

THE ALQUEVA HYDRO-METEOROLOGICAL EXPERIMENT

Salgado, R.^{1,2} (rsal@uevora.pt), Potes, M.¹, Albino, A.¹, Apolinário, J.³, Barbosa, S.⁴, Bárias, S.¹, Beliche, P.⁵, Bortoli, D.¹, Canhoto, P.^{1,2}, Costa, M. J.^{1,2}, Fernandes, R.M.^{3,4}, Harrison, G.⁶, Ilhéu, A.⁷, Le Moigne, P.⁸, Lima, R.⁹, Lopes, F.⁴, Lopes, T.², Marques, J.¹⁰, Melgão, M.^{1,2}, Miranda, P. M.⁴, Morais, M.^{1,2}, Murteira, M.⁷, Nicoll, K.⁶, Novais, M. H.¹, Nunes, S.², Parrondo, M. C.¹¹, Penha, A.², Pereira, S.¹, Policarpo, C.¹, Prior, V.¹⁰, Rodrigues, C. M.², Rosado, J.¹, Sá, A.^{3,12}, Serafim, A.¹, Silva, H.¹, Soares, P. M. M.⁴, Tlemçani, M.^{1,2}, Zavattieri, A.²

¹Instituto de Ciências da Terra, Universidade de Évora; ²Escola de Ciências e Tecnologia, Universidade de Évora; ³SEGAL, Universidade da Beira Interior; ⁴Instituto D. Luís; ⁵Comissão de Coordenação e Desenvolvimento Regional, CCDR – Alentejo; ⁶Department of Meteorology, University of Reading, UK; ⁷Empresa de Desenvolvimento e Infraestruturas de Alqueva, EDIA; ⁸CNRM-GAME, Météo-France/CNRS, France; ⁹Escola Superior de Tecnologia da Saúde do Porto, Instituto Politécnico do Porto; ¹⁰Instituto Português do Mar e da Atmosfera; ¹¹Instituto Nacional de Técnica Aeroespacial (INTA), Spain; ¹²Instituto Politécnico da Guarda

ABSTRACT

The Alqueva hydro-meteorological experiment, ALEX 2014 (<http://www.alex2014.cge.uevora.pt>) was an integrated field campaign with measurements of chemical, physical and biological parameters at different experimental sites in the Alqueva reservoir and in its surrounding region. With the main purpose of studying the lake-atmosphere interactions, the ALEX 2014 took place from June to September and comprised a three days Intensive Observation Period (IOP) from 22 to 24 July.

<http://www.alex2014.cge.uevora.pt>

The ALEX 2014 Field Campaign

a. Continuous observations

During 4 months a set of continuous measurements of several parameters were performed, namely:

- the energy fluxes (radiative and sensible and latent heat), CO₂ and H₂O over the reservoir

c. Intensive Observation Period

The ALEX 2014 comprised an Intensive Observation Period (IOP) on 22, 23 and 24 of July 2014, during which:

- 18 meteorological balloons with meteorological radiosondes were launched.



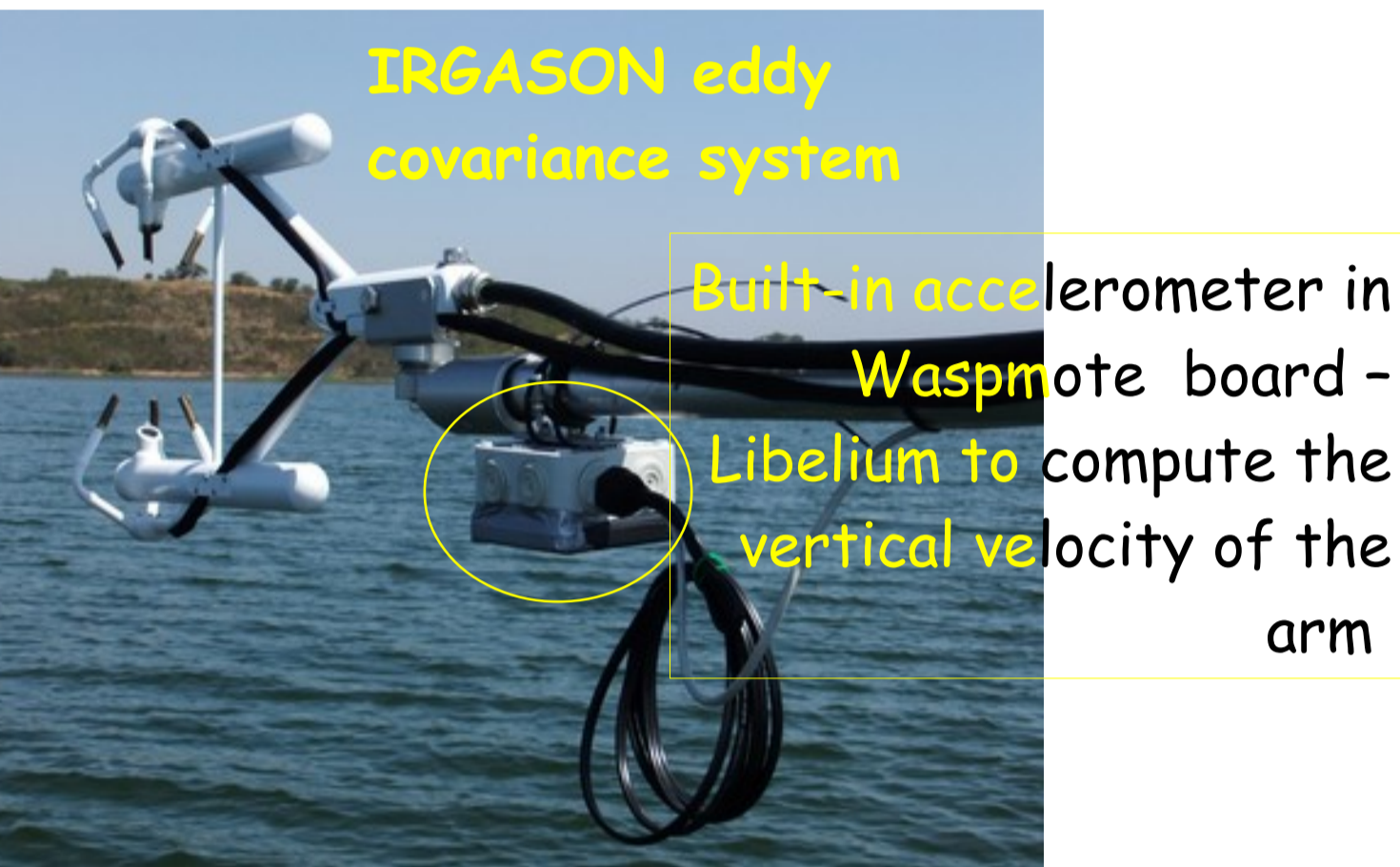
- Geiger sondes (Harrison et al., 2012) were coupled to the meteorological radiosondes in order to obtain the atmospheric ionization profile



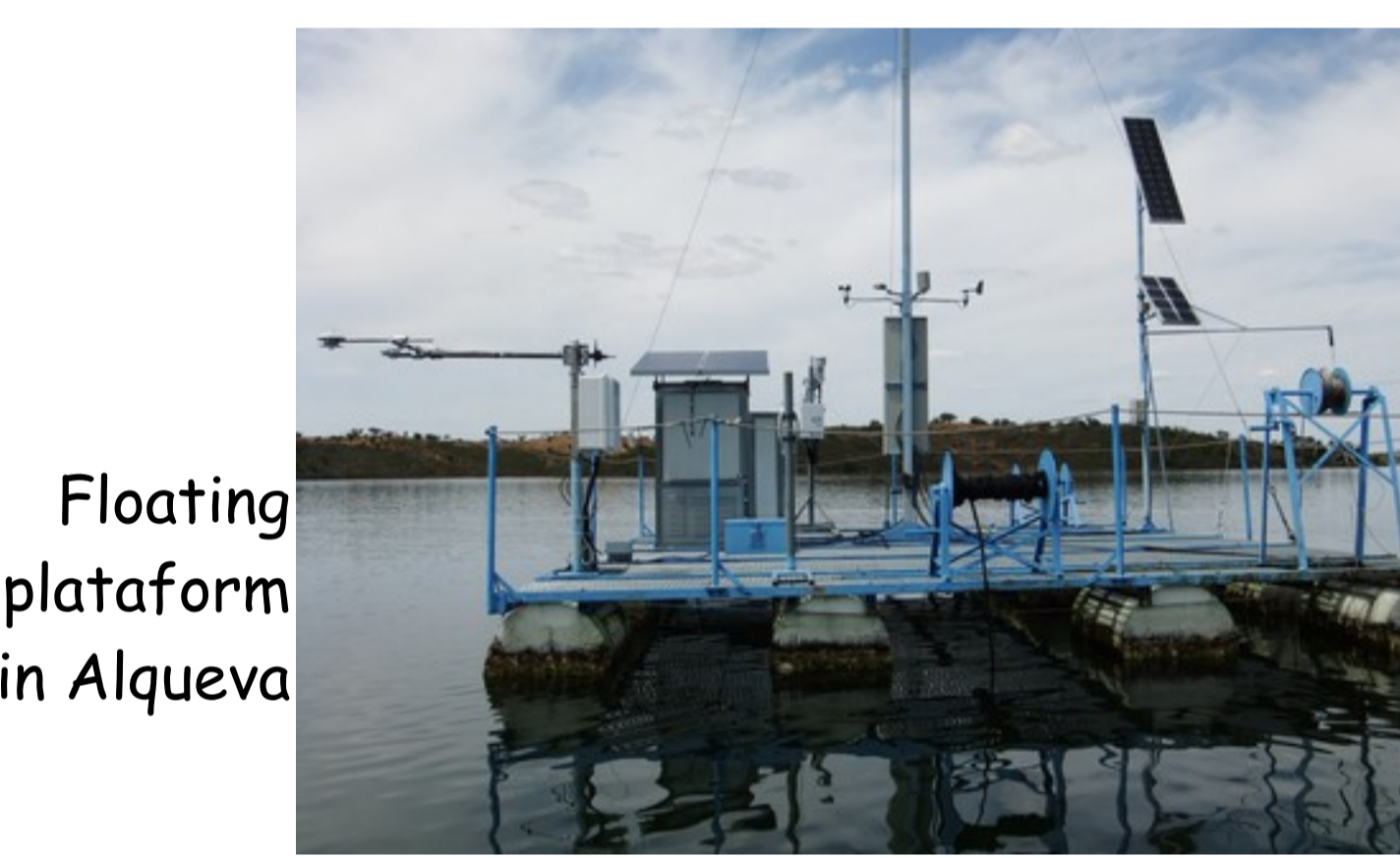
- The vertical distribution of O₃ and NO₂ were obtained by the Spectrometer for Atmospheric Tracers Measurements
- the Boundary layer were characterized with a Ceilometer



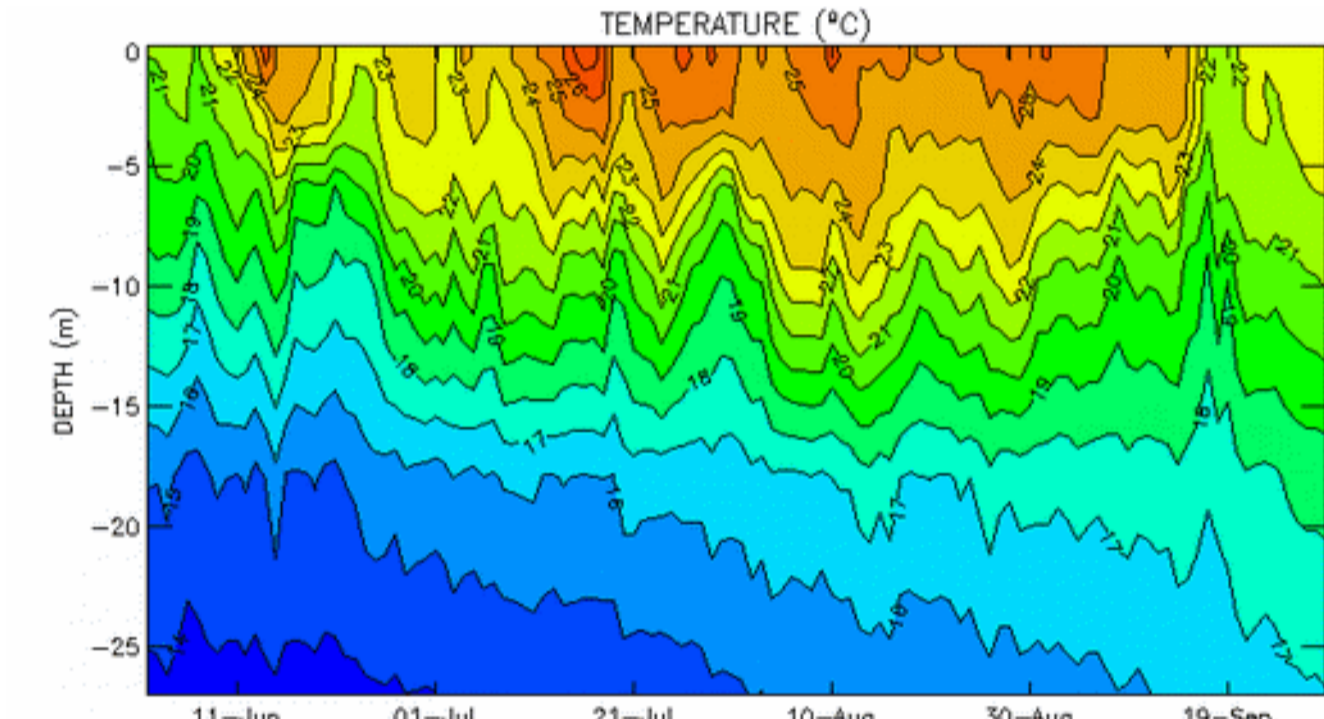
- A GPS network (15 GNSS stations) were installed in order to map the water vapor



IBGASON eddy covariance system
Built-in accelerometer in Wasp mote board - Libelium to compute the vertical velocity of the arm



- the thermal profiles of the water column



- near surface meteorological stations: temperature, humidity, wind, precipitation and pressure.

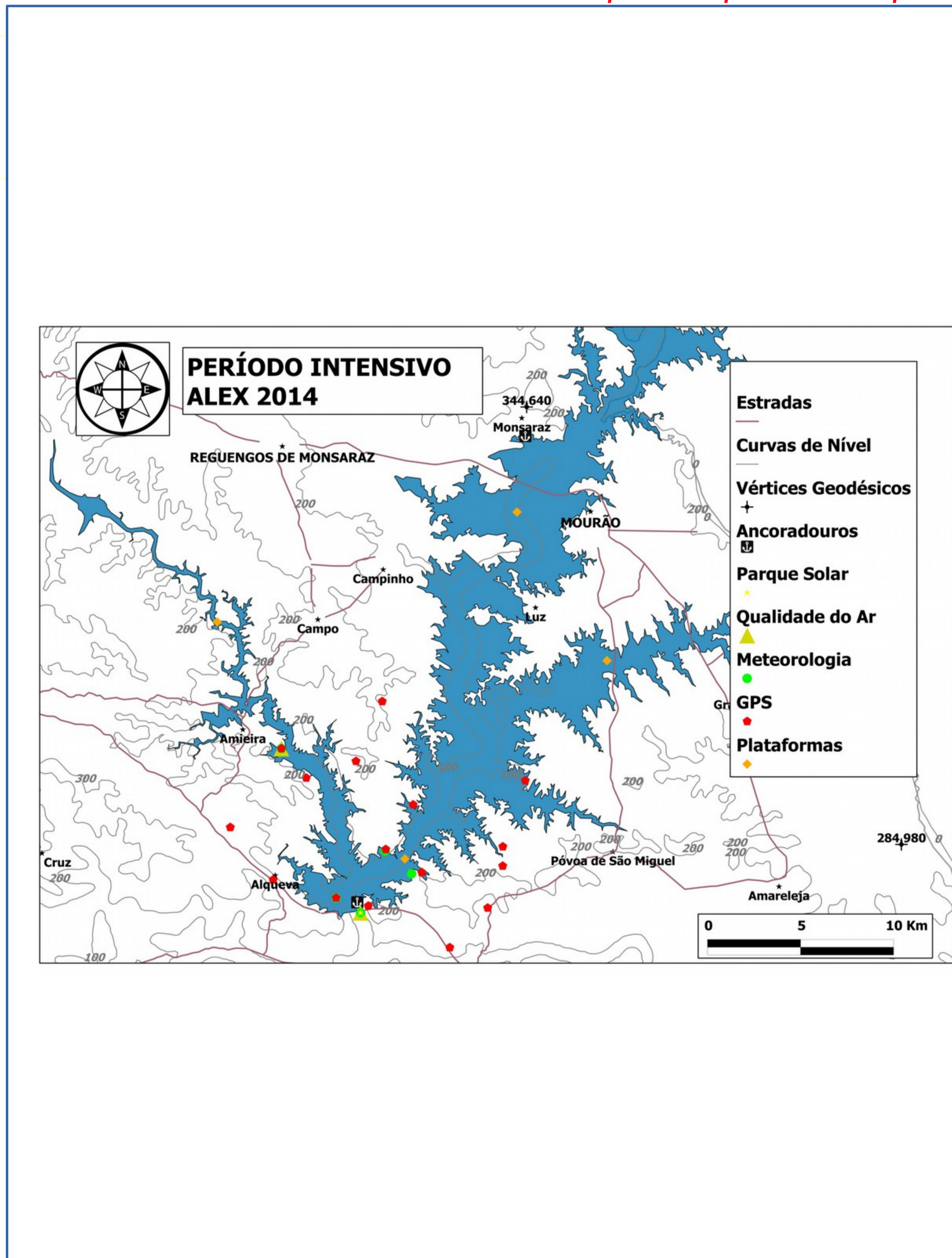


- Air quality,



- Atmospheric Electric Field sensor

- solar resource: global and direct



b. Sampling

Several observations were made on a monthly basis:

- water column profiles of dissolved oxygen (mg DO L-1 and %), pH, oxidation-reduction potential



- Biological Characterization close to lake margins



- Turbidity and the spectral irradiance at different depths

- Microscopic and molecular characterization of cyanobacteria present in different locations of the Alqueva reservoir



- Biological Characterization: Diatoms on artificial substrates in depth + planktonic diatoms in the water column



- measurements of the sky brightness with an Unihedron Sky Quality Meter



Supports

