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Saulo Rodrigues-Filho German Müller

# A Holocene Sedimentary Record from Lake Silvana, SE Brazil

Evidence for Paleoclimatic Changes  
from Mineral, Trace-Metal  
and Pollen Data

With 29 Figures and 11 Tables



Springer

## Authors

Dr. Saulo Rodrigues-Filho

Geochemist

CETEM/CNPq, Centro de Tecnologia Mineral

Rua 4, Quadra D. Cidade Universitaria, 21941.590 Rio de Janeiro, Brazil

Prof. Dr. Dr. h. c. mult. German Müller

Ruprecht-Karls-Universität Heidelberg, Institut für Umweltgeochemie

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To Andréa Vilhena and Júlia and Pedro Vilhena Rodrigues

## **Preface**

In 1950 Martin Schwarzbach from Cologne University published a remarkable book „Das Klima der Vorzeit,, followed by the second (1961) and third (1974) edition and an English version „Climates of the Past,, (1963), tracing the historical evolution of the earth's climate since Cambrian time.

The catalytic effect of his book was enormous and encouraged worldwide research with the development and application of new methods, to mention only isotopic methods to reconstruct paleotemperatures.

During the past two decades the climate question has become a new *ecological* dimension: Will the „greenhouse effect,, related to the combustion of fossil fuels, influence our *present* climate? Will it remain as it is, will it become colder, or will it become warmer? And: how rapid will a change occur (if it occurs at all!)? Studies on paleoclimatic development to-day concentrate on Pleistocene sediments and on ice cores deposited during and between glacial transgressions and on post-glacial sediments laid down during the Holocene.

The present study is an example of a sediment series in a lake formed some 10.000 years ago in a now tropical climate. Already by vision four different sediment types can be recognized which represent four paleoenvironmental zones. Mineralogical-sedimentological, geochemical and palynological investigations permit the establishment of a general climatic change from grassland to savanna type vegetation and a period of stronger rainfall leading to the present-day semideciduous forest.

The study is also an example for a multidisciplinary approach which permits the connection of sediment data with the weathering and erosion history in the catchment.

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