

COBECORE

Congo basin eco-climatological data recovery and valorisation

Contract - BR/175/A3/COBECORE

Summary

Context

The Congo Basin rainforest, the second largest on Earth, covers more than 600 million ha. The rainforest stores up to 66 Pg of carbon and is a persistent carbon sink (0.34 Pg C yr⁻¹). The African rainforests also contribute significantly to GDP through the forestry sector, with most foreign export directed to Europe. Despite this relevance, predictions regarding forest resilience under challenging climate scenarios remain uncertain, in part due to a lack of long-term data to provide the necessary climatological and ecological context for current research in the Congo Basin. Much of the necessary baseline information is available in historic paper archives from the colonial era, yet this data is practically inaccessible for contemporary research reliant on accessibility through digital data repositories.

Objectives

The COBECORE project aimed to establish baseline measurements necessary for long-term (retrospective) ecological and climatological research through the recovery and valorisation of unexplored historical data collected in the Congo Basin by Belgian scientists during the colonial period. The project generated three main data streams through the completion of its four objectives:

- (1) data recovery of the historical climate record for the central Congo basin;
- (2) historic metrics of forest structure through digitization of aerial photographs;
- (3) data recovery of historic leaf traits from herbarium specimens; and
- (4) data integration and dissemination.

Conclusions

Through the development of a multi-faceted database, COBECORE contributed to the digital accessibility of the analog archives of the Institut National pour l'Etude Agronomique du Congo Belge (INEAC), in addition to extracting eco-physiologically relevant plant traits from historical herbarium specimens. The COBECORE project implemented state-of-the-art digitization techniques, including machine learning, citizen science and several European collaborations, resulting in practical insights for future digitization projects, outreach for secondary schools and public interest, and numerous publications in A1 scientific journals. The data recovered during COBECORE continues to inspire new research opportunities and remains a valuable reference for contemporary research.