records and time lapse photographs.  
 Proposed model for ice doline functioning.

### Communication & Publications

- 2 public reports disseminated by the Chablais UGGp
- Chablais UGGp communication : Regular presentations at territorial council meetings, web articles, FB, YouTube, press releases, free public talks, articles for the European Geopark Network
- Local newspaper articles, features on science networking sites



25 mai | 09 juin

### CONFERENCE-CAUSERIE SUR L'ALPAGE DE NIFFLON

**Mercredi 29 mai | A Vailly, salle communale (en face de la mairie)**

De l'exploitation ingénieuse de ses tannes à la mise en place d'un suivi scientifique de l'évolution du climat. Par Jean-Claude REY, petit-fils des derniers alpagistes de Niffion et Jean-Baptiste BOSSON, géomorphologue et glaciologue.

Retrouvez le programme complet de la semaine sur [www.geoparc-chablais.com](http://www.geoparc-chablais.com)



**ECHOSCIENCES SAVOIE MONT BLANC**  
Partageons les savoirs et les innovations !

MAI 29 le 2019

## CONFÉRENCE Conférence-causerie sur l'alpage de Niffion

De l'exploitation ingénieuse de ses tannes à la mise en place d'un suivi scientifique de l'évolution du climat.

Par Jean-Claude REY, petit fils des derniers alpagistes de Niffion et Jean-Baptiste BOSSON, géomorphologue et glaciologue.

CONFÉRENCE  
ALPAGE CAUSERIE  
GEOPARK EAU

3:

### VAILLY

## Les animations organisées sont riches d'enseignements



gue glaciologue, travaillant au Conservatoire des espaces naturels Asters de Haute-Savoie, conseiller scientifique du Geoparc, ont développé les spectacles de l'alpage de Niffion.

## dl Conférence-causerie

### VAILLY Conférence-causerie sur l'alpage de Niffion

Dans le cadre de la 2<sup>e</sup> édition de la Semaine du Geoparc Chablais, une conférence-causerie est proposée sur l'alpage de Niffion, mercredi 29 à



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@GeoparcChablais



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Géoparc du Chablais 15 novembre 2018 - 04:02

niffion

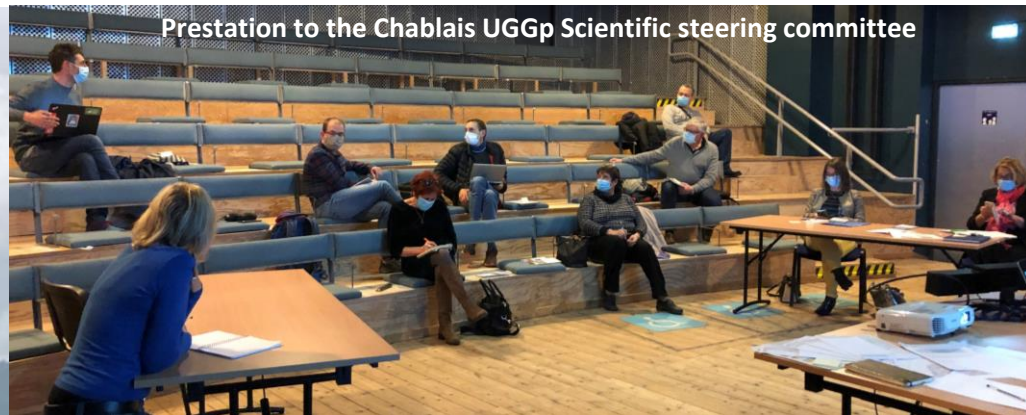


## CASE STUDY

### CHABLAIS UNESCO GLOBAL GEOPARK, FRANCE

#### *Geomorphological analysis of the Les Noeuds landslide and territorial vulnerability assessment*

<b>Project title</b>	<b>Geomorphological analysis of Reyvroz Bas-plateau (Chablais UNESCO Global Geopark, France) and territorial vulnerability assessment in relation to Les Nœuds landslide</b>
Research objective	<ul style="list-style-type: none"> <li>✓ Analysis of geomorphological hazard distribution</li> <li>✓ Investigation of the <i>Les Noeuds</i> landslide</li> <li>✓ Territorial vulnerability assessment (infrastructure)</li> </ul>
Project actors	<p><i>Scientists</i> : C Lo Destro, M Giardino</p> <p><i>Chablais UGGp</i> : S Justice</p> <p><i>Politicians</i> : Mayor of Reyvroz</p> <p><i>Techers and pupils</i> : La Versoie High School</p>
Project followers	<p>Politicians from 62 municipalities of the Geopark</p> <p>Local inhabitants</p> <p>Visitors to the territory</p> <p>Government agencies</p>
Duration	2019-20
Results	<p>Geomorphological mapping of the <i>Les Noeuds</i> landslide</p> <p>Production of a risk map</p> <p>Reflection on long-term viability of tourist infrastructure</p>
Communication & Publications	<ul style="list-style-type: none"> <li>• Chablais UGGp communication : Meetings with the Mayor of Reyvroz, regular presentations at territorial council meetings, web articles, FB, YouTube, articles for the European Geopark Network</li> <li>• Local newspaper article</li> </ul>



Prestation to the Chablais UGGp Scientific steering committee

<https://www.geoparc-chablais.com/toutes-les-actualites/page/3/>



23.09.19

## Recherches en cours à Reyvroz

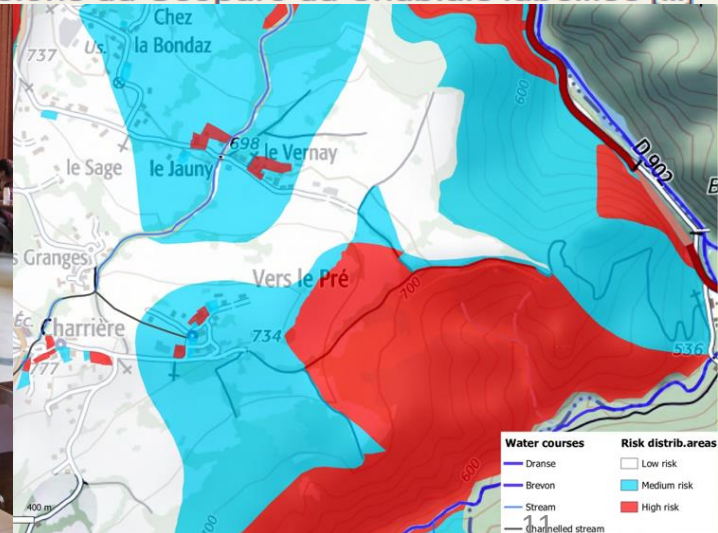
La recherche sur le territoire fait partie intégrante des missions du Géoparc du Chablais labellisé [...]

# GEOMORPHOLOGICAL ANALYSIS OF REYVROZ BAS-PLATEAU (CHABLAIS UNESCO GLOBAL GEOPARK, FRANCE) AND TERRITORIAL VULNERABILITY ASSESSMENT IN RELATION TO LES NOEUDS LANDSLIDE

S Etude sur le glissement de terrain à Reyvroz, Haute-Savoie

Copier le li...

**Le Géoparc mondial UNESCO du Chablais PRÉSENTE**  
En association avec l'Université de Turin  
**ÉTUDE DU GLISSEMENT DE TERRAIN DE REYVROZ**  
AVEC Chiara Lo Destro, étudiante en Géographie à l'université de Turin





## CASE STUDY

### CHABLAIS UNESCO GLOBAL GEOPARK, FRANCE

*Structure and  
hydrogeological  
functioning*

<b>Project title</b>	<b>Geological structure and hydrogeological functioning of Mont Bénand and the La Beunaz lakes, Saint Paul en Chablais</b>
Research objective	✓ Understand the origin and hydrogeological functioning of a series of lakes in the municipality of Saint Paul en Chablais
Project actors	<i>Scientists</i> : V Pelé, P Lachassagne, R Vassallo <i>Chablais UGGp</i> : S Justice <i>Politicians</i> : Mayor and councillors of Saint Paul en Chablais
Project followers	Politicians from 62 municipalities of the Geopark Local inhabitants Visitors to the territory
Duration	2016
Results	Revised glacial reconstructions supporting a glacial origin of the lakes Chronology of lake formation determined
Communication & Publications	<ul style="list-style-type: none"> <li>Chablais UGGp communication : Presentation at municipal council meetings, FB, workshops for the general public at regional events</li> </ul>

# Origine géologique et chronologie de mise en place des lacs du secteur

Partie amont

