Holocene paleoclimate reconstructions from belgian continental archives

MOHAMMED ALLAN[1,], SOPHIE VERHEYDEN[2], MICHEL CRUCIFIX[3], NATHALIE FAGEL[1]

[1] AGEs, Département de Géologie (ULg) Sart-Tilman, Liège, Belgique, mohammedallan@outlook.com

[2] Service Géologique de Belgique, IRSNB, Jennerstreet 13, 1000- Brussels, Belgium, sophie.verheyden@belspo.be

[3] The Georges Lemaître Centre for Earth and Climate Research (TECLIM), Earth and Life Institute (UCL) Place Louis Pasteur, 3, Louvain-la-Neuve, Belgium, michel.crucifix@uclouvain.be

Speleothems and peatbogs presented in Belgium are interesting archives for atmospheric pollution record and climate variability. Both archives are reliable continental environmental archives of high interest due to their dating possibilities and their possibility to preserve multi-proxy records of environmental and climatic dynamics. Combining studies on speleothems and peatbogs from the same area will provide an age-constrained reconstruction of climatic variability at annual resolution for key intervals of the Holocene. The reconstructed precipitation and temperature curves in NW European settings, as proposed in HOPES, are essential to better constrain the Northern Hemisphere climatic record and to test climate models. Our strategy is derived from a comparative study of two continental archives speleothems and peatbogs. Time series of elemental and stable isotope geochemistry will be established for the 2 archives. For peatbog, the reconstructions of temperature (derived from stable C and O isotope), precipitation (derived from humification) and dust flux (from elementary geochemical signature) would track climate changes with subdecadal resolution. As an innovative part, Laser Ablation analyse of elemental geochemistry on impregnated peat section will allow to reach an annual resolution in the dust flux. For speleothems, records of temperature (derived from oxygen and carbon isotopic composition of calcite) and effective rainfall (derived from geochemical ratios) would reach a seasonal resolution.