

GROTTE DE SAINT-MARCEL: A MAJOR FRENCH CAVE SYSTEM FOR SPELEOLOGY, SCIENCES, TOURISM AND EDUCATION

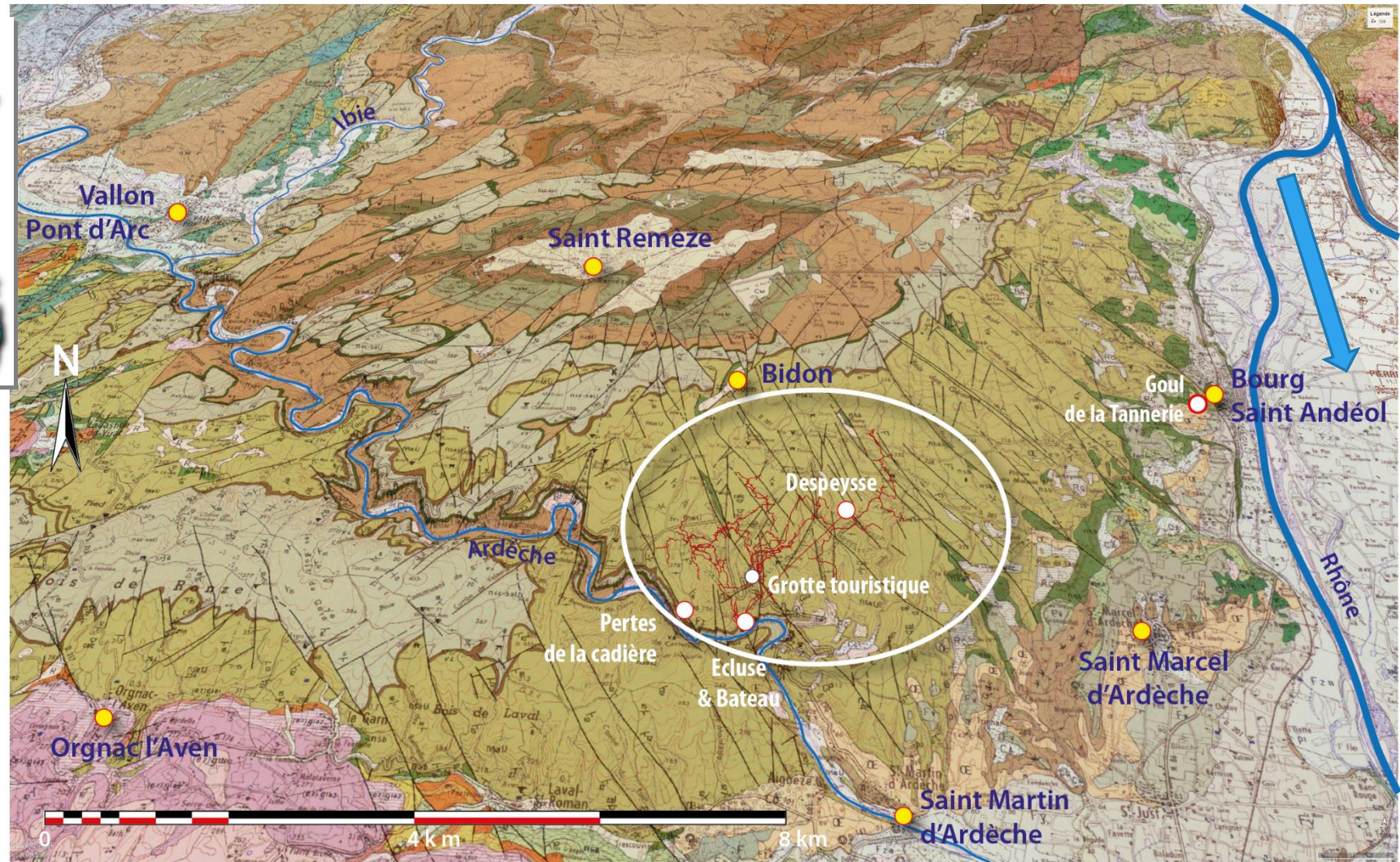
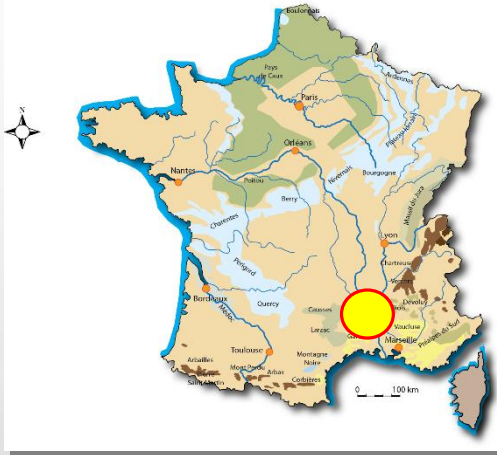
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26th International karstological school
18/06/18

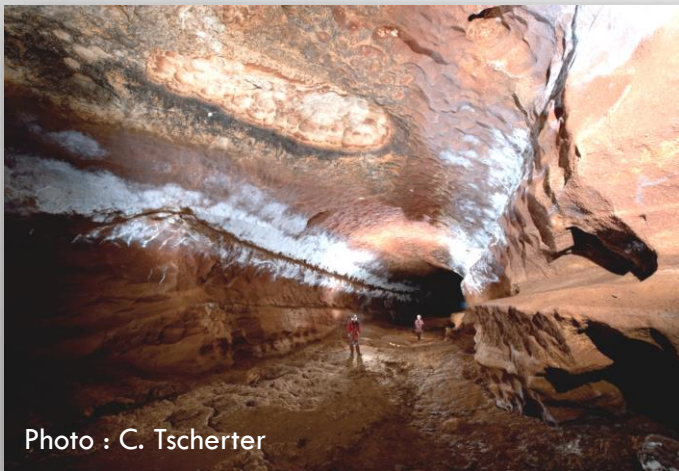


GROTTE DE
SAINT-MARCEL

SAINT-MARCEL CAVE SYSTEM



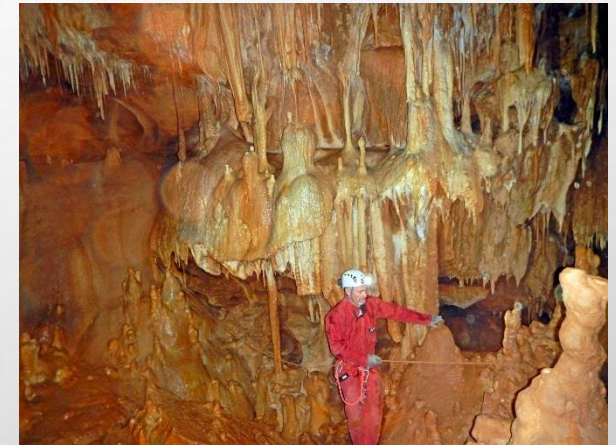
GROTTE DE SAINT-MARCEL : A LONG TERM HISTORY FOR CAVE EXPLORATION AND TOURISM



On October 1836, a local has rediscovered the entrance of the cave filled by sediments and explored a 200m long part of the first gallery. On 1838 with other local people they have continued the exploration further. The cave became an important point of interest. More and more people visited the cave and destroyed the formations to get a souvenir or trade.

For cave protection, On October 1838, the Municipality organize a tour, twice a week, under the supervision of local guides. The first map of the cave was published on 1839. A geometer has surveyed 2250m of the main gallery. The touristic activity started from Saint-Martin d'Ardèche by boating.

50 years later, Martel come to explore and studied the cave. He published a description of the cave.



SAINT-MARCEL CAVE SYSTEM

5 Entrances :

- The Historical Entrance, 87m asl.
- Grotte Deloly, 57m asl.

A main sinkhole :

- Perte de la Cadière, 47m asl.

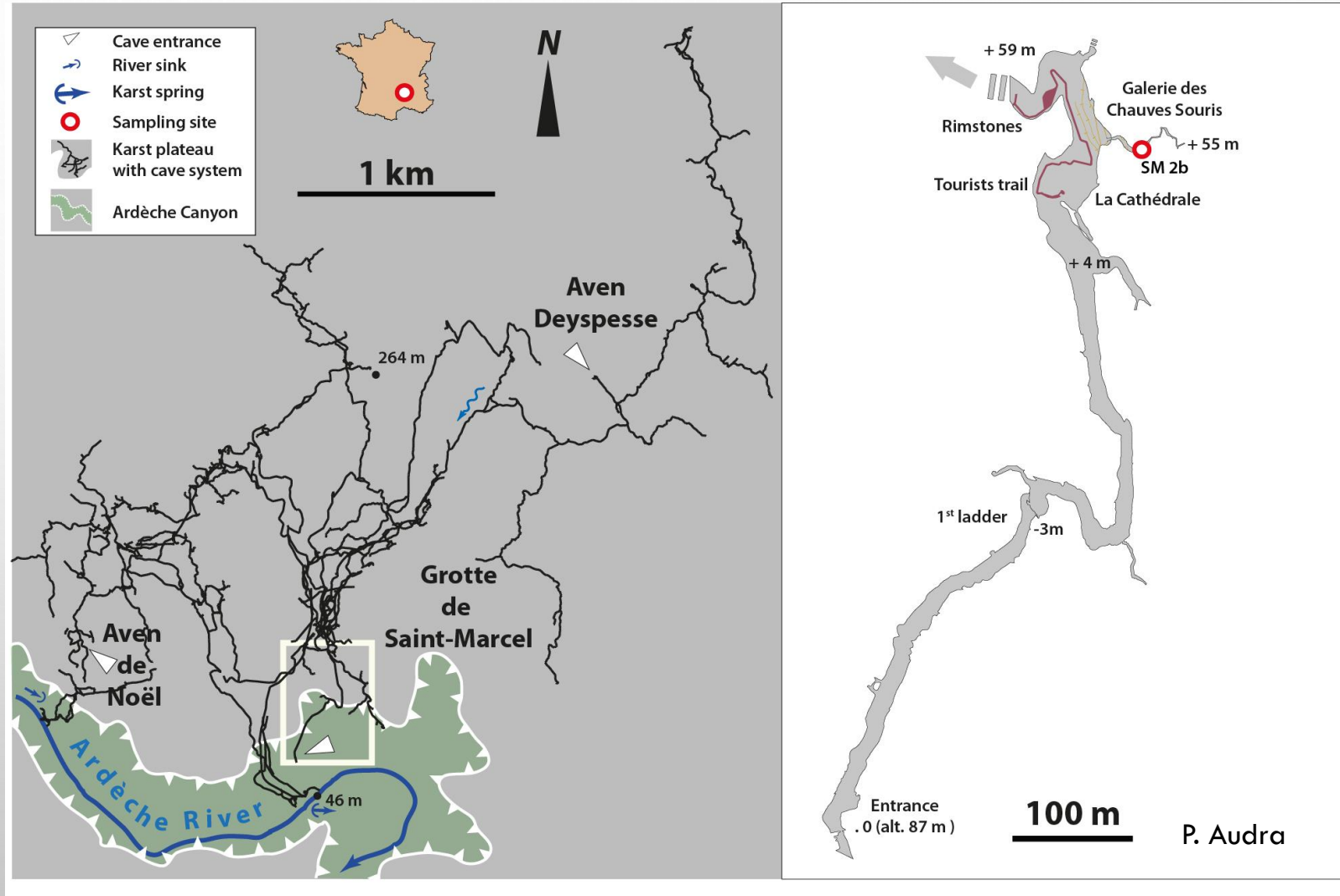
2 artificial entrances:

- Aven du Deyspesse, 224m asl,
- The show cave Entrance, 190m asl.

A long term exploring and Surveying Project:

- 5 networks
- Length: 57 km
- Depth: 291m (-154m, +137m)

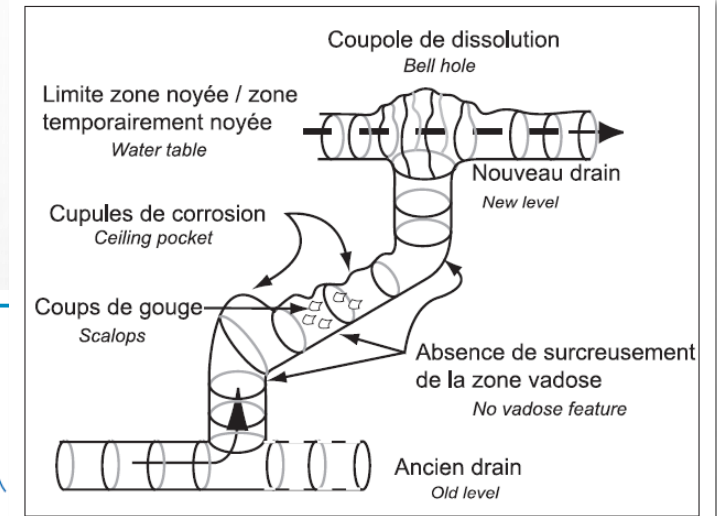
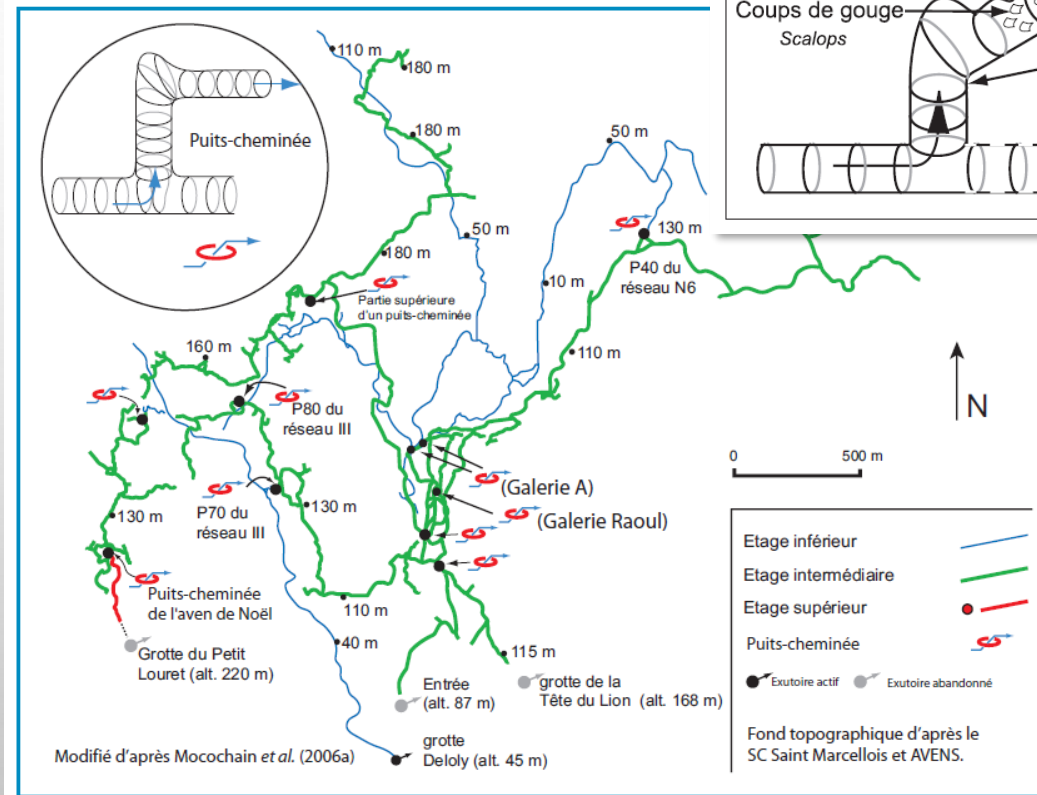
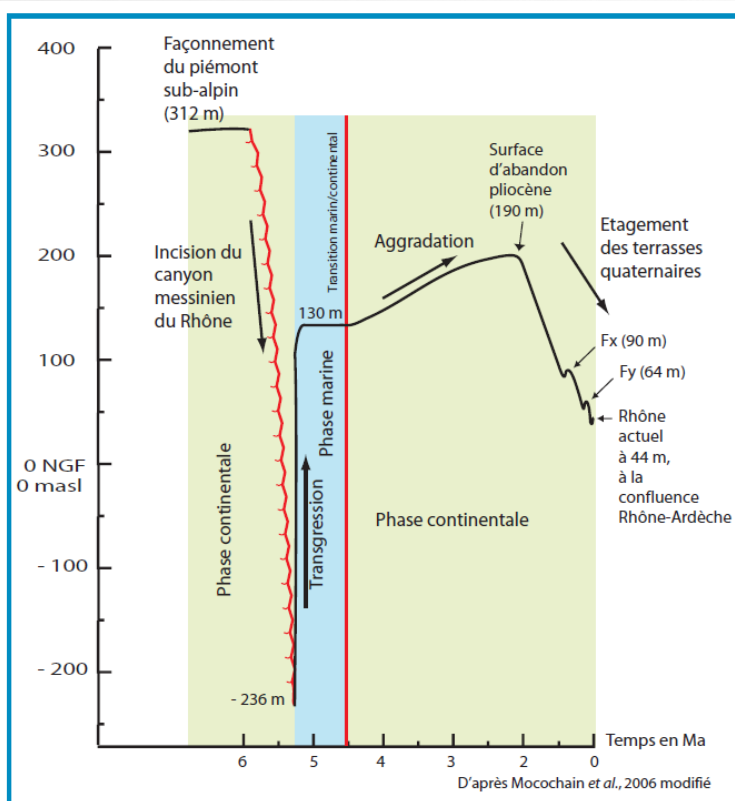
A surveying project leads by Marc Faverjon. The data are actually managed by the Comité départemental de spéléologie de l'Ardèche (CDS 07).



UNDERSTANDING SAINT-MARCEL CAVE SYSTEM

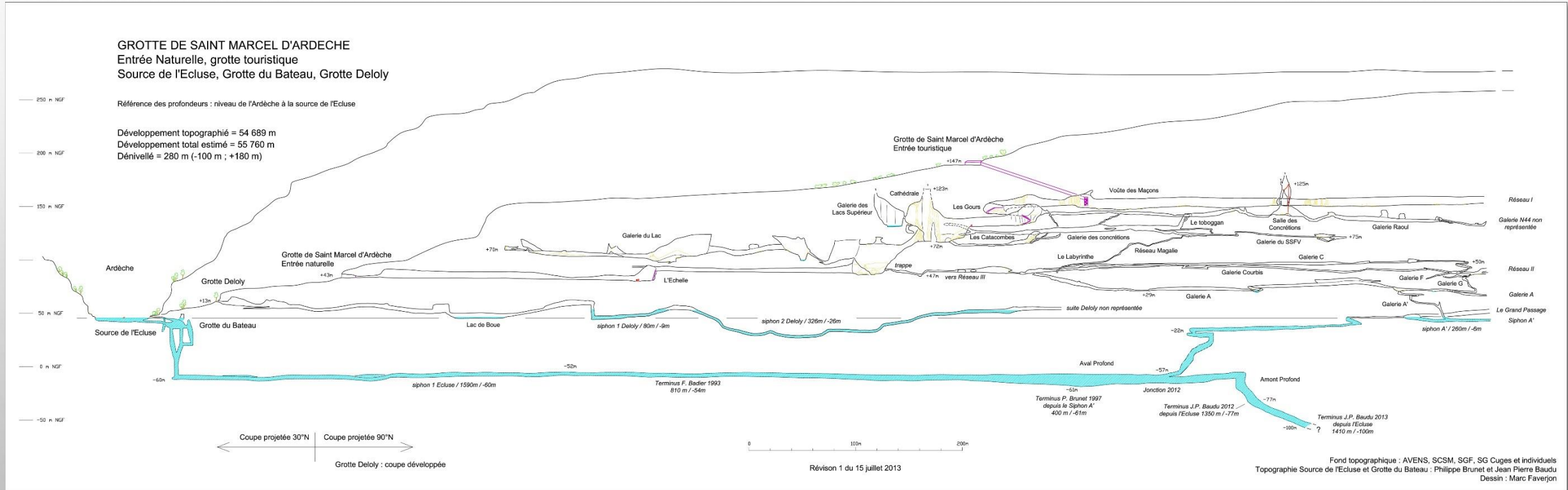
- **GEOMORPHOLOGY**

A cave system evolution, from the Messinian to the actual, with a long phasis of speleogenesis by aggradation



Mocochain et al.

EXPLORATION AND SCIENCES IN THE PHREATIC ZONE



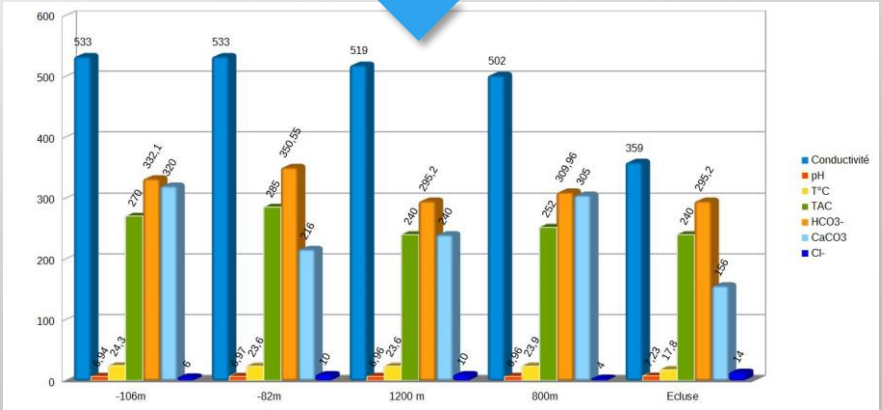
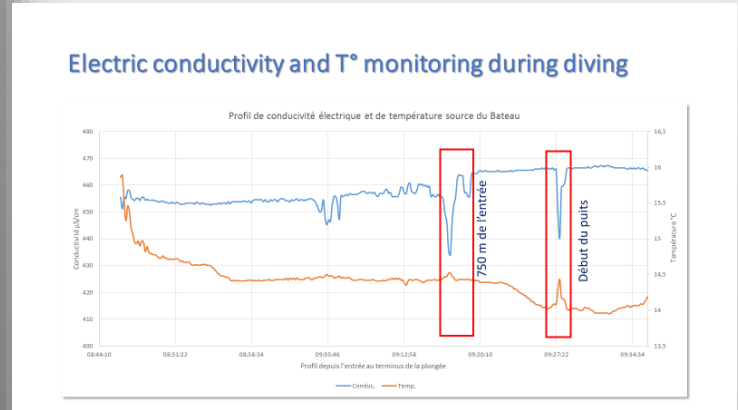
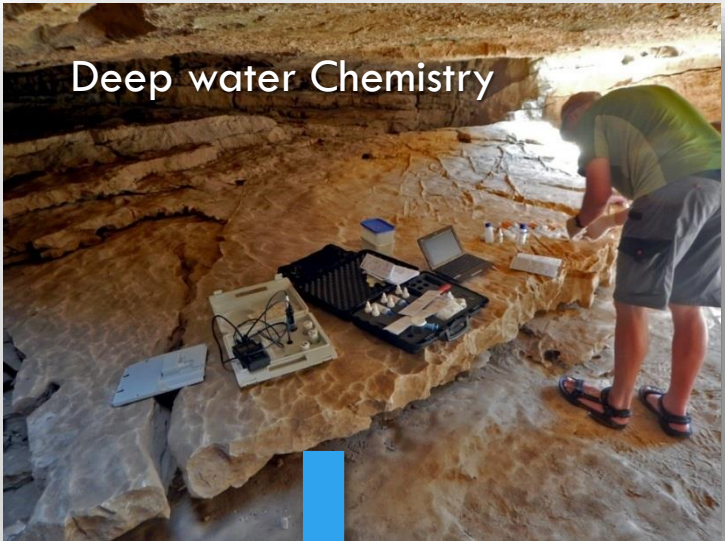
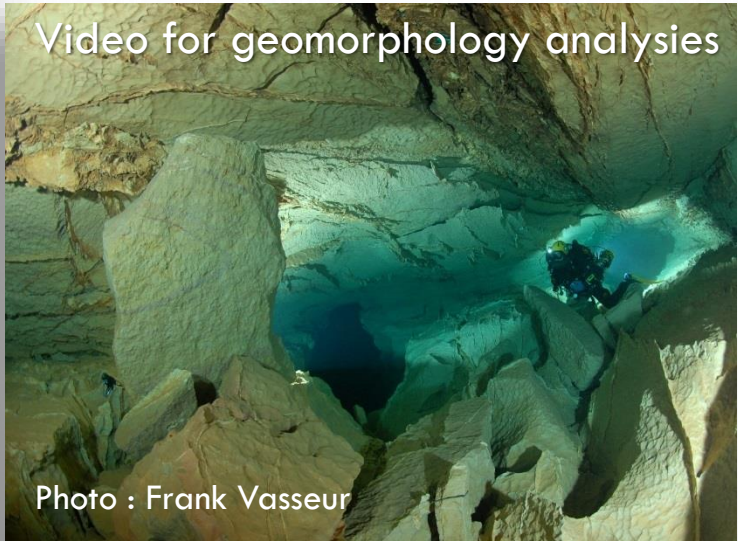
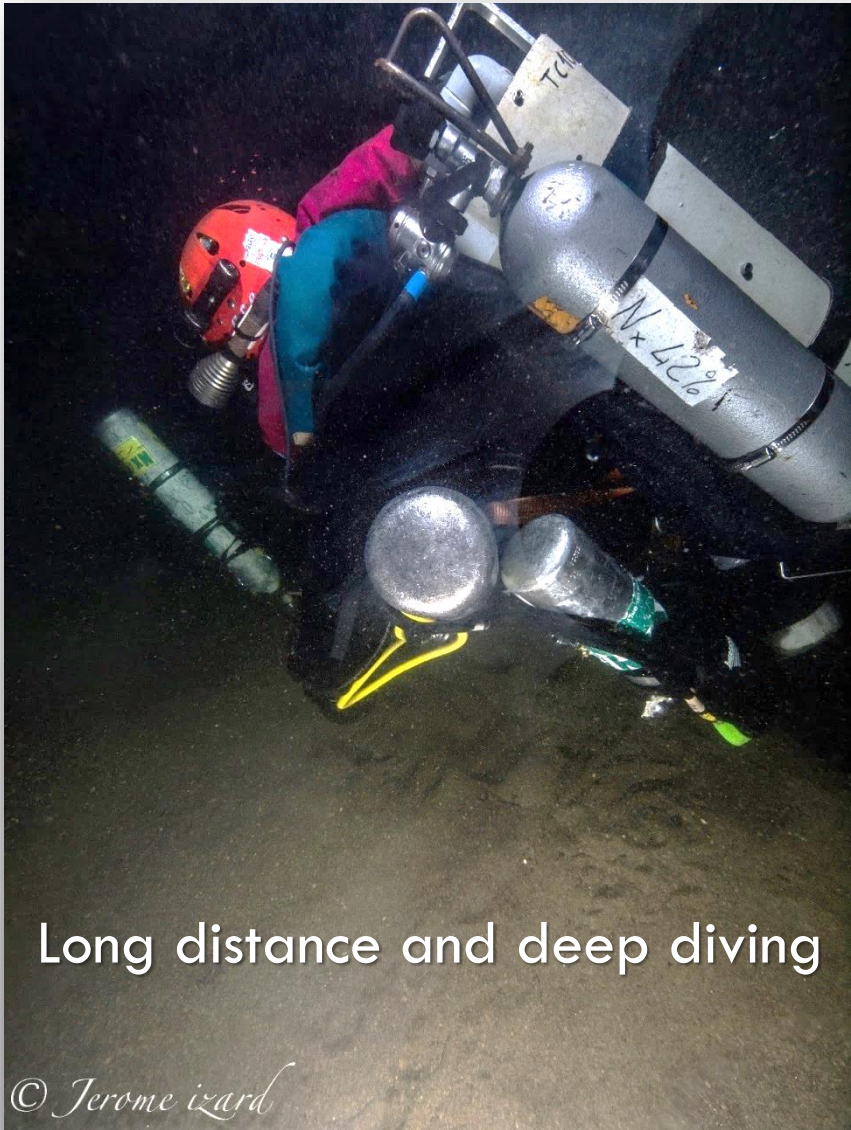
Cave diving explorations: Philippe Brunet and team

Deep cave diving explorations: Jean-Pierre Baudu and team

Multi siphons and post siphon exploration : long: **12 km**

Terminus 2015 : Long: **1460 m** Deep : **-114m**

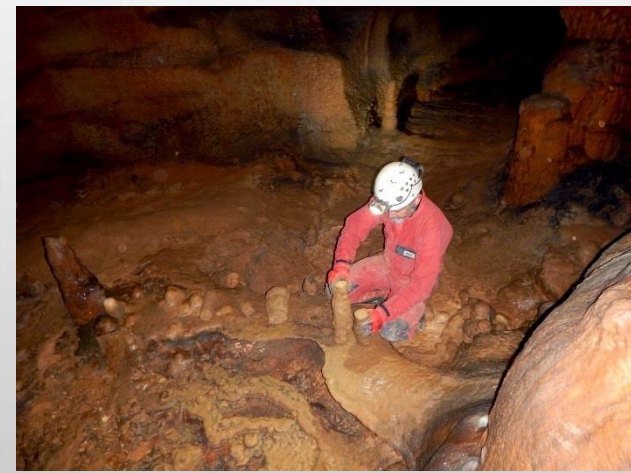
CAVE DIVING AND SCIENCES



CONDENSATION CORROSION PROCESSES



PALEO CLIMATE AND PALEO ENVIRONMENT STUDIES



SM1



79 ka

122 ka

SM3



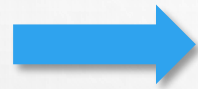
52 ka

282 ka

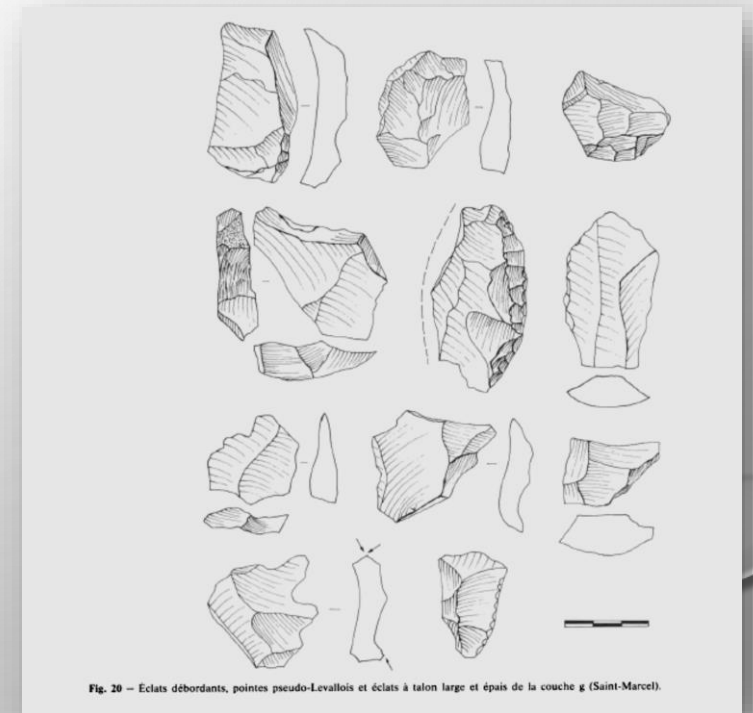
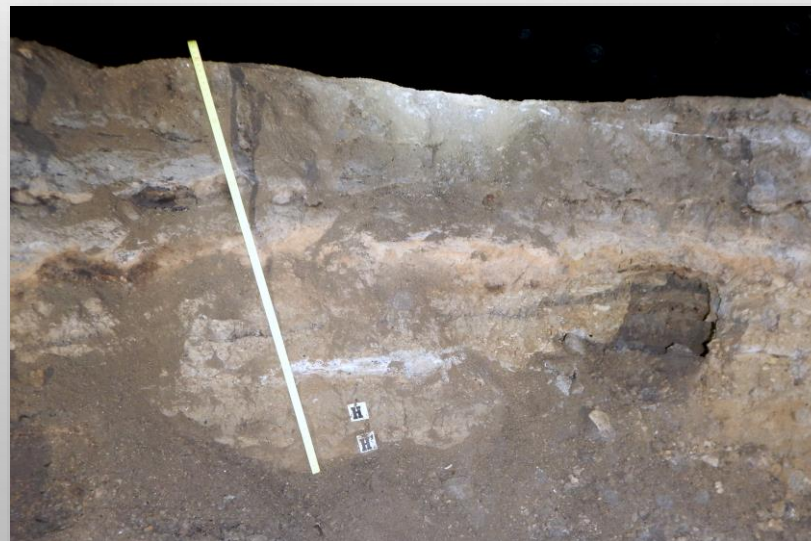
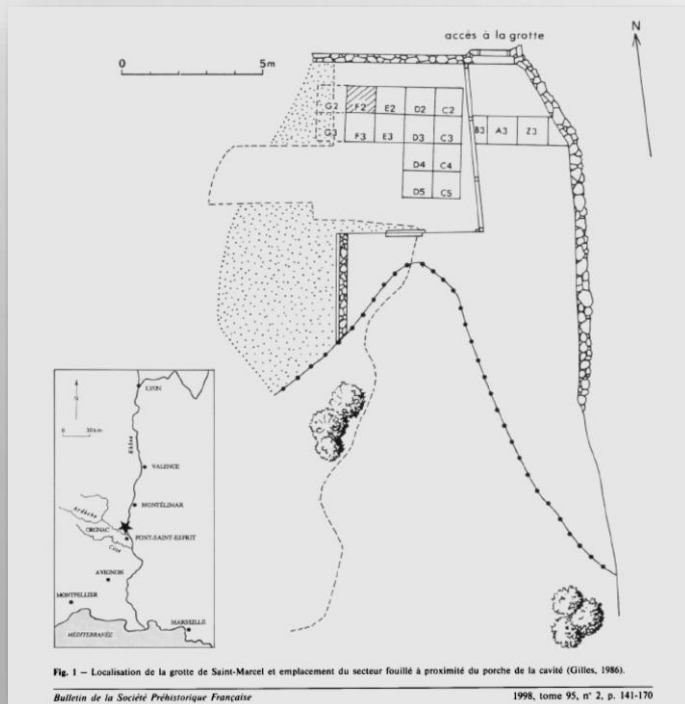
- STALAGMITES WITH COVERAGE OF LAST GLACIAL PERIOD (120 – 12 KA)

ARCHAEOLOGY

The natural entrance of Grotte de Saint-Marcel Cave is an important site from the Mousterian Period in the South Ardèche and the Rhône Valley, that yielded more than 10 Mousterian levels and almost 5 000 lithic artefacts. (Gilles, 1975, Moncel, 1998)



A place shared by Neandertal and modern humans.



THE SHOW CAVE AND THE TOURISM ACTIVITIES

The 3 axis axis :

- THE TOURISTIC TOUR 51 000 VISITORS IN 2017.
- THE SPELEOLOGICAL TOUR (3000 PERSONS IN 2017).
- THE WINE TOUR.



Photo : Grotte de Saint-Marcel



Photo : Grotte de Saint-Marcel

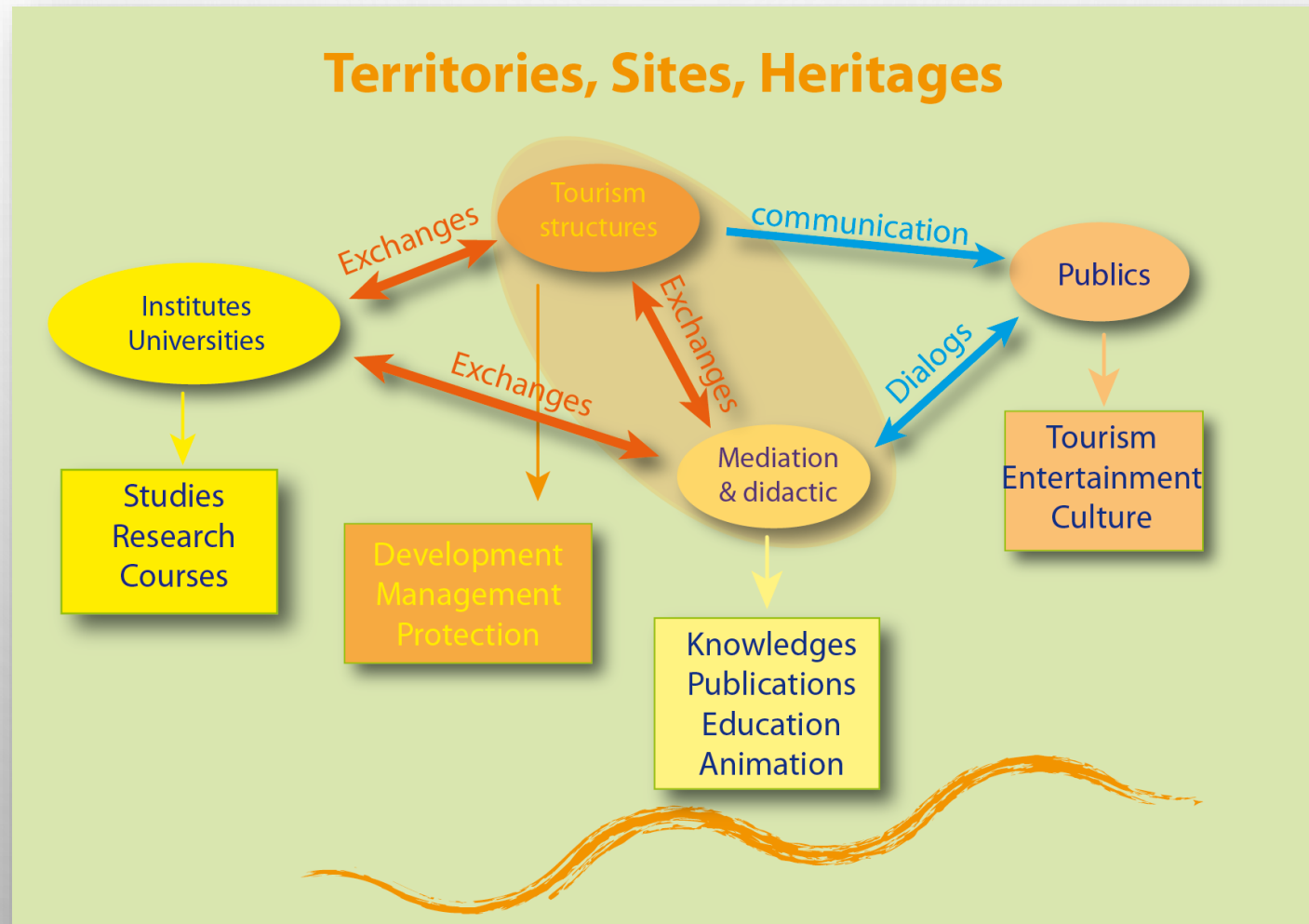


Photo : Rémi Flament



Photo de

GROTTE DE SAINT-MARCEL, A CAVE FOR ENVIRONMENTAL EDUCATION



NEW PROGRAMS FOR TOURIM AND EDUCATION

- New equipments in the cave (Lighting, pathways.)
- New offer : Thematic and participative visits (Sciences, Culture, Art).

Educative Projects with school (Primary school, Gymnasium)

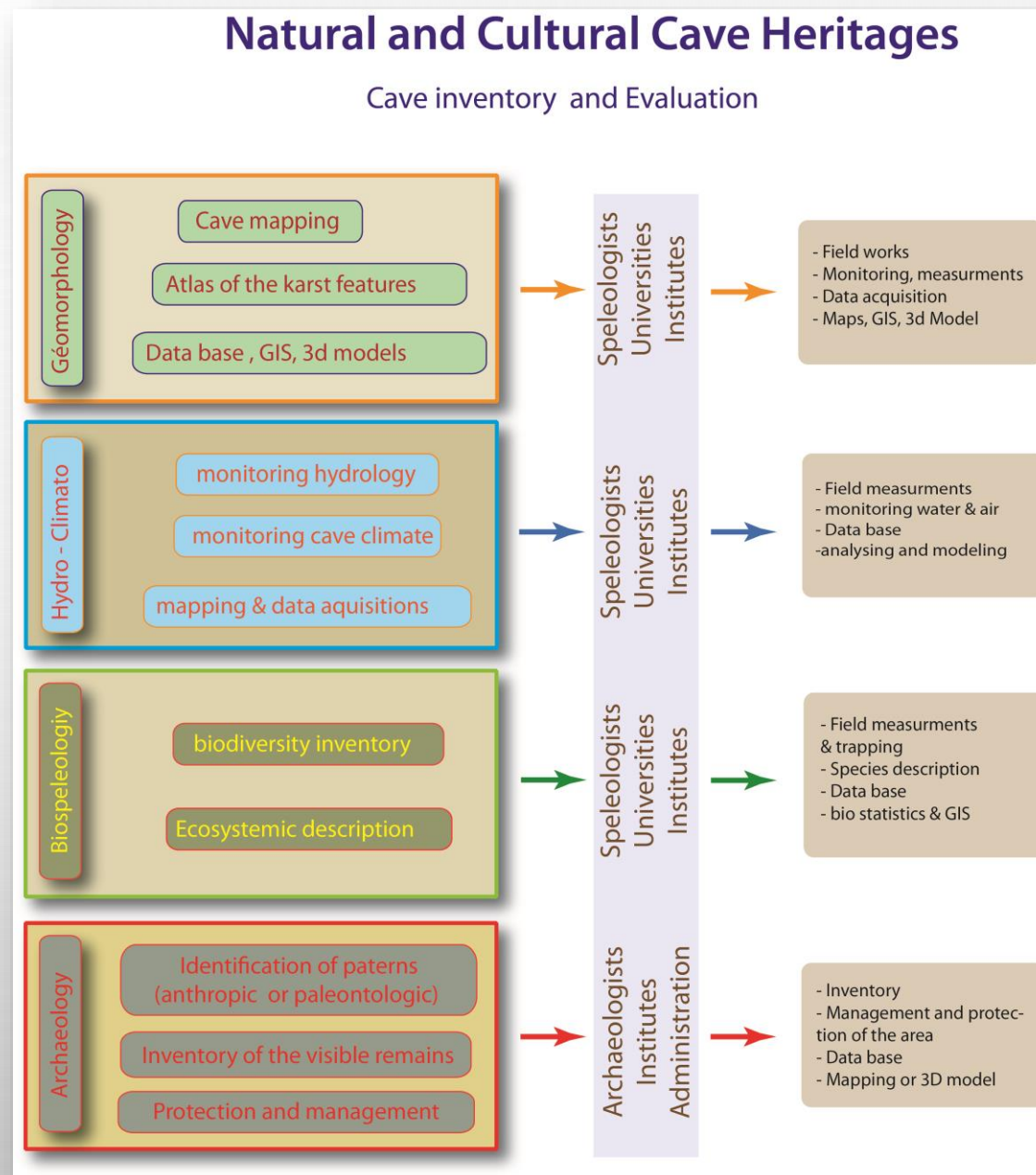
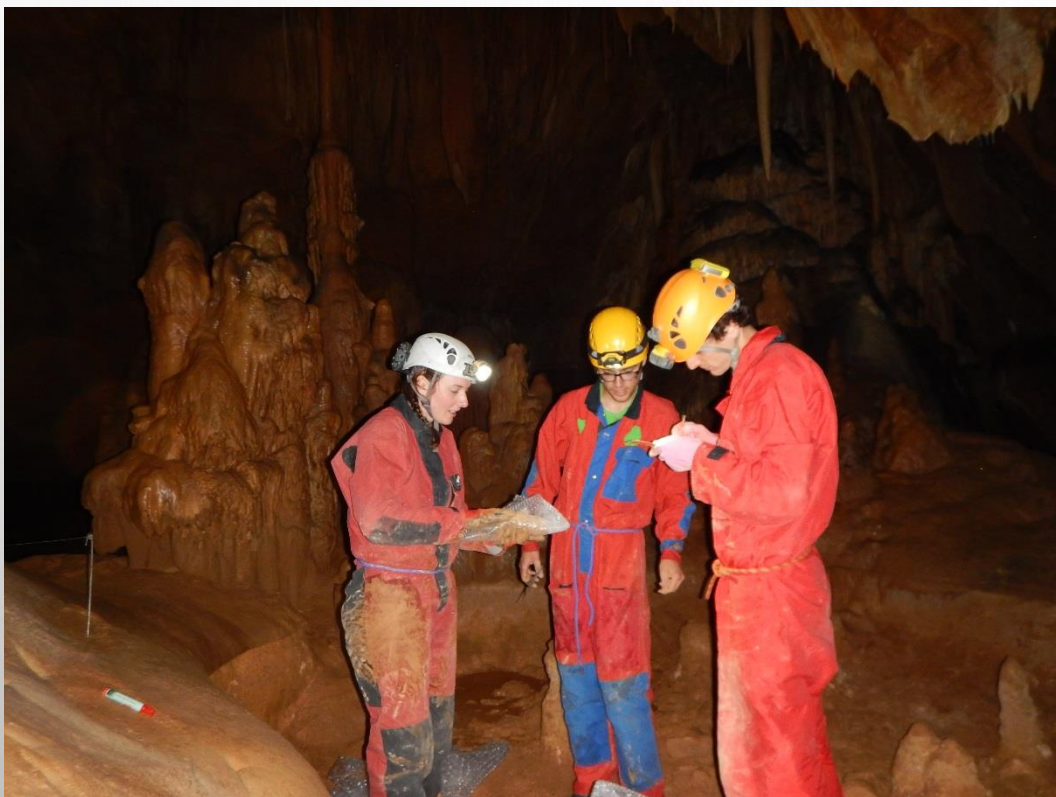
Cave Discovery

Cave animals

Cave legends



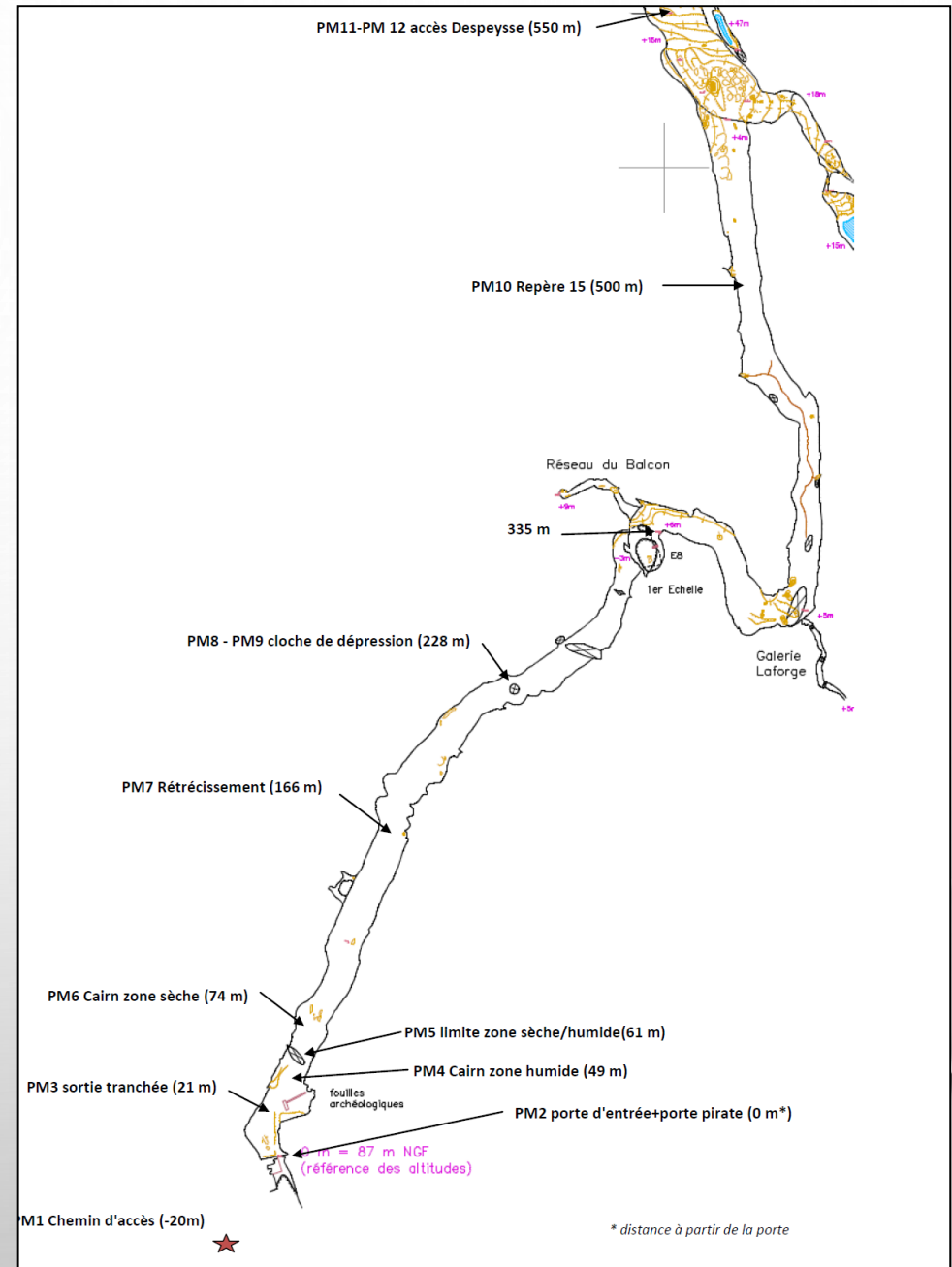
CAVE PROTECTION



Cave climate investigation

UNDERSTANDING CAVE CLIMATE :

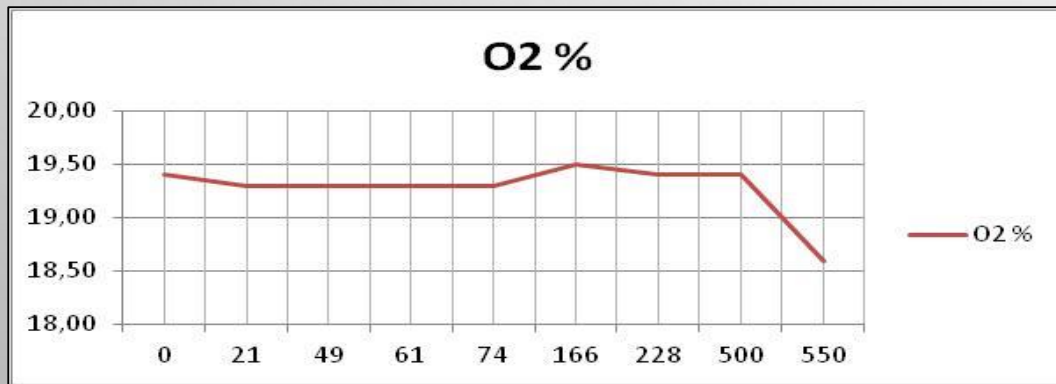
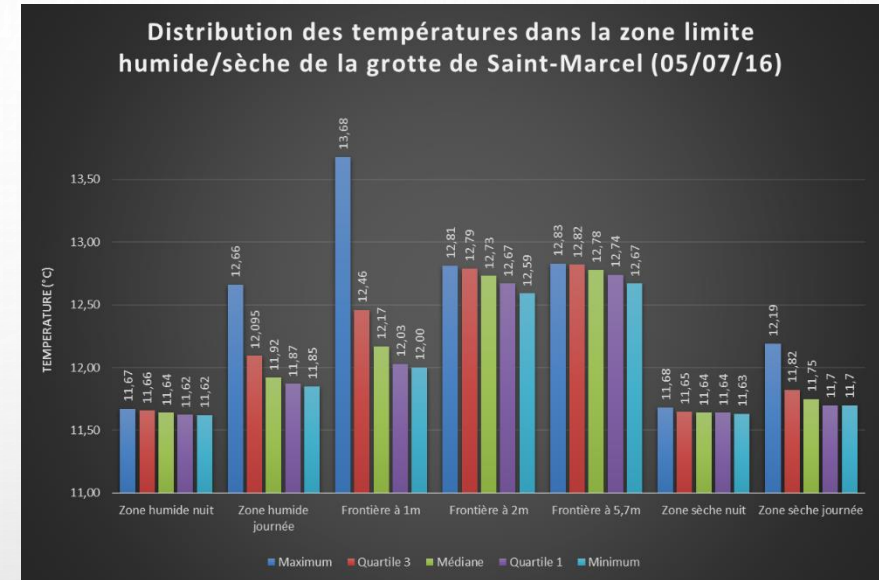
- FOR A SUSTAINABLE MANAGEMENT OF THE CAVE SYSTEM AND THE KARSTIC AREA,
- FOR THE CONSERVATION OF CAVE HERITAGES (NATURAL AND CULTURAL),
- FOR THE EVALUATION OF THE BIODIVERSITY IN THE CAVE SYSTEM.



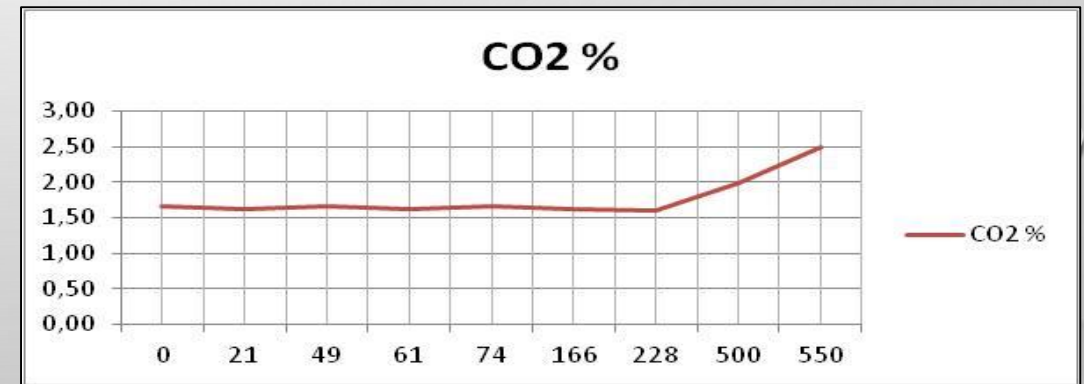
CLIMATOLOGY IN THE CAVE ENTRANCE AREA

Air velocity and discharge

	Section (m ²)	vitesse m/s	débit m ³ /s
PM1 (porte fermée - 25% +entrée sauvage)	0,90	8,52	7,668
PM2 (porte ouverte+entrée sauvage)	1,20	9,26	11,112



Distance from the entrance



Distance from the entrance



THANK YOU FOR YOUR ATTENTION