

**“MISSION TO ROCHECHOUART”: DRILING PROJECT AND COLATERALS.**

P. Lambert<sup>1</sup>, J.L. Allard<sup>2</sup>, and J.M. Rougier<sup>3</sup>. <sup>1</sup>Sciences & Applications, Bd Albert 1er, 33800 Bordeaux, France. E-mail: lambertbdx@numericable.fr., <sup>2</sup>President, Communauté Communes Pays de la Météorite, F87600-France, <sup>3</sup>Mayor, Mairie de Rochechouart, F87600-France.

In 2008 the French Government acknowledged the National heritage value of the Rochechouart impact structure establishing it as protected area in the scheme of National Natural Reserve (NNR). Late 2013, NNR endorsed the ambitious project to drill the crater and make the material available to the Scientific Community. Excepted for “scale”, aims and rationale are not that different from past sample return missions to the Moon and future ones on Mars. Our LEM (or Martian rover) is replaced by a mobile drilling unit, Saturn V by a 4 wheel drive truck, and the curatorial office at JSC by a storage building, plus some equipment and expert knowledge on site in a small dedicated “Research Center” comparable to “ZERIN” at Ries. The latter will be established by the same local authorities in charge of the NNR, co-authoring the abstract. Of course target size, scientific spin off and investments are considerably more modest than for missions to the Moon and Mars. Yet the cost/scientific benefit ratio is really competitive if not unbeatable because of accessibility. Beyond geographical proximity, both the complete sequence of impact deposits in the crater and the readjusted floor below are widely exposed [1]. This rather unique situation enables easy and reliable “mining” and quantification of key impact cratering processes such as damaging in the distal zone, transient crater collapse, temperature evolution, water availability, and more. Note the last two are essential for constraining merging models and theories (ex. in [2]) on impact generated conditions for developing life on planetary bodies, and their influence on the Early Earth habitability. The major drawback i.e. poor outcropping conditions due to weathering plus heavy vegetal cover, is taken care by drilling. Budget foreseen would allow over 300 m of cumulated cores. Although funding is not approved yet, it seems very likely it will be, especially if the Scientific Community gets involved in the project. We thus call for manifestation of interest for studying drill cores, which will also determine the drilling program. The latter as well as scientific management of the cores and interfacing with the Scientific Community will be handled by the Research Center. An international scientific board is intended to insure the French authorities in charge of both NNR and the Research Center, a proper realization of the whole scheme. Final approvals for drilling and samples loans will be given by NNR upon recommendation of its National Scientific Advisory Panel. More details on “why and how” will be presented and forms for manifestation of interest will be made available. Any goodwill is warmly encouraged and will be duly acknowledged. 5, 4, 3, 2, 1, LAUNCH!!!

**References:** [1] Lambert P. 2010. *Geological Society of America Special Paper 465:pp. 509-541*. [2] Abramov O. and Kring D. A., *Meteoritics and Planetary Science 42, pp. 93-112*.