



CLIMCOR: a 7 year project to develop new generation of drilling/coring tools for the French and international scientific communities

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Fundamental paleoclimatic data, being geochemical or geophysical, cannot be recovered without sophisticated technological equipments to retrieve top quality records. But after the initial revolution of the 80s and 90s in paleoclimate science and technology, it is now time to launch a new generation of technical equipments and approaches on various paleoclimate archives. The increasing complexity of the mechanisms to decipher in climate models render mandatory to improve not only the quality, but also the temporal and spatial coverage as well as the range of proxies acquired in paleoclimate archives. One key objective is notably to access high quality data and high-resolution records that could extend their temporal coverage further back in time, in more contrasted climate conditions than the last two millenniums or the Last Glacial Maximum, so that the calibration of the Earth system models could encompass a larger range of boundary conditions.

The available drilling/coring equipments in France did not allow such important jump in the quality of the data, and therefore in the knowledge of past climate variations at extremely high resolution.

A preliminary initiative named C2FN (Centre de Carottage et de Forage National, <http://c2fn.dt.insu.cnrs.fr/spip/>), supported by CNRS, at the National Institute of Earth Sciences and Universe (INSU), gathered the present coring equipments located in labs, at the technical division of INSU or on oceanographic vessels, under a joint official umbrella, aiming at coordinating the different efforts conducted in marine, ice and continental drillings.

The 7-year CLIMCOR project (<http://climcor-equipex.dt.insu.cnrs.fr/> 17.68 M€ funded by the national program on equipments of excellence) intended to support this effort by providing the French scientific community with top-notch technological support for the new generation of drilling/coring tools and for an upgrade of the Marion-Dufresne vessel capacity to collect oceanographical data as crucial complements of paleoclimatic data. Beside paleoclimatic reconstructions based of both ice and marine sediment coring, there is an urgent need to improve our understanding of the role of oceans in the current climatic machinery at the global level. With its oceanographical fleet and the skill of its marine researchers, France is a major actor in this scientific field, providing for example key contributions to IPCC and other international bodies involved in climate change issues. Last but not the least, while developing new coring facilities, CLIMCOR also developed a new database, a cyber repository, to properly archive the upcoming data obtained from the cores retrieved with the new equipments.

CLIMCOR will increase the competitiveness of the French paleoclimate and marine science community at the international level. It will contribute to bring key constraints on the possible range of future climatic evolutions, thus meeting societal and policymaker requirements. The technological developments aimed by CLIMCOR have resulted in new patents. Furthermore, while the C2FN infrastructure gathers renowned engineers in their respective fields, strong interactions with French companies are a daily routine for them. Our presentation is showing the completion of the different developments achieved in the various coring activities for the benefit of the French and international communities.