An 18,000-year multiproxy lacustrine record of climate variability in south-central Chile (40°S): Lago Puyehue, Chilien Lake District

De Batist, M.1,* & the ENSO-CHILE Project Team


(1) Department of Geology and Soil Science, Universiteit Gent, Belgium. (2) UMR CNRS 5025/5204, Université de Savoie, Le Bourget du Lac, France. (3) Département de Géologie, Université de Liège, Belgium. (4) Instituto de Geociencias, Universidad Austral de Chile, Valdivia, Chile. (5) Geological Institute, ETH Zurich, Switzerland. (6) Institute of Astronomy and Geophysics Georges Lemaître, Université catholique de Louvain-la-Neuve, Belgium. (7) UMR CNRS 5183, Université de Grenoble, Saint Martin d'Hères, France. (8) Department of Geology, Université Gent, Belgium. (9) UEA, Universidad de Concepción, Chile.

*Email address: marc.debatis@ugent.be

SETTING AND DATA

Lago Puyehue: The Watershed

Lago Puyehue is located in the south-central Chilean Lake District, between 37° and 42°S latitude. It is an oligotrophic, temperate monomictic lake, with a surface area of 165 km². The lake is fed by several inflow rivers: Golgol, but also Lican, Pescadero; and an outflowing river: Pilmaquen. It has a complex morphology with 3 main basins, underwater moraine ridges and islands. The lake has an altitude of 130 m and a precipitation rate of 2000 mm/yr in the lake to 5000 mm/yr in the upper part of the drainage basin. It has a homogenous to laminated (varved) sedimentary sequence. The lake is characterized by a period of 2.4, 3.0 and 4.4 years, which are typical QBO (Quasi-Biennial Oscillation) periods at 90% significance level or period at 90% significance level or period at 90% significance level. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

The lake is mainly fed by the Pilmaquen River, which carries meltwater from the Llanquihue glaciation. The lake is also fed by several inflow rivers, including the Golgol and Lican rivers. The lake has a complex morphology with several basins, underwater moraine ridges, and islands.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.

THE LAST 600 YEARS

The last 600 years is a period of significant climate variability in the region. The lake has a laminated varved sedimentary sequence, which indicates a transition from a cool, wet period to a warmer, drier period. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature. The lake has a significant QBO influence on its Seasonal Temperature and Mean Air Temperature.