

Astrophysics and Planetary science for development in Africa

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Abstract

Africa is a continent with great assets for Astrophysics and Planetology (including astrobiology): skies unpolluted with anthropogenic light, meteorites and impact structures, and vast sedimentary-metamorphic-igneous records of early Earth' geologic evolution. Aware of these assets, a community of scientists is involved in increasingly ambitious projects. Their original works notably highlight the African scientific heritage, alongside engagement in economic, cultural and societal development. One of the notable achievements of this group is the observation of three stellar occultations by asteroids in Senegal, in direct support of NASA missions of exploration of the Solar System. The first campaign was achieved in August 2018, in support of the flyby of Kuiper belt object Arrokoth by the New Horizons spacecraft. The second and third campaigns, in September 2020 and October 2021, in preparation for the upcoming flybys of Trojan asteroids Polymele and Orus by NASA's Lucy mission, were led by Senegalese scientists, supported by a few European astronomers. Other notable achievements include fieldwork at potential or known impact structures (including search of tektites in Côte d'Ivoire), providing opportunities for student training and local education. Members of our group have also launched the first popular science magazine on astronomy (in French) (l'Astronomie Afrique). Last, founding the RISE 5A project (Astronomy and Astrophysics Arising Across Africa), with proposal intended to be resubmitted to the Horizon Europe program in 2022, together with some joint educational initiatives linking Egypt and Spain, will hopefully open new opportunities for staff and students exchanges between Europe and Africa. These achievements also impart an enduring engagement of the youth, while reinforcing the role of West African scientists in the scientific, cultural, and economic development of their countries and communities worldwide.

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Abstract Text:

Africa is a continent with great assets for Astrophysics and Planetology (including astrobiology): skies unpolluted with anthropogenic light, meteorites and impact structures, and vast sedimentary-metamorphic-igneous records of early Earth' geologic evolution. Aware of these assets, a community of scientists is involved in increasingly ambitious projects. Their original works notably highlight the African scientific heritage, alongside engagement in economic, cultural and societal development. One of the notable achievements of this group is the observation of three stellar occultations by asteroids in Senegal, in direct support of NASA missions of exploration of the Solar System. The first campaign was achieved in August 2018, in support of the flyby of Kuiper belt object Arrokoth by the New Horizons spacecraft. The second and third campaigns, in September 2020 and October 2021, in preparation for the upcoming flybys of Trojan asteroids Polymele and Orus by NASA's Lucy mission, were led by Senegalese scientists, supported by a few European astronomers. Other notable achievements include fieldwork at potential or known impact structures (including search of tektites in Côte d'Ivoire), providing opportunities for student training and local education. Members of our group have also launched the first popular science magazine on astronomy (in French) (l'Astronomie Afrique). Last, founding the RISE 5A project (Astronomy and Astrophysics Arising Across Africa), with proposal intended to be resubmitted to the Horizon Europe program in 2022, together with some joint educational initiatives linking Egypt and Spain, will hopefully open new opportunities for staff and students exchanges between Europe and Africa. These achievements also impart an enduring engagement of the youth, while reinforcing the role of West African scientists in the scientific, cultural, and economic development of their countries and communities worldwide.

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