

2nd Alqueva Summer School on Atmospheric and Inland Water Sciences

Alqueva, 19 – 21 June 2018



Instituto de Ciências da Terra
Institute of Earth Sciences

ALOP

Alentejo: sistemas de Observação e Previsão



u  **évora**
ESCOLA DE CIÊNCIAS E TECNOLOGIA

 **IP Beja**
INSTITUTO POLITÉCNICO
DE BEJA



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DOM LUIZ**



Goals and scope

- The summer school covers a range of advanced topics in atmosphere and inland water sciences, it is directed to young scientists and graduate students in Earth and Environmental Sciences, Physics or Engineering, who wish to deepen their knowledge in atmospheric and water sciences and the interactions between lake /reservoirs and the climate.
- The School includes a 3 days intensive training period with courses by a set of international lecturers and the participation in meteorological and limnological field campaign activities.

Program

19 June

| | |
|---------------|---|
| 9:00 – 10:00 | Rui Salgado, Miguel Potes and Manuela Morais Welcome Session: Introduction to ALOP Experiment and 2 nd Alqueva Summer School. |
| 10:00 – 11:30 | José da Silva, FCUP Satellite Remote sensing over water surfaces Deteção Remota de satélite sobre superfícies de água |
| 12:00 – 13:00 | António Chambel, UE Surface water – groundwater interactions Interação águas superficiais-águas subterrâneas |
| 13:00 – 14:30 | Lunch time |
| 14:30 – 16:00 | Eduardo Morales and Helena Novais, ICT Algae and primary productivity in reservoirs Algas e produtividade primária em albufeiras |
| 16:00 – 19:00 | Field campaign activities |
| | Dinner time |

20 June

| | |
|---------------|---|
| 7:00 | Launch of meteorological balloon |
| 9:00-10:00 | Pedro Soares, IDL Regional climate modelling and future climate |
| 10:00 – 11:00 | Rita Cardoso, IDL Land-atmosphere coupling and climate extremes |
| 11:30 – 13:00 | Patrícia Palma, IPB Environmental risk assessment of pesticides in reservoirs of South of Portugal |
| 13:00 – 15:00 | Lunch Portugal – Morocco (football match) |
| 15:30 – 16:30 | Alexandre Araújo, UE The Alqueva Fault: An active tectonic structure? A Falha de Alqueva: Uma estrutura tectónica activa? |
| 16:30–19:30 | Field campaign activities |
| 20:00 | Summer school Dinner and social event |

21 June

| | |
|---------------|---|
| 7:00 | Launch of meteorological balloon |
| 9:00 – 10:30 | Florence Habets, CNRS Hydrological modeling: integrating the impact of the groundwater and anthropogenic effect at the basin scale. |
| 11:00 – 12:00 | Gianpaolo Balsamo, ECMWF Land surface modelling: representing heterogeneity |
| | Gianpaolo Balsamo, ECMWF Land surface modelling: coupling to atmosphere |
| 12:00 – 13:00 | Lunch |
| 14:30 – 15:30 | Célia Antunes, UE Methodologies for the Monitoring and Characterization of Bioaerosols: the role of lake emissions to atmosphere Methodologies for the Monitoring and Characterization of Bioaerosols: the role of lake emissions to atmosphere |
| 15:30 – 19:00 | Field campaign activities |

ALOP Project: A kind of introduction



Instituto de Ciências da Terra
Institute of Earth Sciences

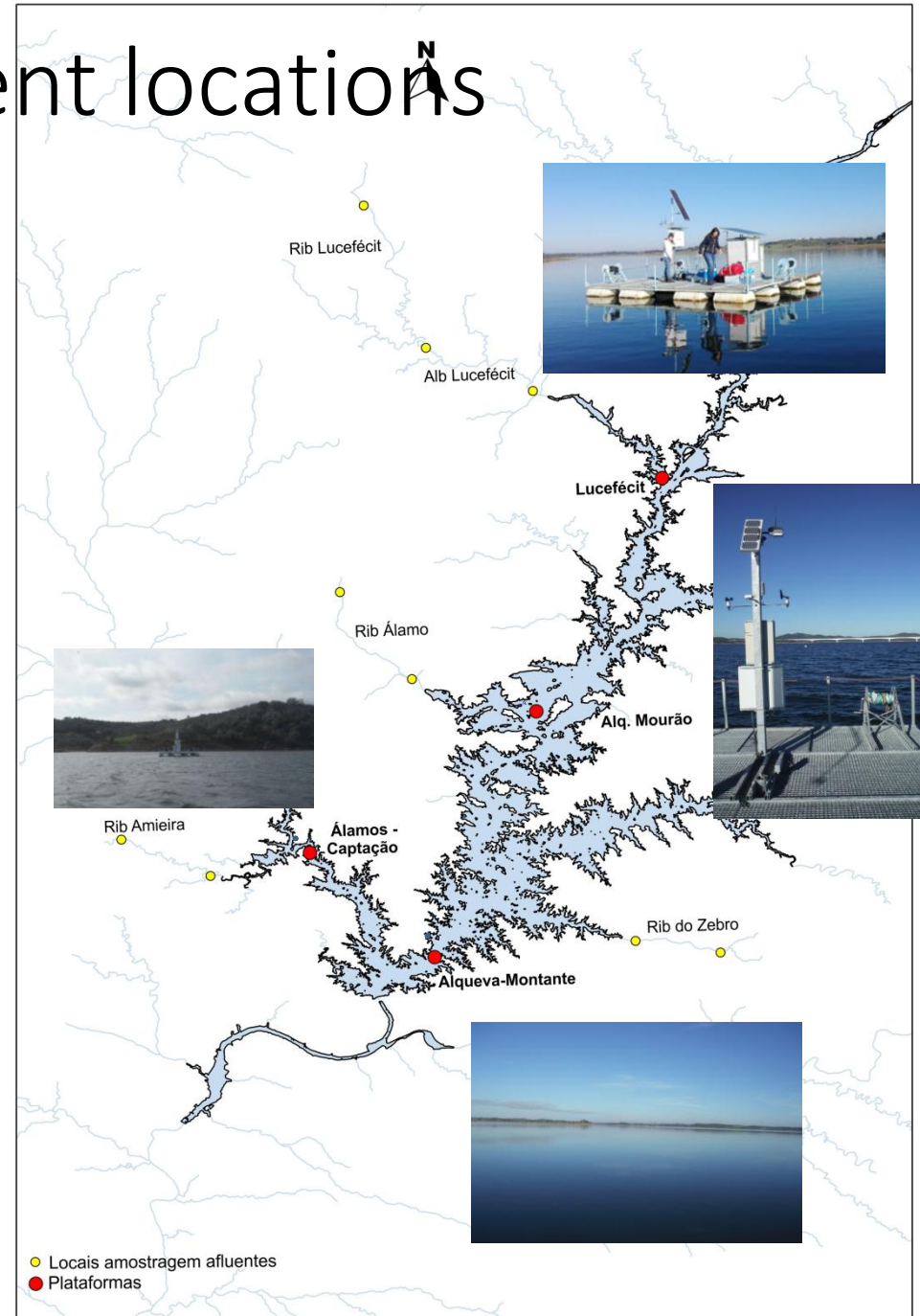


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- An ongoing project 2016 – 2020
- Observation, prediction and alert systems in atmosphere and in water reservoirs of Alentejo
- Includes an 1 Year (at least) field experiment in Alqueva
 - Continuous water thermal profiles; Radiative, Heat and CO₂ fluxes; Dissolved CO₂; air meteorological parameters at 3 stations
 - water reflectivity pH, Dissolved O₂, Conductivity, Redox, Turbidity, Nitrates, Nitrogen, Phosphates, Phosphorus, Phytoplankton, Diatoms
- Data will be available, namely to inter comparison experiments

Measurement locations

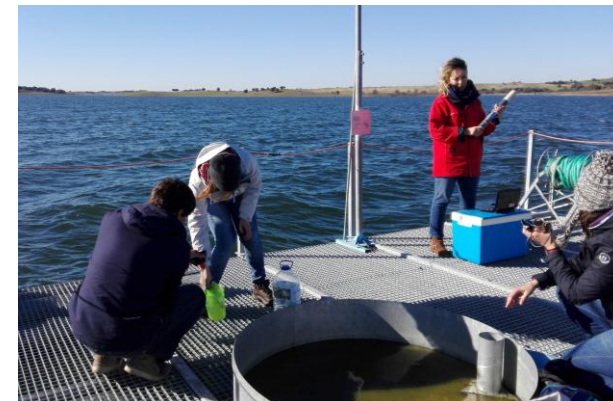
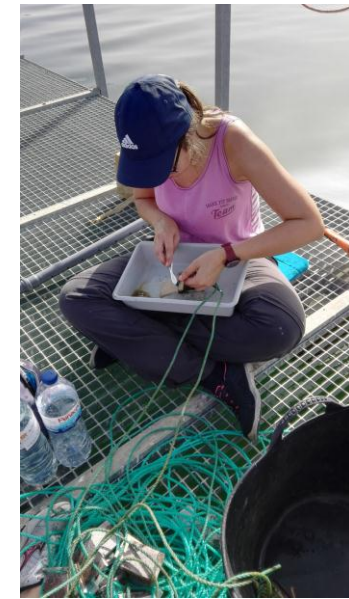
- 4 in floating platforms;
- 4 in water inflows.



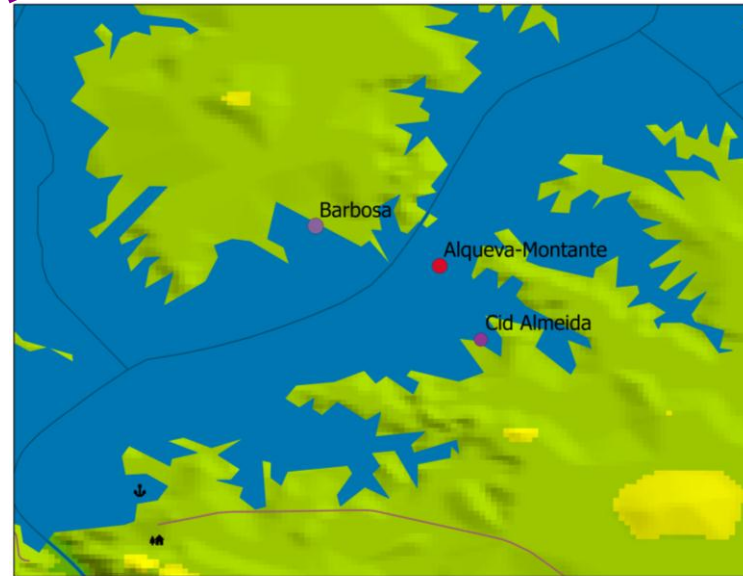
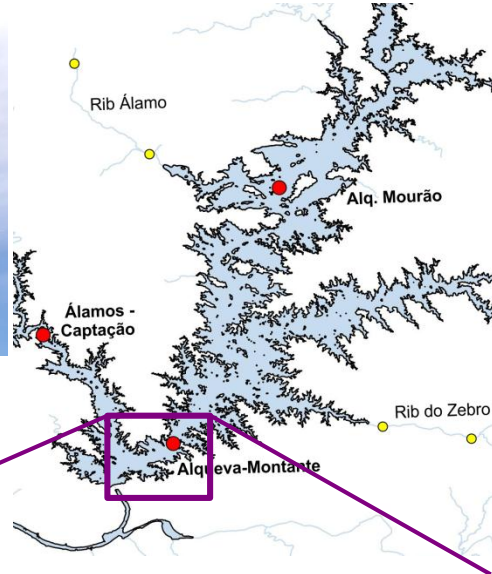
Observations in the Plataforms

- In situ: profiles of temperature; Dissolved Oxygen; pH, Potential redox, Conductivity; turbidity. Secchi disk
- Water sampling for chemical analysis
- Radiation in water
- diatomaceous.
- Sediments for ecotoxicological analysis

Observations on the platforms



Meteorological Observations



Alqueva-Montante Platform



Alqueva-Montante Platform



Continuous measurements

Fluxes of energy,
water vapor and CO_2



Solar and thermal
radiation, up and down



Water dissolved CO_2
and temperature at
diferen depths



Three Field Campaign Activities

| | |
|--|--|
| Floating Platform | Take sediments from the bottom of the reservoir (70 meters) |
| | Take a profile of dissolved CO ₂ in water |
| | Take a profile of water quality parameters |
| | Take water samples for laboratory analysis |
| | Take water samples for analysis of CO ₂ and CH ₄ with a GC |
| | Take a profile of underwater solar irradiance (until 3 m) |
| Weather station + balloon launching | Familiarize with instrumentation and data collection |
| | Measurements with Optical Particle Size (OPS) |
| | Measurements with Coriolis |
| Alqueva Fault | Visit and explanation to Alqueva Geological Fault |

Group schedule for field campaigns

| Day | Group 1 | Group 2 | Group 3 |
|----------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | | |
| Tuesday - 19 | Floating Platform | Weather station + Balloon launching | Alqueva Geological Fault |
| | | | |
| Wednesday - 20 | Alqueva Geological Fault | Alqueva Geological Fault | Floating Platform |
| | | | |
| Thursday - 21 | Weather station + Balloon launching | Floating Platform | Weather station + Balloon launching |

Safety Rules on board the Vessel

- The use of a lifejacket is mandatory for all occupants.
- The use of rubber boots is forbidden on board.
- The use and transport of flammable materials on board is forbidden.
- The use and transport of sharpened materials on board is forbidden.
- The use of sun protector creme and a hat is highly recommended.
- Wear comfortable clothes and shoes.
- Take drinkable water with you.

Schedule for atmospheric balloons

| day | hour (LT) | Organisation | School (2 persons) |
|-------------------|--------------|---------------|--------------------|
| | | | |
| Tuesday - 19 | 19:00 | Rui , Gonalo | Group 2 |
| | | | |
| Wednesday - 20 | 01:00 | Miguel, Max | |
| | 07:00 | Rui , Gonalo | |
| | 13:00 | Miguel, Max | |
| | 19:00 | Rui , Gonalo | |
| | | | |
| Thursday - 21 | 01:00 | Miguel, Max | |
| | 07:00 | Rui , Gonalo | |
| | 13:00 | Miguel, Max | |
| | 19:00 | Rui , Gonalo | Group 1 / Group 3 |

Lunch and Dinner

- Lunch and Dinner can be taken in restaurants:
 1. Artur restaurant (7€ with dish, drink and coffee or 8€ plus desert)
 2. Seara restaurante (8€ with dish, drink, desert (??) and coffee)

Summer school Dinner and Social event

Social dinner take place in Artur restaurant Wednesday (20th) at 20:00.

Organization:

ALOP project (ALENTEJO 2020, referência: ALT20-03-0145-FEDER-000004)

Doctoral Program on Earth and Space Sciences (University of Évora)

Lisbon Doctoral School on Earth System Science (University of Lisbon)

ICT (Évora Pole)

Organizing Committee:

Rui Salgado, Maria João Costa, Manuela Morais e Miguel Potes (ICT / U. Évora), Emanuel Dutra e Pedro Miranda (IDL / U. Lisboa), Patrícia Palma (IPBeja)

Sponsors:

