



ASTEROIDS, IMPACTS AND PLANETARY SCIENCE IN AFRICA FOR DEVELOPMENT

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ASTEROIDS, IMPACTS AND PLANETARY SCIENCE IN AFRICA FOR DEVELOPMENT. D. BARATOUX^{1,2}, M. KAIRE³, E. LAGADEC⁴, P. ROCHETTE⁵, C.A.B. NIANG⁶ and the AWA research team ¹UFR STRM, Université Félix HOUPHOUËT-BOIGNY, Cocody, Abidjan, Côte d'Ivoire, ²Géosciences Environnement Toulouse, Université Paul Sabatier, CNRS & IRD, 14, Avenue Edouard Belin, 31 400, Toulouse, France (david.baratoux@ird.fr). ³Association Sénégalaise pour la Promotion de l'Astronomie (ASP), ⁴Laboratoire Lagrange, Université Côte d'Azur, Observatoire de la Côte d'Azur, CNRS, Boulevard de l'observatoire, CEDEX 4, 06304 Nice ⁵Aix-Marseille Université, CEREGE, Centre National de Recherche Scientifique, France. ⁶Institut Fondamental d'Afrique Noire Cheikh Anta Diop, Dakar, Senegal, ⁷Société des Mines au Sénégal (SOMISEN).

Résumé (for text submitted in English) or Summary (for text submitted in French): Cette présentation s'intéressera aux récents efforts de développement des sciences de l'espace et des planètes en Afrique, et en particulier les travaux s'intéressants aux structures d'impacts africaines et au soutien des missions spatiales NASA (New Horizons, Lucy) d'exploration des astéroïdes par des campagnes d'occultation stellaire menées au Sénégal.

Introduction: Africa is undoubtedly the continent with the most assets for planetary sciences, including impact science and meteoritics: skies without light pollution for observations of the solar system from the ground, meteorites and meteorite impact craters, geological remains of the ancient Earth. Outside of South Africa, however, there are still few African scientists working in these fields. This situation can be explained, on the one hand, by the dependence of the African research world on international funding and their priorities, and on the other hand, by the structural weakness of national public funding, which guarantees academic freedom. Conscious of these assets and challenges, a community of astronomers and planetary scientists is involved in increasingly ambitious projects in Africa and is distinguished by original scientific works that highlight the African scientific heritage.

Recent Initiatives to support the development of planetary sciences in Africa: This presentation will focus on recent collaborative activities between scientists from African and European Institutions. In the wake of the African Initiative for Planetary and Space Sciences (AFIPS, <https://africapss.org>), launched in 2017 [1,2], several research and capacity building programs have been launched, including the realization of 2 stellar occultation campaigns in Senegal in connection with the NASA's space program in Senegal, the achievement and progress of several PhD theses in planetary science in Africa, the setting up of the RISE 5A project (Astronomy and Astrophysics Arising in Africa, submitted to the European Commission), the setting up and on-going development of the AWA projet (Astrophysics and planetary science in Africa, funded by CNRS), and the launch of the first popular science magazine on astronomy in French-speaking Africa, in collaboration between ASPA (Senegalese Association for the Promotion of Astronomy), and SAF (Société Astronomique de France).

Through these achievements, we will show the impact of these activities on African youth and the role that African astronomers play in the scientific, cultural, and economic development of their countries.

Impact science in Africa: this presentation will also present a state of the art of the current research on impact science in Africa and the discuss the motivations and justifications to promote impact science in Africa, including the number of potential discoveries to be made on the continent, and the established relationship between mineral resources and ore deposits and impact structures at the global scale, and the potential of impact sites for geotourism as in Meteor Crater (U.S.A), or Rochechouart (France), Ries (Germany) and Vredefort (South Africa). The Rochechouart impact structure, and the CIRIR may play an essential role for education and training a new generation of impact scientists in Africa, as already illustrated in the case of C.A.B. Niang [3], who recently graduated at the University Cheikh Anta Diop of Dakar with the support of the CIRIR.

References: [1] Baratoux, D. et al. Africa Initiative for Planetary and Space Science. EOS, 98. <https://eos.org/opinions/africa-initiative-for-planetary-and-space-sciences>. [2] Baratoux, D. et al. The State of Planetary and Space Sciences in Africa, EOS, 98, <https://eos.org/features/the-state-of-planetary-and-space-sciences-in-africa>. [3] Niang, C.A.B. et al. Signatures radiométriques des structures d'impact : applications et perspectives pour l'exploration géologique, PhD thesis, UCAD, 279 pages.

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