Project PHYMOR

« Recent and Past hydrological variability in the Moroccan Middle Atlas »

-Participants

CEREGE : L. VIDAL (MDC, AMU), F. SYLVESTRE (DR, IRD), C. VALLET-COULOMB (MDC, AMU), N. THOUVENY (PR, AMU), K. TACHIKAWA (DR, CNRS), E. BARD (PR, CdF), C. SONZOGNI (IE, CNRS), **R. ADALLAL (PhD)**, G. JOUVE (ATER, AMU)
IMBE : B. TALON, V. ANDRIEU-PONEL
ISEM/Géosciences : R. CHEDDADI (DR, CNRS)/L. DEZILEAU (MCF, Univ. Montp.)
ISTO : E. CHAPRON (PR GEODE), A. SIMMONEAU (ATER, Univ. d'Orléans)

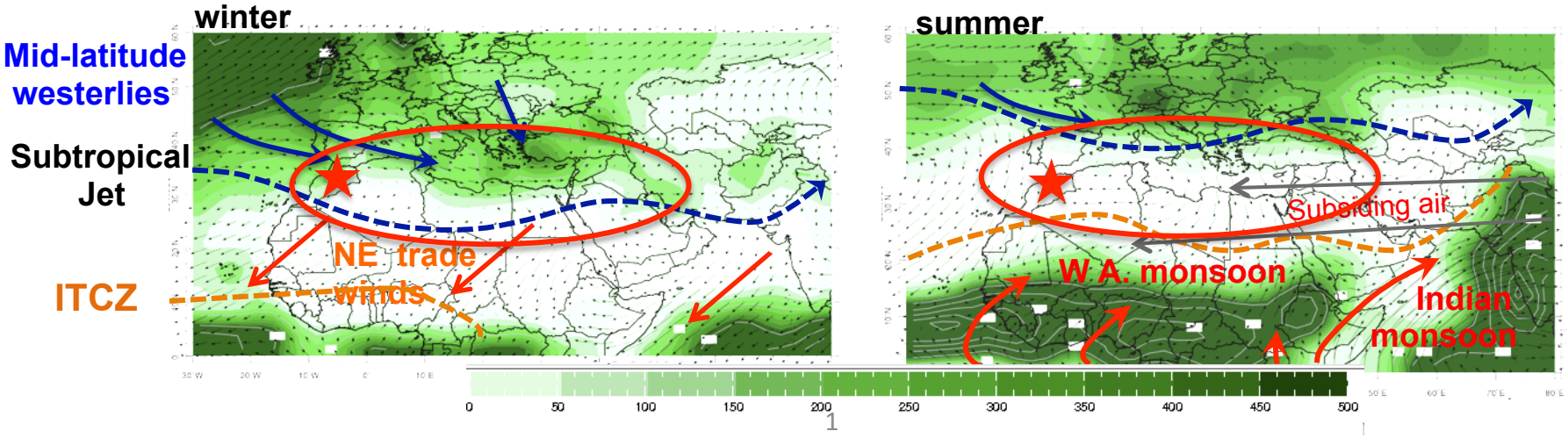
Laboratoire Géoressources :
A. BENKADDOUR (PR, Univ. Cadi Ayyad, Marrakech)
A. RHOUJJATI (PR, Univ. Cadi Ayyad, Marrakech)
Collaboration with LMI TREMA (Marrakech)

Labex support : research funding + 1 PhD thesis (started in January 2014)

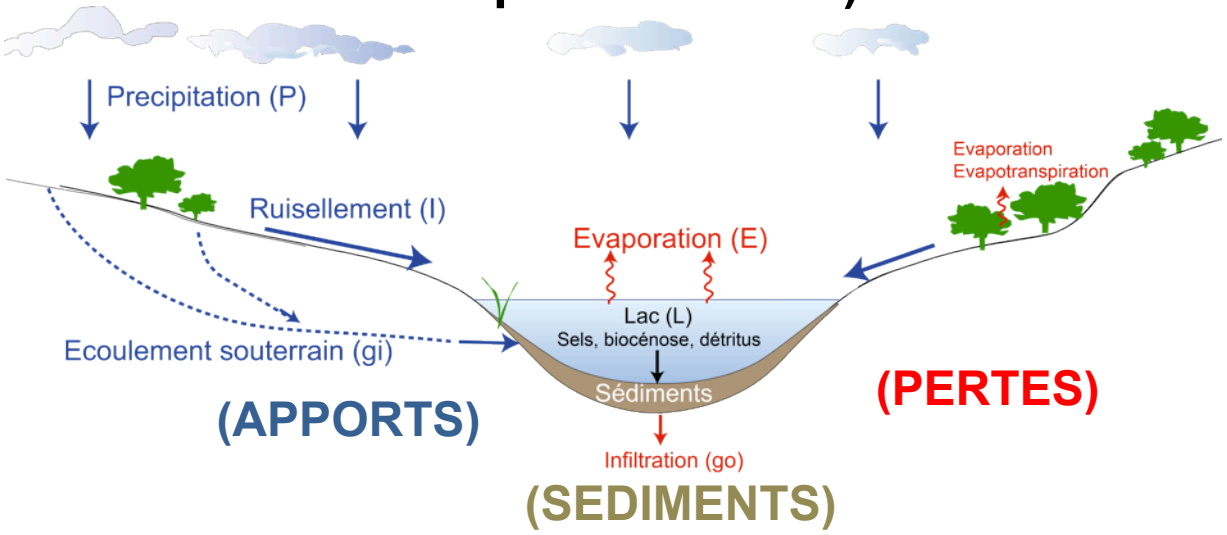
Aix*Marseille université
cnrs
IRD Institut de recherche pour le développement
GÉOSCIENCES DE L'ENVIRONNEMENT CEREGE CENTRE EUROPÉEN DE RECHERCHE ET D'ENSEIGNEMENT DE GÉOSCIENCES DE L'ENVIRONNEMENT
ISTO
UNIVERSITE CADI AYYAD MARRAKECH جامعة القاضي عياض مراكش
isem Institut des Sciences de l'Evolution-Montpellier
LGR Laboratoire des Géoressources

Motivation : general context

- Document regional/local continental hydrologic signatures



- Studying lacustrine systems (since they provide a continuum between instrumental climate data and paleo records)



Specific Objectives

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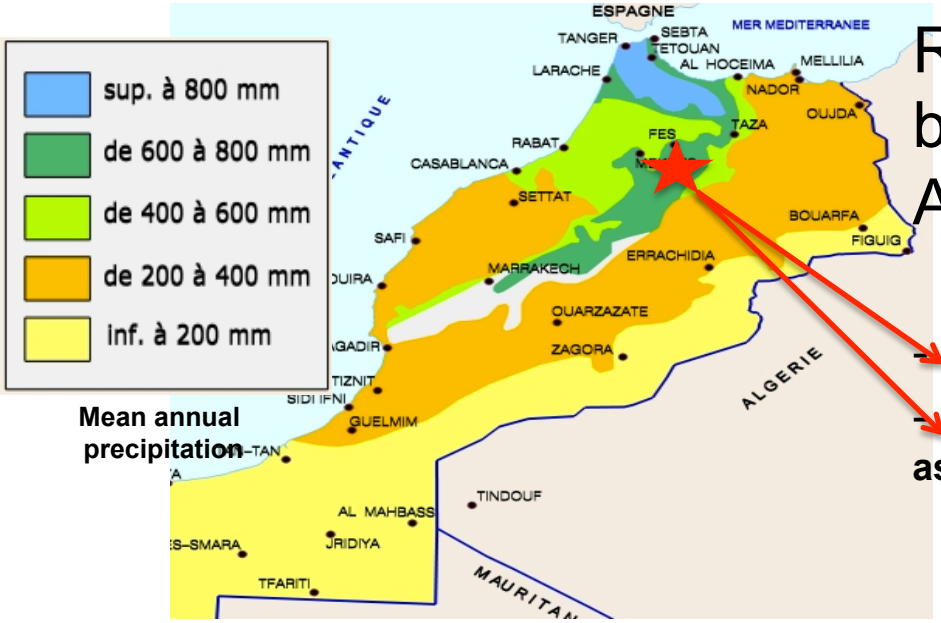
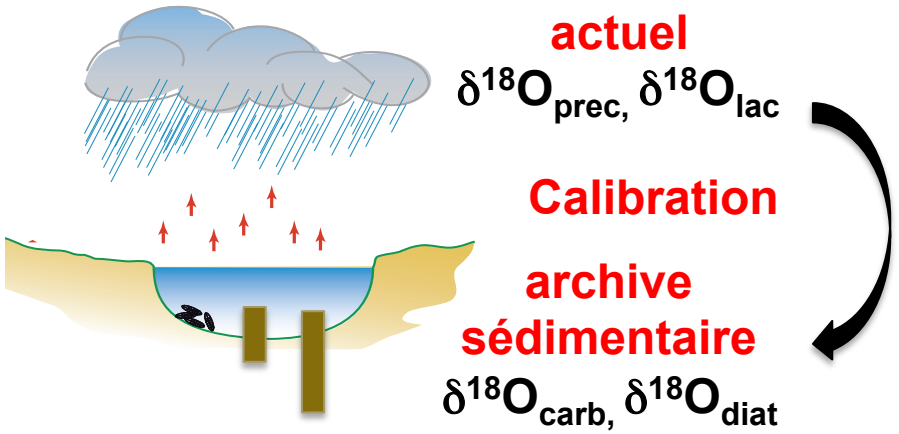


Recent and past hydrological balance in the Moroccan Middle Atlas

- Lake Azigza (32°58'N, 5°26'W, **1470 m asl)**
- Lake Tiguelmamine (32°54N, 5°21W, **1650 m asl)**



1-Modern isotopic water balance and modeling

2-Calibration of isotopic proxy as tracer of **paleoprecipitation**

3-Paleohydrological reconstructions from sedimentary archives **from the same study site**

Site monitoring at Lake Azigza
(R. Adallal, PhD Thesis)

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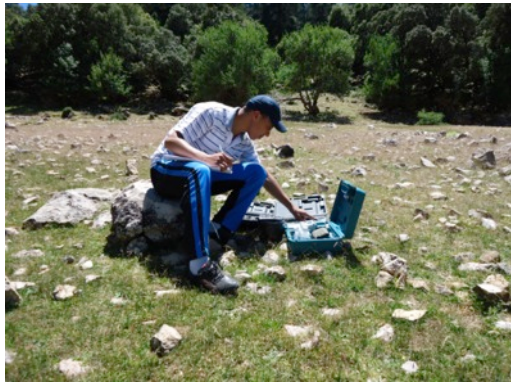
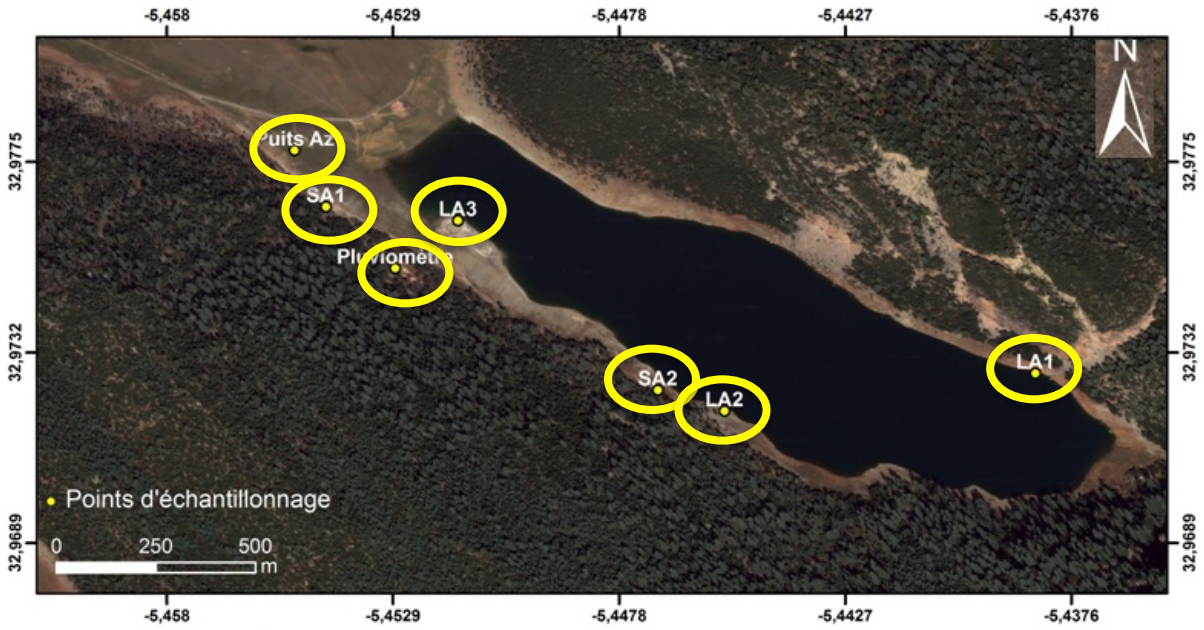
-**Monthly sampling** (since 24 months) :
Precipitations, lake water, spring and well groundwaters
-**Sediment sampling** :
(watershed, surface/interface and short cores)





Sampling location in lake Azigza.

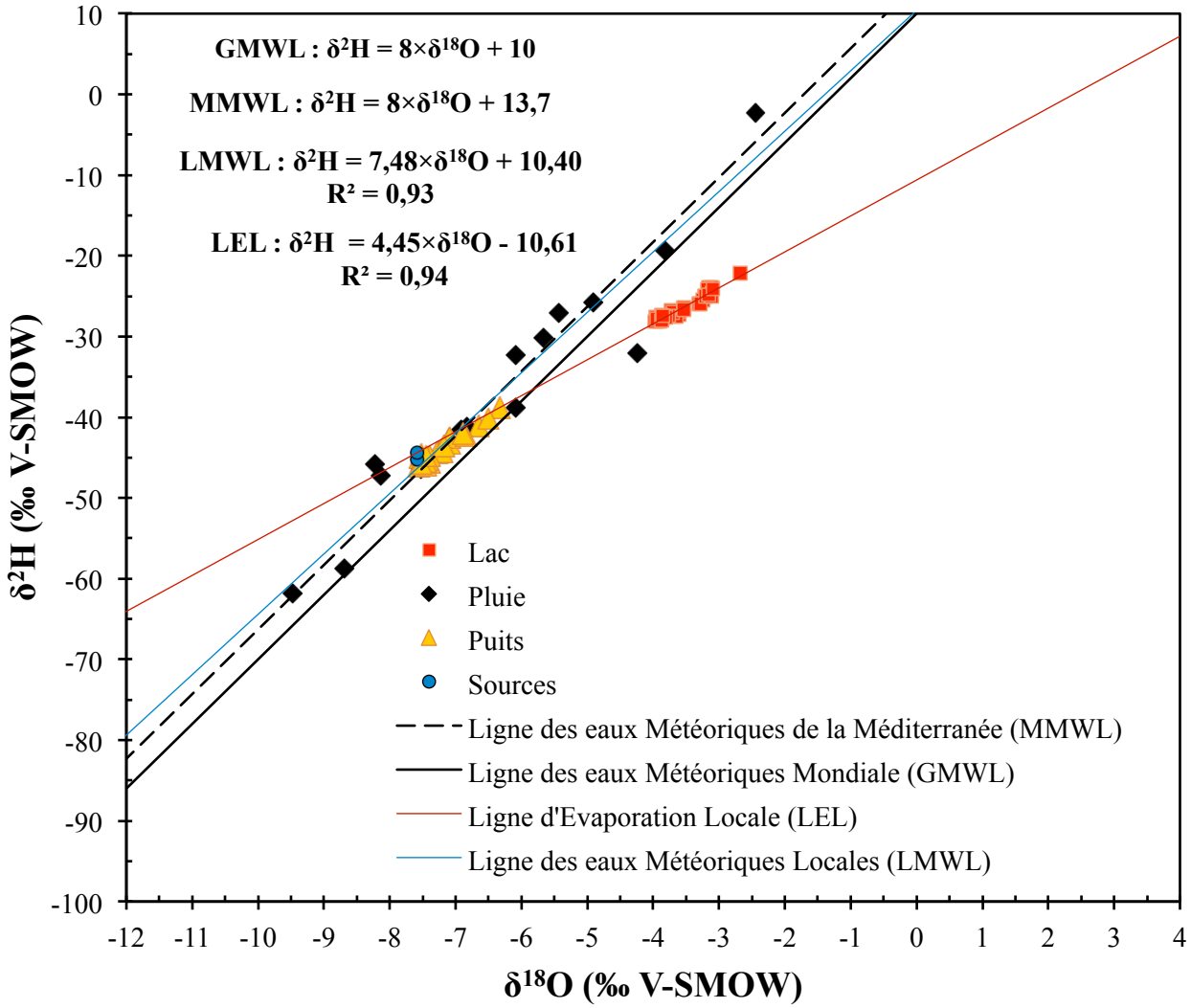
First Results :
Isotopic composition of the lake system Azigza

◆ **Main precipitation sources:**

- Atlantic ocean
- Western Mediterranean

◆ **Observations :**

- Enriched lacustrine waters due to evaporation
- Less enriched groundwaters due to fast water circulation in the karstic network



First Results : Hydrological balance

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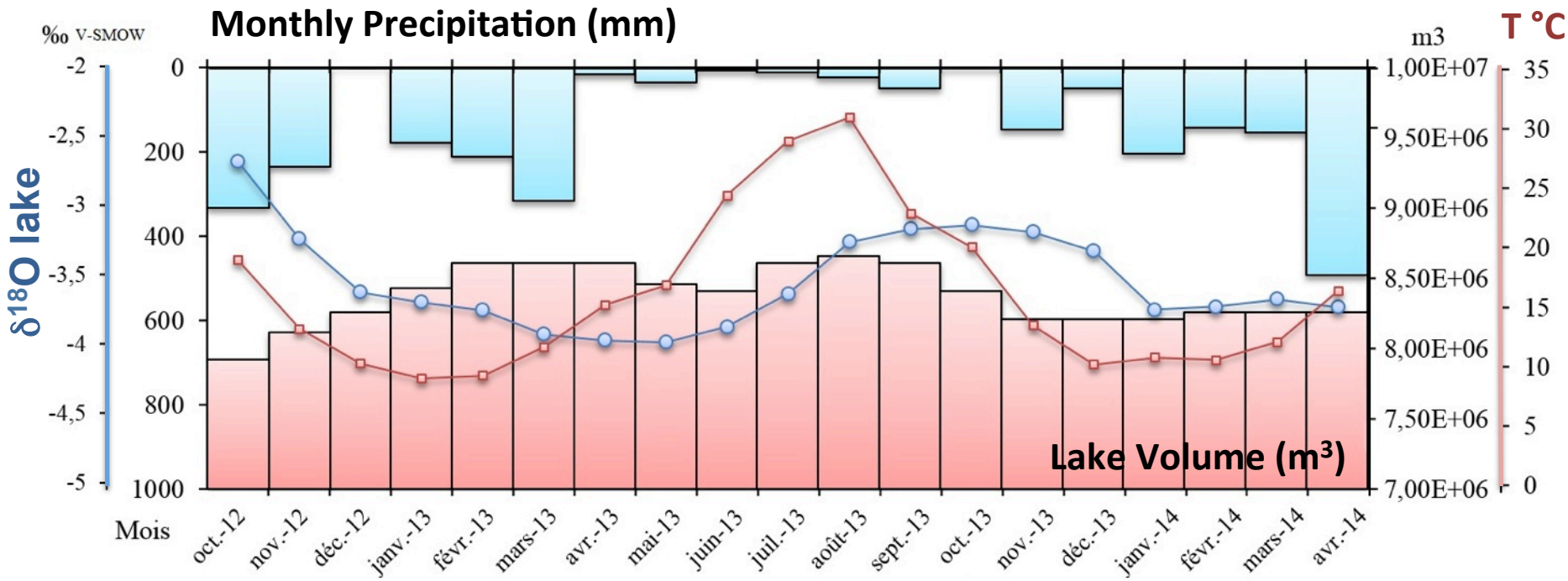
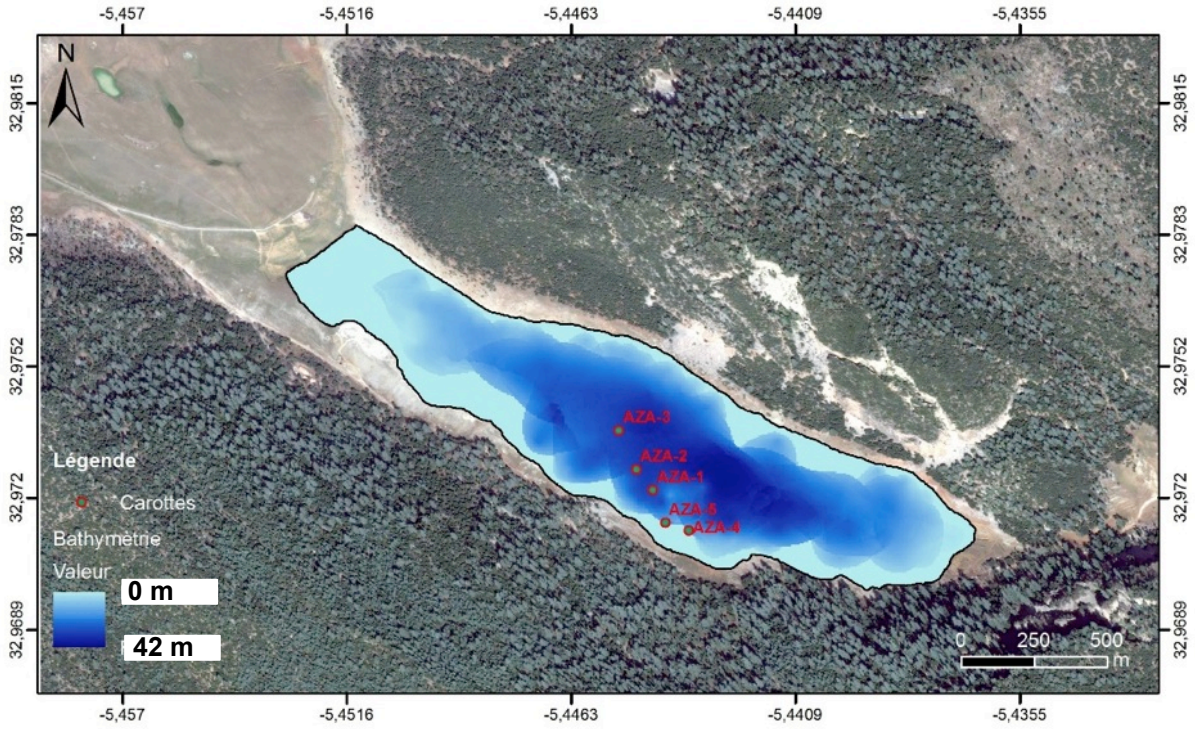


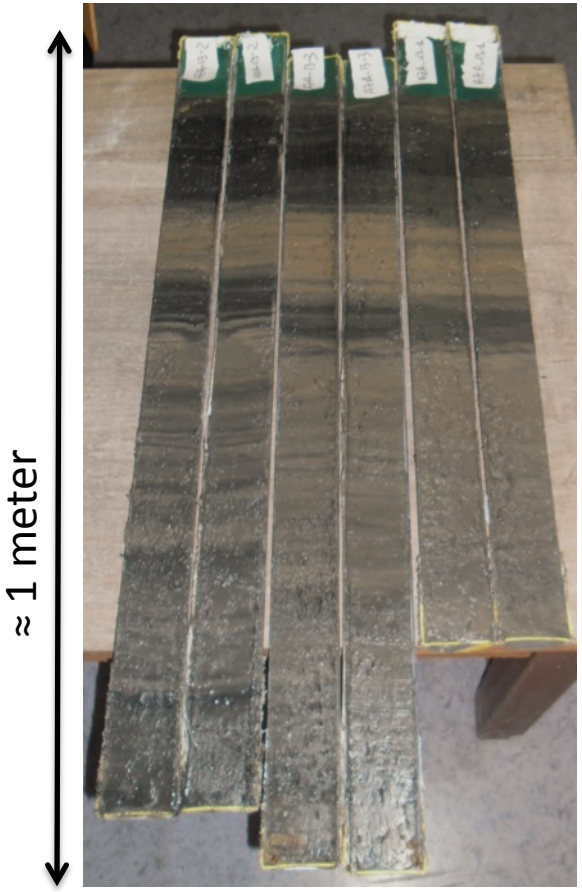
-sensitive to climate
-fast water renewal of the lake
-less than 20% of the lake water is loss by evaporation

Coring at Lake Azigza (short cores)

High potential to record recent and past hydrological variations : suitable for paleoclimate study



- Sediment core location



First results : Sediment chemical composition
XRF measurements on core AZA 13-2

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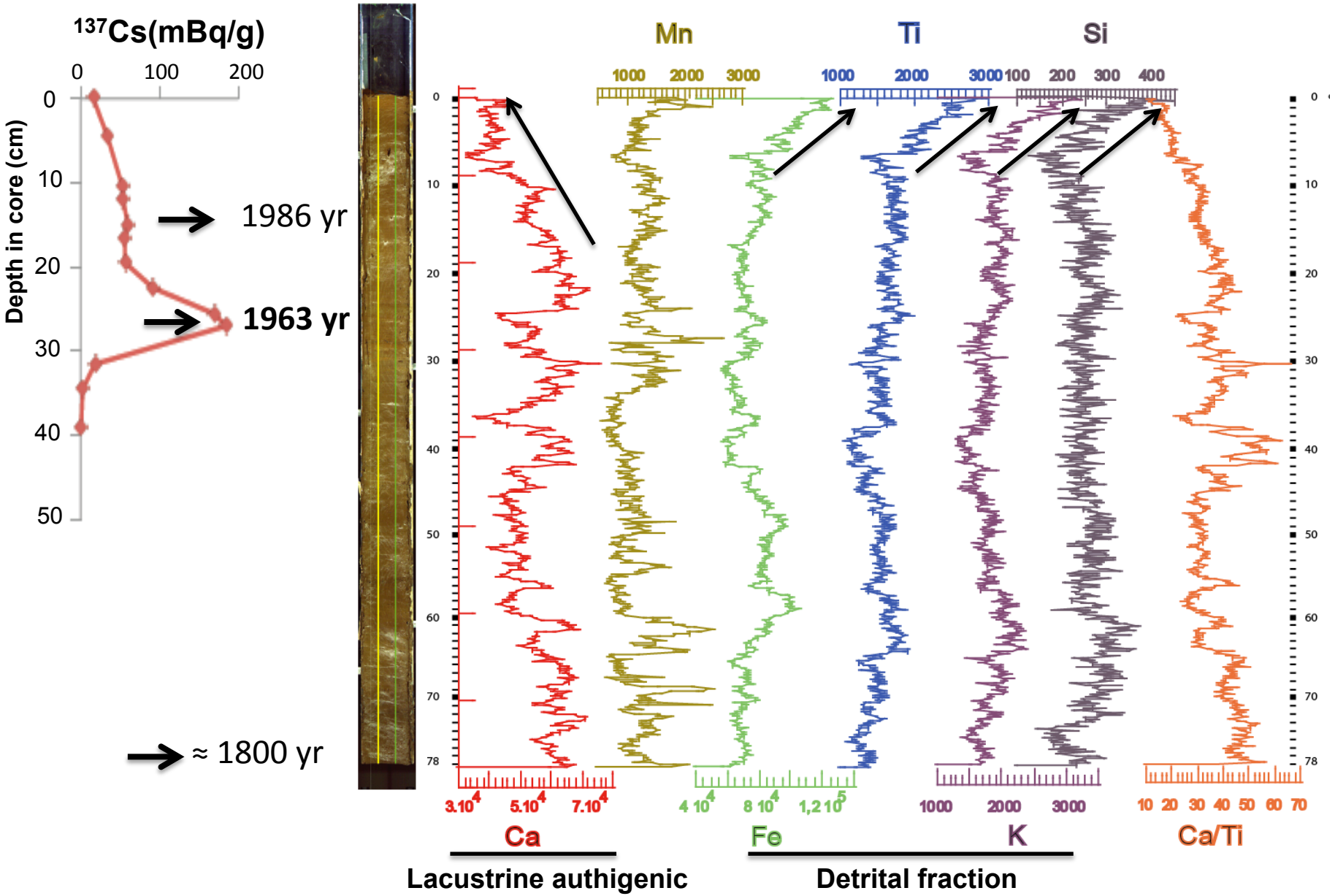


Future plans

◆ short term :

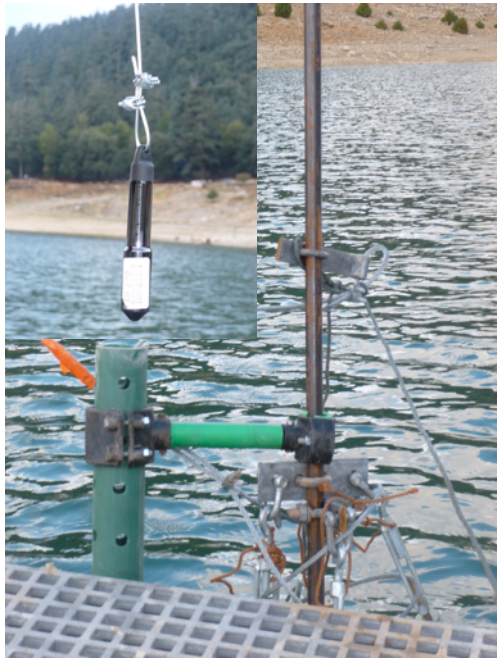
-sustain site monitoring (CTD diver, Meteorological station, sediment trap…)

-sediment coring (long cores) planed for April 2015

-cave/speleothems study (close to the lakes)

-regional climate modelling

Coord. N32°58.546' W5°27.202', 1525 masl
Start : 18/11/2014
T, h, UV, wind speed, pluviometer



CTD diver (Conductivity, Temperature, pressure gauge) (2.50 m water depth)
Start: 18/11/2014

Future plans

◆ **-Mid term :**

-PHYMOR »2» (mutliproxy study of lacustrine sedimentary Sequences) **: 30 k€, INSU-MISTRALS**

-ANR PACHA (Impact of past climates on the Atlas Cedar in Morocco and habitat forecasting) **(ISEM, CEREGE, Univ. Cadi Ayyad, Morocco) (pré-proposition submitted)**

-Project for a post-doc position for micro-scale analysis of sediments (G. JOUVE) to study extremes events deposits **(collaboration CEREGE-IMBE)**
(AMU foundation, AXA, LABEX-OT-Med)

-Establish an interdisciplinary network of competence between AMU labs and Moroccan universities to work on risks indicators (climate and non-climate related risks) as well as societal response