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Introduction: The African Initiative for Planetary and Space Science is a research network of scientists and science communicators. It builds on 5 years of informal existence and has now received long-term funding from the National French Institute for Sustainable Development (IRD). In a vibrant context of recent and multiple initiatives in Sciences of the Universe across the African continent [e.g., 1, 2, 3], the specificity of this network is to focus on areas having synergies with geosciences: early history of the Earth and planets, the coupling between internal, surface and atmospheric processes, comparative planetology, geological mapping of planetary surfaces, the Earth within its environment, including Earth-Sun interactions, meteors, meteorites, impact craters and their consequences on crustal evolution. This presentation will briefly review the history and past achievements of the network and will present the roadmap of the next 4 years.

The African Initiative for Planetary and Space Science was launched in 2017, following an AGU-sponsored panel discussion initiated by D. Baratoux and H. Chennaoui-Aoudjehane during the International Geological Congress (IGC) in Cape Town, South Africa [4]. It received institutional support and/or financial contributions from IRD, the American Geophysical Union (AGU), the European Association of Geochemistry (EAG), the Geochemical Society (GS), and the Meteoritical Society. It was endorsed by several institutions and several hundreds of individuals, in Africa, and outside Africa [5,6]. The first goal of this initiative was to reduce the isolation of individuals or small groups of planetary scientists in Africa, already known for remarkable achievements in science and public outreach. A second goal was to contribute to the structuring of an African community of planetary scientists. A third goal was to initiate new research

based on the strong assets of the African continent for planetary sciences. The fourth goal was to strengthen the public outreach activities in planetary science in Africa. Five years later, it is possible to affirm that the AFIPS accomplished these goals beyond expectation, as highlighted by a selection of significant achievements:

- Three occultation campaigns for NASA in Senegal. One of them contributed to the successful flyby of the Arrokoth Trans-Neptunian Object by the New Horizons spacecraft [7], the two others contributed to the NASA Lucy mission (flyby of Jupiter's Trojan asteroids). The success of these experiments has contributed to the emergence of space-related activities in Senegal. Maram KAIRE, who coordinated the astronomical campaigns, was appointed in 2023 as the director of the new Senegalese Agency for Space Studies.
- Pioneering analysis of the radiometric signatures of impact structures [8], elucidation of the origin of chemical anomalies at the Bosumtwi impact crater in Ghana [9], pioneering work related to the identification of impact craters with lobate/fluidized ejecta on Earth, analogous to impact craters formed in volatile-rich environments on Mars.
- First exploration since 1965 and discoveries of new tektites in Côte d'Ivoire, related to the Bosumtwi impact crater [10].
- Extension of Fireball monitoring networks (FRIPON) in Senegal, Morocco and Burkina Faso.
- Successful investigations on the first and unique impact structure in Morocco, Agoudal, in the Atlas Mountains [11].

In the wake of the AFIPS, we noted the emergence of several associations and foundations for the development of planetary science over the last 5 years (e.g., ATTARIK, in Morocco, Association Ivoirienne

d'Astronomie). Another outcome is the launch of the Astronomy magazine in French-speaking Africa, *L'Astronomie Afrique*, in collaboration with the Senegalese Association for the Promotion of Astronomy (ASPA) and the Société Astronomique de France.

The next phase of the AFIPS network formally involves 17 institutions, research centers or universities, and 5 NGO or associations for the promotion of sciences based in one of the following African countries: Algeria, Burkina Faso, Chad, Côte d'Ivoire, Ethiopia, Ghana, Madagascar, Mauritania, Morocco, Senegal, and Tunisia. In addition, 8 French research centers are involved in the network. AFIPS team members are listed at <https://africapss.org>

Research objectives: The research activities within the network are divided in four domains: 1) Remote sensing geological mapping of planetary surfaces, and comparative planetology with Africa-based planetary analogues, 2) Meteorites and impact science, analysis of African meteorites, and exploration of the African impact record, 3) Space physics and space weather, 4) Astronomical observations of Earth's neighborhood, from space debris to asteroids. These research activities have impact on society and address at least 3 of the 17 Sustainable Development Goals, through skills transfer and public outreach in collaboration with associations for the promotion of science. These activities also aim to highlight and protect the under-explored geo-heritage of the African continent such as meteorites, impact structures, geological sites, and dark sky reserves.

Capacity building in planetary sciences: Capacity building (CB) tasks are thought in adequacy with research objectives and divided in 4 tasks. CB Task 1 will focus on developing skills in planetary/geological mapping, while highlighting synergies between analysis tools for Earth observation products and remote sensing observations of planetary surfaces. CB Task 2 will focus on training in recognition criteria for meteorites and impact structures. Space physics and space weather are at the crossroads of several topics: plasma physics, geophysics, astrophysics, atmospheric physics. Consequently, several communities are involved and this requires a common vocabulary and knowledge. To achieve this, training workshops will be organized (CB Task 3). CB Task 4 training workshops will aim to strengthen the skills required for astronomical observations, in order to support the scientific use of existing, new and planned astronomical observatories, including general knowledge of astrometry (coordinate systems on the celestial sphere and movements of

celestial objects), handling of robotic and small professional telescopes, photometry, programming, reduction, calibration, and data analysis. Every workshop will include training in soft skills (how to write a research proposal, how to communicate science) and will focus on good practices in science, including ethics and scientific integrity (e.g., discussions about plagiarism and intellectual property), the publication and editorial process, and importance to publish in high-standard journals.

Outreach activities and public engagement:

AFIPS members are already strongly engaged into public outreach, and have made countless interventions in the media (radio, TV and journals/magazines) in Europe and Africa (RFI, France Culture, African TV channels, the Conversation Africa) and will continue to do so. They are also often invited for public conferences. Some AFIPS members are engaged for decades into the promotion of African science, and into in-depth cultural exchanges to learn about the history of African astronomy. The movies “A la poursuite d'Arrokoth” [12], and “Stars Chasers in Senegal” [13] were remarkable achievements in this domain, and may be used as a tool to communicate about both the modern and past achievements of African astronomers.

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