



## Doctoral profile - 2019 campaign

### Research framework

#### Work-Package:

"Environmental change and societies in the past"

#### Heads:

- **Catherine KUZUCUOGLU** (LGP: Laboratory of Physical Geography - UMR 8591)
- **Zoi TSIRTSONI** (ArScAn: Archeology and Sciences of Antiquity - UMR 7041)

### Position description

**“MédOc: The malacological approach to relationships between paleoenvironments, climates and societies on the western Mediterranean coast over the last 10,000 years.”**

*Theoretical field.* Recent abstracts on the climate of the Mediterranean zone during the Holocene, i.e. the last 10,000 years, underline considerable variability. This variability is at once temporal (a succession of rapid climate change events, or "RCCs") and spatial, reflecting a marked regionalization of the environmental responses, which highlight the heterogeneity of the succession of plant covers around the basin's rim during this period. At the same time, this climatic instability was seen as a major cause of the change in economic resources that led to social disruptions. However, certain research projects show that the man-environment relationships formed during the Postglacial period are more complex and require a regional approach based on detailed case studies, enabling researchers to assess the real environmental impact of the climatic oscillations and the societies' ability to adapt.

*Issues and objectives.* Recent research programmes initiated on this topic (Paleomex, INSU-INEE) approached the issue and organized their study zones in selected transects, making it possible to recreate the regional environmental variability and address the question of the relationships between societies and their environments. However, the north-south axis of the western Mediterranean coast remains largely unexplored. This doctoral project aims to fill this gap by systematically documenting this area of the Mediterranean rim. It aims to identify the Holocene paleoenvironmental and paleoclimatic changes at regional level within a precise chronological framework, by acquiring detailed data on key sequences, from the north of Morocco to the Provence region in France. The results will be compared with the archeological data in order to discuss the relationship between the changes observed and the cultural phases that punctuate Mesolithic societies (hunter-gatherer economies), then Neolithic societies (agro-pastoral economies) in this part of the Mediterranean.

*Methodology.* The practical aspects of this project draw on the strong informational potential of continental malacofaunas. The group of mullusks, whose shells can be classified in a specific rank, is



suitable for a detailed paleoecological approach including the reconstruction of plant environments, the evolution of biodiversity and paleographic variations in the distribution of organisms. Moreover, the shells keep well in all carbonate sediments and can offset the current lack of available paleoenvironmental data along the coast of Spain and in North Africa. At the same time, recent research has shown that isotope analyses of shells can be used to reconstruct variations in climate parameters such as temperature, aridity and precipitation regimes.

The study of malacological successions can draw on modern reference bases and species systematics (systematics is the science that organises the classification of taxons) that are well established for the Franco-Spanish zone. However, the enumerations of North African faunas are old, so this project will require the researcher to update the taxonomy - a task that requires a sound knowledge of the naturalist approach. Very few malacological studies have as yet been carried out in Spain and Morocco. Yet these regions hold exceptional potential because of the wealth of their Quaternary material and their current great diversity. The references acquired during this doctorate on the assemblages-environment relationship will form an essential basis for the development of future paleomalacological studies in Spain and Morocco. A naturalist approach is also indispensable for understanding the factors accounting for the variability of the geochemical signal recorded in the shells, which is heavily dependent on the habitat and diet of the selected species. Moreover, isotope studies of shells are often performed, punctually, at archeological levels; this project proposes to set up ongoing analyses throughout the selected sequences in strict correspondence with the study of the faunistic assemblages.

**Fields.** Six deposits, including four sequences of calcareous tufa spanning all or part of the Holocene in Provence and in Spain (Aragon and Andalusia), were identified and selected for this project during survey missions in 2018; one lacustrine site from the Cardial Neolithic in Catalonia will be diagnosed. Moreover, three sites are already being studied in the north of Morocco; some of them will undergo further research. The tufa sequences, which have great potential for conserving malacological faunas, are also propitious for isotope studies on the calcite making up the tufa. This independent geochemical data will enable the doctoral student to compare and calibrate the data obtained from shells. All of the malacological studies will be incorporated into multidisciplinary teams, giving the doctoral student an appropriate scientific environment (geomorphology, geochemistry, archeology, etc.).

## Planned collaborations

### **Funding**

This doctoral project is part of several current or future research programs that will finance field missions and analyses. Most of them focus on one region within the transect under study: Morocco: **PALEOMEX Program (INSU-INEE)**, Maghreb transect (headed by J.F. BERGER, UMR 5600, EVS, Univ. Lyon); Andalusia: **“Cuenca de Galera” Program** (headed by D. FAUST, T.U. Dresden, Germany); Provence: **Funding under consideration by the PACA Region** (headed by V. OLLIVIER, UMR 7269, LAMPEA, Univ. Aix-Marseille). **ANR JCJC TEECH Project** (*Tufa as records of European Environments and Climate during the Holocene*), headed by J. DABKOWSKI (UMR 8591, LGP, Meudon). Projected funding of the studies on the tufa sequences, which make up the bulk of the corpus of sites for this doctoral topic, in particular a large part of the dating and the geochemical analyses. The student will be encouraged to follow up other possibilities: mobility grants from the University of Paris 1, symposium subsidies from AFEQ, financial support from the LGP, application for Artemis <sup>14</sup>C dating, etc.



# Laboratoire d'Excellence Dynamiques Territoriales et Spatiales

Cluster of Excellence *Territorial and Spatial Dynamics*

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## *Inclusion in the topics studied by the WP's research laboratories*

This doctoral project on the relationships between man and his environment is central to the issues addressed by the "Environmental change and societies in the past" WP. It opens onto the research focus areas of the **two partner teams: LGP and Trajectoires**.

At the LGP, this project is linked to the research focus areas of Topics 1 & 2 ("Environmental responses to the Quaternary climatic dynamics and impact on the populations" and "Anthropization, landscape dynamics and habitat management"). The student will be working in a specialized, multidisciplinary research environment (encompassing malacology, geochemistry and geomorphology) and have access to the necessary facilities (specialized laboratories for malacology, chemistry, sedimentology and palynology). His/her main subject-matter contacts will be N. LIMONDIN-LOZOUET (Malacology) and J. DABKOWSKI (Geomorphology and Geochemistry).

This project lies within the research focus of the Trajectoires laboratory, on the history of societies from 7000 BC to 1000 BC. The doctoral student will be able to draw on the skills and knowledge of colleagues specialized in neolithization in Europe, to guide the discussion and provide a better understanding of the relationships between man and his environment in western Mediterranean protohistoric societies. The student will be supervised by F. GILIGNY.

## *National and international collaboration*

Various collaborative arrangements have been established within the research programs already in progress and during field missions in 2018: **Morocco**: J.F. BERGER (UMR 5600, EVS, Univ. Lyon), L. BOUDAD & F. SEGAOUI (Univ. Meknes), D. LEFEVRE and B. DEPREUX (UMR 5140, ASM, Univ. Montpellier 3); **Andalusia**: Dominik FAUST & D. WOLF (T.U. Dresden, Germany), J.M. RECIO-ESPEJO & F. DIAZ del OLMO (Univ. Cordoba); **Aragon**: A. LUZON & C. ARENAS ABAD (Univ. Zaragoza); **Provence**: V. OLLIVIER (UMR 7269, LAMPEA, Univ. Aix-Marseille). Contacts have been arranged with colleagues at the CSIC (Barcelona) for studying the Catalan sequence. Isotope analyses of shells will be carried out at the SSMIM (UMR 7203, MNHN) in collaboration with D. FIORILLO.

## Required skills and abilities

### *Required skills*

A Master's degree in paleoenvironmental studies, specializing in geography, geomorphology, geology, archeology or biology.

Research experience in malacological faunas or another bioindicator (determination, taxonomy).

Field experience (stratigraphy, sampling, geomorphology).

Good command of specialized software (statistics, drawing, GIS).

Ability to read, write and speak in English.

### *Desired skills*

A basic knowledge of isotope analysis methods would be a plus.



For field work, a knowledge of Spanish and/or Arabic would be appreciated.

## Additional information

<b>Contract start date</b>	Choice of 02/09/2019 or 01/10/2019
<b>Length of contract</b>	3 years
<b>Host laboratory</b>	<b>Laboratory name:</b> UMR 8591, Laboratory of Physical Geography (LGP) <b>Address:</b> 1 Place A. Briand, 92190 Meudon <b>Thesis supervisors:</b> <b>Nicole LIMONDIN-LOZOUET</b> (Director of research, CNRS – UMR 8591 LGP) & <b>François GILIGNY</b> (Professor, Université Paris 1 Panthéon-Sorbonne – UMR 8215 Trajectoires).
<b>Net monthly remuneration</b>	Approx. €1,421 (additional teaching assignments possible) <sup>1</sup> <b>Thesis registration fees are covered by the LabEx Dynamite.</b>
<b>Contact</b>	contact@labex-dynamite.com

## Recommendations for the candidates:

### Recruitment procedure and schedule:

- **The application must be submitted electronically by application form** (<http://www.form-labex-dynamite.com/doc/en/>). It must demonstrate that the candidate fulfils the requirements indicated in the position profile (specified tasks and skills).

The application will include:

- a description of the doctoral project (2 to 5 pages maximum, if more the application will be refused) indicating the theoretical basis of the research, the research-related issues, the methodology to be used, a feasibility report with a 3-years period and project schedule;
- curriculum vitae;
- transcript of higher education record for first year of masters studies (*Master 1*) and the first semester of research masters (*Master 2*);

<sup>1</sup> Depending on the host/assigned establishment.



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- a letter of recommendation from the supervisor of the research master's thesis;
- a letter confirming the forthcoming defence of the candidate's master's thesis (prior to **31 August 2019**).

It is recommended for the candidate to establish contact with the thesis supervisor in advance.

- **The deadline for the submission of applications is 8 May 2019 (inclusive).**

*For your information: When the deadline for applications has passed, the LabEx DynamiTe will contact the director(s) of the potential host unit(s) to add an agreement certificate to the application.*

- The candidates appointed following the evaluation of the applications and interviews (which will take place during the week of 24 June 2019) will be informed of the results of the application process from 28 June 2019.