

# The impact of climate change in Ecuador's Andean mountains

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El Cajas National Park is located in Ecuador's Azuay province.

The lakes of El Cajas National Park, located at 4,000 metres high in Ecuador's Azuay province, are the scene of fieldwork carried out by the research project ECUAFLUX, an initiative to analyse the carbon cycle

in the Andean basins of Ecuador and predict the impact of climate change on natural ecosystems.

ECUAFLUX —a pioneering project in the Andean country— will study [carbon](#) flux and its relationship with vegetation, sun and water bodies in three experimental basins of Andean mountains. It will provide valuable information to improve water management in headwater catchments that supply the city of Cuenca, a city of 350,000 inhabitants which is the third most populated city in the country after Guayaquil and Quito.

## **An Andean tree as indicator of climate change**

The project will explore the role that different elements of the natural ecosystem play in the [carbon cycle](#) in three basins of Andean mountains with some common features: They do not receive external water supplies (except for rain) and present different concentrations of dissolved and particulate organic carbon in lakes. Stands of *Polylepis reticulata* —an Andean tree which lives in [extreme conditions](#) and is one of the main agents involved in carbon fixation— make up the characteristic vegetation of the basins studied in El Cajas National Park, which has a rich lake ecosystem in a surface of 29,000 hectares.

Carles Gràcia, professor in the Department of Ecology of the UB and member of the Centre for Ecological Research and Forestry Applications (CREAF), explains that "the species *Polylepis reticulata* lives at 4,000 metres high, in an environment of permanent changing extreme conditions due to the effects of the climate change; therefore, this species is a very sensitive indicator to the [climate change](#)."

## **Promotion of scientific collaboration with Ecuador**

It is important to remember that in 2013, the UB and the University of

Cuenca signed a collaboration agreement to enhance scientific research on terrestrial and aquatic ecosystems in Ecuador. This agreement has led to an expert collaboration programme coordinated by Carles Gràcia and Henrietta Hample. Moreover, a research group on ecophysiology and forest modelling, coordinated by Professor Gràcia, was created in 2014.

Provided by University of Barcelona

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