RECONSTRUCTION OF PRECIPITATION CHANGES IN CENTRAL AND SOUTH AMERICA DURING THE LAST 2000 YEARS AND THE INFLUENCE OVER CIVILIZATIONS

Soares, J.H.F

Universidade Federal de Ouro Preto, Minas Gerais, Brasil / Durham University, United Kingdom

Central and South America were scenario to some climate changes during the last two millennia. Changes in precipitation were analysed from different sources and counter maps were made to show the evolution of precipitation during the last 2000 years in Latin America. Data from different sources including oxygen isotopes from foraminifera, titanium present in constitution of speleothems, percentage of different grain sizes of sediments, grey scale and colours of lake sediments and others were collected from articles in the site of National Centers for Environmental Information (NOAA). All these data were worked in comparison parameters to make the counter maps and trace the evolution of precipitation over the continent. With all the information brought by the maps, it was able to interpret some climate changes and compare them to development of civilizations that lived in this area during this period. Climate changes were responsible for many impacts in society and ancient civilizations. In Central America, there was a drought around 200 AD responsible for an impact in Maya civilization. They could recover themselves, and the cities that were abandoned started to be populated again. However, about 900 AD a bigger drought happened causing the entire collapse of Maya civilization. In South America, we could find some Andean civilizations that were also impacted by climate changes, but in a different way. The Wari Empire, predecessor of Inca Empire, rose in a dry condition, which was responsible for a period of political conflict and warfare increase around 600 AD. The same event was responsible for the Wari collapse some centuries later, once they could not sustain themselves in such stressed conditions. After Wari collapse the Inca Empire started to rise in a period with more humid conditions before 1400 AD. Afterwards the Inca Empire conquered large areas in west of South America and became the biggest Empire in Pre-Colombian America. The modern world civilization is also modelled by climate changes. The humankind has the power to change and affect directly the climate on Earth, and the driest scenario, during the last 2000 years, started after 1800, when the civilization in development started the intense industrialization. The actual population is responsible for injecting anthropogenic aerosols into atmosphere, which causes changes in tropical circulation and reduction of precipitation. This process, intensified by industrialization, is also responsible for change in the ITCZ position, which affects directly the climate in Central and South America. Today we have technics and processes that allow us to live in conditions that have collapsed ancient civilizations. However, the climate changes that humans are causing is getting bigger, affecting every society in a global scale. Even though our technics have evolved to support stressed environments, we still can be affected by huge climate changes.

KEYWORDS: PRECIPITATION, COUNTER MAPS, PALEOCLIMATE