

PASTECA

Historical aerial Photographs and ArchiveS to assess Environmental Changes in Central Africa

DURATION
15/12/2016 – 15/03/2021

BUDGET
597.560 €

PROJECT DESCRIPTION

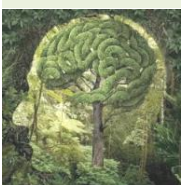
The conversion of natural lands into human-dominated landscapes is a major component of global environmental change. This conversion has been substantial during the past few centuries, but dramatically accelerated during the last decades and is expected to continue. This human-induced transformation of environments can have impacts for example on biodiversity, climate and land surface feedbacks, soil and landscape degradation, and also alter ecosystem services. Assessing the processes of land use and land cover (LULC) changes and possible future scenarios is of paramount importance if we are to embed sustainability in development strategies, ecosystem management, and land use planning, particularly for developing countries where rates of LULC changes are highest.

To quantify and understand the complexity of changes and subtle modifications in LULC, an accurate account of past LULC conditions and recent changes over a multidecadal time scale has an important added value. However, sufficiently long, multidecadal records of LULC changes are almost inexistent for the least developed areas of the globe. Here we propose to make use and valorise the Royal Museum for Central Africa (RMCA)'s unique collection of historical black and white aerial photographs over the entire DR Congo, Burundi and Rwanda. These photographs are an important but hitherto poorly exploited archive that has the potential to reveal key information on the state of the environment in that region of Central Africa at the mid of the 20th century. Additionally to these photographs, archives such as relevant maps also available at RMCA (rural cadastre, urban cadastre, etc.) can provide supplementary information on historical LULC.

The general objective of the PASTeCA project is to evidence the importance and the added value of archive documents in studies addressing present day issues in areas lacking baseline studies. In the present case, aerial photographs and archives from RMCA will support present day environmental change studies in target tropical environments of Central Africa. The focus of the environmental topics relies on the spatio-temporal dynamics of LULC changes. The project deals with land occupation and demography, land degradation, slope processes, geohazards, and geomatics and remote sensing issues. The first specific objective is to produce geolocalised digital products of the historical photographs and archives that can be used for LULC studies in general. The second specific objective of this project is to explore the causes, impacts, scales and trends of the LULC and its changes in the context of environmental degradation with the help of these digital products. The third specific objective is dedicated to improve accessibility of digital products derived from historical photographs, archives and LULC changes for both the international scientific community and the public at large to foster their exploitation.



LULC and its change along Ruzizi river - DRC - Rwanda border - May 2013



PASTECA



Urban sprawl on landslide slopes - Bukavu - May 2013

In order to carry out the project in the most efficient way, research is focused on a well-defined study area located in the tropical mountain environments of the western branch of the East African Rift. The region of interest extends from the North Tanganyika rift zone in the south to the Virunga Volcanic Province in the north. Its LULC evolution is very interesting to study because of the combination of various natural and human characteristics (i.e. high population densities, border between three countries, diversity in landscape, recent land degradation, various conflicts, urban sprawl, numerous occurrences of landslides, very active volcanoes, etc.). For the region of interest, most questions related to LULC and the changing environments remain unclear and research outputs will be directly relevant to society. It is hoped also that the new knowledge that this project will bring will not be limited only to a local and regional perspective. It is expected that PASTECA brings insight of the core basics that explain the studied environmental processes in general so that it serves for other assessments in many other places too.

CONTACT INFORMATION

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LINKS

<http://pasteca.africamuseum.be/>