PERSONAL INFORMATIONS

Date of birth:

Nationality: Italian

Office address:

Office number:

Private phone number: +

E-mail:

URL:

I am currently holding the position of **Associate Professor** in Sedimentology at BIUST (Botswana International University of Science and Technology), in Botswana and I am the **Coordinator** of the Pan African Planetary and Space Science Network (PAPSSN) and FAST4Future, both EU-funded projects promoting research and education in the field Planetary and Space Science in Africa. After my PhD in Earth Science studying the astrobiological potential of Devonian carbonate mounds in the Moroccan Sahara, I have pursued a career at the crossroad between planetary science and carbonate sedimentology with a clear interest for biogeochemical pathways and astrobiology. Since 2012 I have published 34 papers, 15 as first author, and I have created a broad network of collaborations in the field of planetary sciences and sedimentology. In the past 3 years, I have successfully participated in two NERC projects and led my institution into the Europlanet 2024 Research Infrastructure funded by INFRAIA under Horizon2020. I coordinate the planetary field analogue Makgadikgadi Pans in Botswana as part of the Europlanet2024 Transnational Access and successfully organized more than 20 field trips in Central and North-Western Botswana, Namibia, Angola, South Africa and Zimbabwe.

In my spare time I am an amateur entomologist, passion that I share with my 2 kids, and I am a big baseball fan (better not to disclose my team though...) and I coach the university softball team.

EDUCATION & HABILITATION

October 2018: Habilitation as Associated Professor by the Italian Ministry of Education, University and Research (Abilitazione Scientifica Nazionale – Professore Fascia II).

January 2010 - April 2013: PhD school in Earth Sciences at Università degli Studi di Bologna, "Comparative geomicrobiology of the mounds in the Moroccan Sahara: implications for Mars astrobiology". Supervisor: Prof. Roberto Barbieri.

2009: qualified for the profession of Geologist (state examination 159/200) and member of the professional board of the geologists (Emilia Romagna chapter) n. 1356 (withdrew in 2021).

October 2007 - October 2009: Master degree in Applied Geoscience at Università degli Studi di Bologna: "Lower Cretaceous stratigraphy and facies analysis of the Tataouine basin (Tunisia): discussion about the associated bone beds"; vote 110/110 *cum laude*. Supervisor: Prof. Gian Gaspare Zuffa.

October 2004 - July 2007: Bachelor's degree in Geological Science at Università degli Studi di Bologna: "Heavy metals distribution in the Adriatic sea sector influenced by sediment input from Neretva River (Croatia)"; vote 110/110 *cum laude*. Supervisor: Prof. Enrico Dinelli.

EMPLOYMENT HISTORY

November 2021 – Now: Associate Professor Sedimentology, Department of Earth and Environmental Sciences, Botswana International University of Science and Technology. Modules taught: **GEOL302 – Sedimentology and Stratigraphy; GEOL402 – Petroleum Geology; GEOL634 – Paleobiology and Paleoenvironments; GEOL631 – Applied Sedimentology.**

December 2017 – November 2021: Senior Lecturer, Department of Earth and Environmental Sciences, Botswana International University of Science and Technology. Modules taught: **GEOL207 – Introduction to Structural Geology and field methods; GEOL302 – Sedimentology and Stratigraphy; GEOL310 – Geological Field Mapping and Reporting; GEOL402 – Petroleum Geology; GEOL634 – Paleobiology and Paleoenvironments; GEOL631 – Applied Sedimentology.**

January 2015 – December 2017: Lecturer, Department of Earth and Environmental Sciences, Botswana International University of Science and Technology. Modules taught: **GEOL201 – Earth and its material; GEOL302 – Sedimentology and Stratigraphy; GEOL310 – Geological Field Mapping and Reporting; GEOL402 – Petroleum Geology**

November 2012 – November 2014: post-doc research fellow at CNR-ISMAR U.O.S. Bologna: "Geochemical and petrographic study of carbonate conduits linked to hydrocarbon-enriched fluid escape".

July 2012 – January 2015: geology consultant for more than 40 residential and agricultural civil engineering projects, self-employed.

PROFESSIONAL EXPERIENCES & VISITING PERIODS

24th-30th May 2022: visiting Dr Zoltán Juhász at the spectroscopy laboratory at ATOMKI, Debrecen (Hungary). Analysis on Arctic ice for planetary exploration.

1st-23rd May 2022: visiting scientist to the CAGE department at the Arctic University of Norway in Tromsø and scientists on the oceanographic cruise AKMA/Ocean Senses (https://akma-project.com) the Barents Sea and Arctic Oceanon board of the Norwegian icebreaker Kronprins Håkon.

1st-31st December 2021: visiting fellow Institute of Advanced Studies (ISA), University of Bologna.

July 2015 to December 2016: Associate scientist CNR-ISMAR - Project RITMARE (SP4 WP1 AZ 3) – Protocol n. 0009886 (29/12/2015)

11th-20th February 2014: junior geoscientist on the oceanographic cruise CROMA (Montenegro) on the research vessel Urania (CNR).

February 2012: laboratory assistant, microscopy techniques applied to paleontology.

November 2011 - March 2012: Visiting period at Department of Geology at University of Johannesburg in collaboration with Prof A. Hoffman. EPMA, SEM/EDS, XRF.

June 2011: Collaboration period with Dr. Angelo Pio Rossi at the Jacobs University of Bremen: cone shaped mound in the Crommelin crater region (GIS).

November 2010: Collaboration with Prof. Catherine Pierre at the LOCEAN laboratory Pierre et Marie Curie University, Paris: 13C and 18O isotopic composition of carbonates.

July 2004 - August 2004: Paleontology campaign in Dry Island Buffalo Jump Provincial Park, Drumheller, Alberta, Canada, under the supervision of Prof. Philip J. Currie.

RESEARCH GRANTS

September 2022: Erasmus+ Programme (ERASMUS) Call ERASMUS-EDU-2022-CBHE, project: "Focus on Africa Space Science and technology for Future Development - FAST4Future" (project n.: 101082487. **Coordinator/PI** [**€718,532**].

December 2020: Sediments Assessment of the Cubango Okavango River Basin, funded by OKACOM, the Permanent Okavango River Basin Water Commission. **Co-PI** **[USD 140,693]**

November 2020: Intra-Africa Academic Mobility Scheme call EACEA/07/2020, project "PanAfrican Planetary and Space Science Network – PAPSSN" (i.d. 624224-PANAF-1-2020-1-BW-PANAF-MOBAF). **Coordinator/PI** **[€1,395,700]**

August 2019: H2020-INFRAIA-2019-1 call grant n. EPN-2024-RI "Europlanet Research infrastructure (i.d. 871149)". **PaCo**. [10 million euros; **€117,000 awarded to BIUST**]

November 2018: NERC-UK SHEAR Catalyst Call 2017/18 - CONNECT4 water resilience project (REF.: NE/S005943/1) in collaboration with the University of Aberdeen (Leading Institution). **Co-I** **[£249,695.74]**

May 2017: NERC Urgency Grant – PULA project: Extreme rainfall and floods in arid regions: replenishment or contamination of water resources?" (REF.: NE/R002568/1) in collaboration with the University of Aberdeen (Leading Institution). Role: field leader and leading investigator in Botswana. **Collaborator** **[£64,572.66]**

February 2016: BIUST initiation grant, project title: "Early Mesozoic siliciclastic deposits of the Kalahari Karoo Basin (Botswana): a new perspective." **P.I.** [300,000BWP]

OUTREACH AND NETWORKING PROJECTS & SCOLARSHIPS (selected)

December 2022: "Science and Astronomy in Southern Botswana" selected for funding in the 2022 International Astronomical Union OAD Call for Proposals. **Coordinator** **[8000 Euro]**

May 2019: International Association of Sedimentologists, Post Doctoral Grant, Project title: "Characterization of the layered deposits of the Makgadikgadi pan (Botswana)".

November 2016: Earth and Space Award – 'Spring mounds on Earth: terrestrial analogues to Mars environments. Role: sole investigator. https://www.earthandspace.org/previous-earth-and-space-awards/2016-2/

October 2015: Exploration Found (The Explorer Club): "Spring mounds in the Dalhousie region (central Australia) as potential analogues of ancient aqueous deposits on Mars: new sedimentological insights and astrobiological implications".

EDITORIAL ACTIVITY

January 2023: Member of theEditorial Board of the jounral Planetary and Space Science (Elsevier).

July 2022 – Now: Topic Editor for the articles collection titled "Terrestrial Field Analogues for Planetary Exploration" in the online journal Frontiers in Astronomy and Space Science - Astrobiology.

MEMBERSHIPS AND PROFESSIONAL ACTIVITIES

September 2022: Convener Session ODAA7 and TP17, Europlanet Science Congress 2022, Granada 19-23 September 2022.

August 2022 – Now: Council member of the International Association of Sedimentologists.

November 2021 – now: member of BIUST Senate.

September 2021 – Now: Member of the outer international assessment board (IAB) of the Irish Research Council Government of Ireland Programmes: the Government of Ireland Postgraduate Scholarship Programme and the Government of Ireland Postdoctoral Fellowship Programme.

September 2021: Convener Session ODAA7 - Africa-European collaborations in planetary science, Europlanet Science Congress 2021 Virtual meeting, 13 – 24 September 2021.

August 2021 – Now: participant of the Advisory Group on R&I for Africa-Europe Cooperation of the European Union.

August 2021 – Now: Member of the Astronomical Society of Botswana Committee.

February 2021: Member of the Europlanet 2024 RI Global Collaboration and Integration Development Advisory Committee (GCID-AC) for the Europlanet 2024 RI Global Collaboration & Integration Development Strategic Plan 2020-2024.

February 2020 – Now: Member of Europlanet 2024 Research Infrastructure Council and member of the Europlanet Society.

January 2018 – Now: member of the United Kingdom Research & Innovation (UKRI) International Development Peer Review College. Participant of the MET meeting in Egypt 2019.

October 2018: Organizer of the workshop "Space and Planetary Science in Botswana", held at BIUST between the 29th of October 20118 and 3rd of November 2018.

Fall 2017 – April 2020: member of the EuroPlanet Early Career (EPEC) committee, co-chair of the Working Group "New frontiers and future space research".

July 2015 – March 2021: member of BIUST Senate, College of Science lecturers' representative; Senate Executive Committee; Senate Research Committee.

April 2015 – April 2020: member of the International Association of Sedimentologists Early Career Scientists Committee (IAS-ECSC) and Early Career Scientists Grant committee.

LIST OF UNDERGRADUATE STUDENTS SUPERVISED (completed)

2021/2022

Mr. Aobakwe Junior Motlhasedi, thesis title: "Characterization of geological material from potential Mars analogue environments: the example of the Makgadikgadi pans, Botswana". As part of Europlanet 2024 RI.

2020/2021

Ms. Katlo Oromeng, thesis title: "Identification of The Clay Minerals Of The Sua Pan Sediments Of Botswana". As part of Europlanet 2024 RI.

2019/2020

Ms. Boago Kukudi, thesis title: "Characterization of sediments from the Houtriever Dam, South Africa: new insights in contaminants mobilization during extreme weather events".

Mr. Mothusi Thatp, thesis title: "Characterization of sediments from the Shashe Dam, South Africa: new insights in contaminants mobilization during extreme weather events".

Mr. Lefoko Ramakgala, thesis title: "Sedimentological study of the Sua Pan, Makgadikgadi pans, Botswana: evidences for extreme evaporative processes and astrobiological potential."

Mr. Omogolo Keobokile, thesis title: "Evolution of the lake Paleo-Makgadikgadi".

2018/19

Ms. Goitse Mosekiemang, thesis title: "Stratigraphy of the layered mounds in the Ntwetwe Pan, Makgadikgadi pans".

2017/18

Ms. Larona Setlhabi, thesis title: "Stratigraphic and sedimentological characterization of the glacial deposits of the Dukwi Formation (Karoo Supergroup) in Botswana".

Ms. Lulu Orapeleng, thesis title: "Quaternary climate and environmental variations leading to morphological changes in Makgadikgadi Paleolake"

Ms. Mooketsi Boineelo, thesis title: "Chemical characterization of sediments from Sua Pan, Botswana".

Ms. Gaone Johwa, thesis title: "Reconstruction of flood and drought events in the Gaborone catchment area (Botswana): new insights from the shallow sediments of the Notwane Dam" Within the framework of NERC founded PULA Project.

Ms. Masisi Orelirwe, thesis title: "Effects of Dineo on the geomorphology of the Gaborone dam catchment area and the people"

Mr. Rakolanyana Mosireletsi, thesis title: "Charaterization of recent sediment of the Mogobane dam: possible evidences to flood/drought clyles".

2016/17

Mr. Kemiso Onalethata, thesis title: "Facies analysis of the Early Mesozoic siliciclastic deposits of the Lebung Group (Kalahari Karoo Basin, Botswana): implications for paleo-environmental reconstruction and economic potential".

Ms. Lillian Molose (co-supervisor), thesis title: "Water quality and quantity dynamics following floods in the Gaborone catchment".

Ms. Rorisang Jessika Tisane, thesis title: "Geochemical characterization of Paleoproterozoic stromatolites of the Lower Transvaal Supergroup (Kanye, Botswana)".

2015/16

Ms. Oosi Kagelelo Ntereke, thesis title: "Lithostratigraphy of the neo Archean-Paleoproterozoic Lower Transvaal Supergroup, Kanye Basin (Southern Botswana).

Ms. Kamogelo Leanette Phatsimo, thesis title: "Microfacies characterization of the continental to shallow marine mixed siliciclastic-carbonate sediments of the "Continental Intercalaire" (Southern Tunisia)".

LIST OF POSTGRADUATE STUDENTS

Ongoing

Ms Trhas Hadush (BIUST), PhD project tittle: "Comparative mineralogy and geomicrobiology of the Makgadikgadi Pans of Botswana: implications for Mars habitability". PAPSSN Scholarship.

Mr Obakeng Kabelo (BIUST), PhD project title: "Palynological And Geochemical Characterization Of The Macerals From The Lower Ecca Group Coal Seams, South-Eastern Kalahari Karoo Basin, Botswana".

Ms Katlo Oromeng (BIUST), MSc project title: "Characterization of clay minerals distribution in a terrestrial analogue of playa deposits on Mars: the Makgadikgadi pans of Botswana".

Mr Frankline Bokanda (BIUST), MSc project title: "The astrobiological potential of diagenetic crusts formed in the Makgadikgadi pans, Botswana". PAPSSN Scholarship.

Ms Tumisang Tekhiso (BIUST), MSc project title: "Short and Long term climatic and anthropic forcing on the Cubango-Okavango River Basin system (and ecosystem).

Mr Remigylo Mavata (BIUST), MSc project title: "Characterization of the Tlhabala Formation in the Kalahari Karoo Basin and new constraints for the Permo-Triassic boundary identification in Botswana".

Mr. Florian Pasqualotto, (Università dell'Insubria, Italy) MSc project title: "Characterization of dam sediment for the study of the effects of drought and flood cycles in the Limpopo river basin (South Africa)" as part of the CONNECT4WR project

Completed 2021-22

Mr. Thatayaone Oletile, (BIUST) project title: "Geochemistry, Petrogenesis and Economic potential of mafic and ultramafic Rocks of the Baines Drift Complex, Central Zone of the Limpopo Mobile Belt, Limpopo Lipadi game reserve, NE Botswana."

Completed 2018-2019

Mr. Ruaraidh MacKay, (University of Bologna) project title: "Mounded morphologies from the Makgadikgadi Pan (Botswana), as possible analogues of Martian aqueous morphologies".

Mr. Paolo Malaspina, (University of Bologna) project title: "Caratterizzazione stratigrafica e paleontologica della successione di primo sottosuolo del Makgadikgadi Pan, Botswana" [*in Italian*].

LIST OF PUBLICATIONS

Peer-reviewed journal papers (* = student)

1. Schmidt, G., Luzzi, E., Franchi, F., Selepeng, A.T., Hlabano, K., Salvini, F., 2023. Structural Influences on Groundwater Circulation in the Makgadikgadi Salt Pans of Botswana? Implications for Martian Playa Environments. Frontiers in Astronomy and Space Sciences, IN PRESS.
2. Schmidt, G., **Franchi, F.,** Salvini, F., Selepeng, A.T., Luzzi, E., Schmidt, C., Atekwana, E.A., 2022. Fault controlled geometries by inherited tectonic texture at the southern end of the East African Rift System in the Makgadikgadi Basin, northeastern Botswana. Tectonophysics, 10.1016/j.tecto.2022.229678.
3. Geris, J., Comte, J-C., **Franchi, F.,** Petros, A.K., Tirivarombo, S., Selepeng, A.T., Villholth, K.G., 2022. Surface water-groundwater interactions and local land use control water quality impacts of extreme rainfall and flooding in a vulnerable semi-arid region of Sub-Saharan Africa, Journal of Hydrology 609, 127834. doi: https://doi.org/10.1016/j.jhydrol.2022.127834

4. **Franchi F.,** Cavalazzi B., Evans M., Filippidou S., *Mackay R., *Malaspina P., *Mosekiemang G., Price Alex, Rossi Veronica, 2022. Late Pleistocene–Holocene Palaeoenvironmental Evolution of the Makgadikgadi Basin, Central Kalahari, Botswana: New Evidence From Shallow Sediments and Ostracod Fauna. Frontiers in Ecology and Evolution 10, doi: 10.3389/fevo.2022.818417
5. Jenniskens, P., Gabadirwe, M., Yin, Q-Z., Proyer, A., Moses, O., Kohout, T., **Franchi, F.,** and the Motopi Pan Meteorite Consortium, 2021. The impact and recovery of asteroid 2018 LA. Meteoritics & Planetary Science 1–50. doi: 10.1111/maps.13653
6. Bisse, S.B., Ekoko, B.E., Gerber, J., Ekomane, E., **Franchi, F.,** 2021. Influence of biotic vs abiotic processes on the genesis of non-marine carbonates along the Cameroon Volcanic Line (Cameroon) and palaeofluid provenance. The Depositional Record. https://doi.org/10.1002/dep2.154
7. **Franchi, F.,** Kelepile, T., Di Capua, A., De Wit, M.C.J., *Kemiso, O., Lasarwe, R., Catuneanu, O., 2021. Lithostratigraphy, sedimentary petrography and geochemistry of the Upper Karoo Supergroup in the Central Kalahari Karoo Sub-Basin, Botswana. Journal of African Earth Sciences 173, 104025. Doi: 10.1016/j.jafrearsci.2020.104025
8. **Franchi, F.,** Abebe, A., 2020. Statistically learning Archean carbonate diagenesis. Precambrian Research, 348, 105867. Doi: 10.1016/j.precamres.2020.105867
9. **Franchi, F.,** *MacKay, R., Selepeng, A.T., Barbieri, R., 2020. Layered mound, inverted channels and polygonal fractures from the Makgadikgadi Pan (Botswana): possible analogues for Martian aqueous morphologies. Planetary and Space Science 192, 105048. Doi: 10.1016/j.pss.2020.105048
10. *Kelepile, T., Bineli Betsi, T., **Franchi, F.,** Shemang, E., 2020. Partitioning and distribution of silver in sediment-hosted Cu-Ag deposits: Evidence from the Ghanzi-Chobe Belt portion of the Kalahari Copper Belt. Ore Geology Review. Doi: https://doi.org/10.1016/j.oregeorev.2020.103663
11. **Franchi, F.,** Frisia, S., 2020. Crystallization pathways in the Great Artesian Basin (Australia) spring mound carbonates: Implications for life signatures on Earth and beyond. Sedimentology. doi: 10.1111/SED.12711
12. **Franchi, F.,** Ahad, J.M.E., Geris, J., *Jhowa, G., Petros, A.K., Comte, J-C., 2020. Modern sediment records of hydroclimatic extremes and associated potential contaminant mobilization in semi-arid environments: lessons learnt from recent flood-drought cycles in Southern Botswana. Journal of Soils and Sediments 20(3), 1632-1650. Doi: 10.1007/s11368-019-02454-9
13. Dietrich, P., **Franchi, F.,** *Setlhabi, L., Prevec, R., Bamford, M., 2019. The non-glacial diamictite of Toutswemogala Hill (Lower Karoo Supergroup, Central Botswana): implications on the extent of

the Late Paleozoic Ice Age in the Kalahari Karoo Basin. Journal of Sedimentary Research 89, 875–889. Doi: http://dx.doi.org/10.2110/jsr.2019.48

14. **Franchi, F.**, Mapeo, R.B.M., 2019. Evolution of an Archean intracratonic basin: a review of the Transvaal Supergroup lithostratigraphy in Botswana. Earth-Science Reviews 191, 273–290. https://doi.org/10.1016/j.earscirev.2019.02.007.
15. *Tisane, R.J., Bineli Betsi, T., **Franchi, F.**, 2019. Petrochemistry of the metasomatized Neoarchean Lower Transvaal Supergroup carbonate from the Kanye Basin (South Botswana). Journal of African Earth Science 150, 282–298. Doi: 10.1016/j.jafrearsci.2018.11.018
16. Klug, C., Samankassou, E., Pohle, A., De Baets, K., **Franchi, F.**, Korn, D., 2018. Oases of biodiversity: Early Devonian palaeoecology at Hamar Laghdad, Morocco. N. Jb. Geol. Paläont. Abh. 290, 9-48. Doi: 10.1127/njgpa/2018/0772
17. **Franchi, F.**, 2018. Petrographic and geochemical characterization of the Lower Transvaal Supergroup stromatolitic dolostones (Kanye Basin, Botswana). Precambrian Research 310, 93-113. Doi: 10.1016/j.precamres.2018.02.018
18. **Franchi, F.**, Bergamasco, A., Da Lio, C., Donnici, S., Mazzoli, C., Montagna, P., Taviani, M., Tosi, L., Zecchin, M., 2018. Petrographic and geochemical characterization of the early formative stages of Northern Adriatic shelf rocky buildups, Marine and Petroleum Geology 91, 321-337. Doi: 10.1016/j.marpetgeo.2018.01.012
19. **Franchi, F.**, Rovere, M., Gamberi, F., Rashed, H., Vaselli, O., Tassi, F., 2017. Authigenic minerals from the Paola Ridge (southern Tyrrhenian Sea): Evidences of episodic methane seepage. Journal of Marine and Petroleum Geology 86, 228-247. Doi: 10.1016/j.marpetgeo.2017.05.031
20. Tosi, L., Zecchin, M., **Franchi, F.**, Bergamasco, A., Da Lio, C., Baradello, L., Mazzoli, C., Montagna, P., Taviani, M., Tagliapietra, D., Carol, E., Franceschini, G., Giovanardi, O., Donnici, S., 2017. Paleochannel and beach-bar palimpsest topography as initial substrate for coralligenous buildups offshore Venice, Italy. Scientific Reports 7, 1321. Doi: 10.1038/s41598-017-01483-z
21. Kelepile, T., Bineli Betsi, T., **Franchi, F.**, Shemang, E., Suh, C.E., 2016. Petrogenesis of the Neoproterozoic sedimentary succession associated with the Banana Zone Cu-Ag mineralisation, northwest Botswana. Journal of African Earth Sciences. Journal of African Earth Sciences 129, 853-869. Doi: 10.1016/j.jafrearsci.2017.02.018
22. **Franchi, F.**, Turetta, C., Cavalazzi, B., Corami, F., Barbieri, R., 2016. Trace elements and REE geochemistry of Middle Devonian carbonate mounds (Maïder Basin, Eastern Anti-Atlas, Morocco): implications for early diagenetic processes. Sedimentary Geology 343, 56-71. Doi: 10.1016/j.sedgeo.2016.07.008

23. Bonatti, E., Breger, D., Rocco, T.D., **Franchi, F.**, Gasperini, L., Polonia, A., Anfinogenov, J., Anfinogenova, Y., 2015. Origin of John's Stone: A quartzitic boulder from the site of the 1908 Tunguska (Siberia) Explosion. Icarus 258, 297–308. Doi: 10.1016/j.icarus.2015.06.018

24. Cau, S., **Franchi, F.**, Roveri, M., Taviani, M., 2015. The Pliocene-age Stirone river hydrocarbon chemoherm complex. Journal of Marine and Petroleum Geology 66, 582-595. Doi: 10.1016/j.marpetgeo.2015.05.027

25. **Franchi, F.**, Hofmann, A., Cavalazzi, B., Wilson, A., Barbieri, R., 2015. Differentiating marine vs hydrothermal processes in Devonian carbonate mounds using Rare Earth Elements (Kess Kess mounds, Anti-Atlas, Morocco). Chemical Geology 409, 69-86. Doi: 10.1016/j.chemgeo.2015.05.006.

26. Angeletti, L., Canese, S., **Franchi, F.**, Montagna, P., Reitner, J., Walliser, E.O., Taviani, M., 2015. The chimney forest of the deep Montenegrin margin, south-eastern Adriatic Sea. Journal of Marine and Petroleum Geology 66, 542-554. Doi: 10.1016/j.marpetgeo.2015.04.001

27. Taviani, M., **Franchi, F.**, Angeletti, L., Correggiari, A., López Correa, M., Maselli, V., Mazzoli, C., Peckmann, J. Biodetrital carbonates on the Adriatic continental shelf imprinted by oxidation of seeping hydrocarbons. Journal of Marine and Petroleum Geology 66, 511-531. Doi: 10.1016/j.marpetgeo.2015.03.015

28. Viola, L., Oppo, D., **Franchi, F.**, Capozzi, R., Dinelli, E., Liverani, B., Taviani, M., 2015. Mineralogy, geochemistry and petrography of methane-derived authigenic carbonates from Enza River, Northern Apennines (Italy). Journal of Marine and Petroleum Geology 66, 566-581. Doi: 10.1016/j.marpetgeo.2015.03.011

29. Pondrelli, M., Rossi, A.P., Le Deit, L., Fueten, F., van Gasselt, S., Glamoclija, M., Cavalazzi, B., Hauber, E., **Franchi, F.**, Pozzobon, R., 2015. Equatorial Layered Deposits in Arabia Terra, Mars: facies and process variability. GSA Bulletin 127 (7-8), 1064-1089. Doi: 10.1130/B31225.1

30. Sgavetti, M., Serventi, G., Tampella, G., Pedrazzi, G., Carli, C., Pompilio, L., **Franchi, F.**, Tellini, C., 2015. Spectral reflectance characteristics of the Hamar Laghdad hydrothermal sequence, Morocco: Implications for the methane origin on Mars. Icarus 245, 184-197. Doi: 10.1016/j.icarus.2014.09.027.

31. **Franchi, F.**, Cavalazzi, B., Pierre, C., Barbieri, R., 2015. New evidences of hydrothermal fluids circulation at the Devonian Kess Kess mounds, Hamar Laghdad (eastern Anti-Atlas, Morocco). Geological Journal 5, 634-650. Doi: 10.1002/gj.2582

32. Cavalazzi, B., Agangi, A., Barbieri, R., **Franchi, F.**, Gasparotto, G., 2014. The formation of low-temperature sedimentary pyrite and its relationship with biologically-induced processes. Geology of Ore Deposits, 56 (5), 395–408. Doi: 10.1134/S107570151405002X

33. **Franchi, F.**, Rossi, A.P., Pondrelli, M., Cavalazzi, B. 2014. Geometry, stratigraphy and evidences for fluid expulsion within Crommelin crater deposits, Arabia Terra, Mars. Planetary Space Science 92, 34–48. Doi: 10.1016/j.pss.2013.12.013

34. Fanti, F., Contessi, M., **Franchi, F.**, 2012. The "Continental Intercalaire" of southern Tunisia: stratigraphy, paleontology, and paleoecology. Journal of African Earth Sciences, 73-74C, 1-23. 10.1016/j.jafrearsci.2012.07.006

35. **Franchi, F.**, Schemm-Gregory, M. and Klug, C., 2012. A new species of *Ivdelinia* Andronov, 1961 from the Moroccan Givetian and its palaeoecological and palaeobiogeographical implications. Bulletin of Geosciences, vol. 87 (1), 1–11. Doi: 10.3140/bull.geosci.1294

Selected conference presentations

1. **Franchi, F.**, and the PanAfrican Planetary and Space Science Network - PAPSSN Team, Centre of Excellence in Planetary Space Science and Technology in Africa. Europlanet Science Congress 2022, Vol. 16, EPSC2022-177 [**INVITED**].
2. **Franchi, F.**, Cavalazzi, B., Evans, M., Filippidou, S., Mackay, R., Malaspina, P., Mosekiemang, G., Rossi, V., New insights on the Late Pleistocene-Holocene evolution of a giant lake in the central Kalahari (Botswana). 21st International Sedimentological Congress, Beijing 2022 (virtual), ID: T5-50299 [**INVITED**].
3. Bisse, S.B., Bokanda,E.E., Gerber,J., Ekomane, E., **Franchi, F.**, 2022. Influence of biotic vs abiotic processes on the genesis and REE distriution on non-marine carbonates. 21st International Sedimentological Congress, Beijing 2022 (virtual), Session T -8: Carbonate sedimentation: From facies analysis to global changes, ID: T7-80300
4. Schmidt, G., Luzzi, E., Franchi, F., Selepang, A., Hlabano, K., Salvini, F., 2022. Constraining the Movement of Groundwater Within Playa Environments on Mars Through Subsurface Imaging of the Makgadikgadi Salt Pans of Botswana. EGU General Assembly 2022 [EGU22-12535].
5. **Franchi, F.**, Abebe, A., 2021. Statistically learning complex Archean carbonate diagenesis. 35th IAS Meeting of Sedimentology, Prague, Virtual. (id: 177).
6. **Franchi, F.**, The Pan African Planetary and Space Science Network – PAPSSN, Europlanet Science Congress 2021, online, 13–24 Sep 2021, EPSC2021-168.
7. **Franchi, F.**, MacKay, R., Selepeng, A.T., Barbieri, R., 2020. Inverted channels, polygonal fractures and layered mounds from the Makgadikgadi Pan of Botswana: possible analogues for Martian morphologies. Europlanet Science Congress 2020, Vol. EPSC2020-579, 2020.

8. **Franchi, F.**, Frisia, S., 2019. Organic-compounds catalyzed mineralization: a new paradigm for exobiology? EPSC Abstracts, Vol. 13, EPSC-DPS2019-1726-1, EPSC-DPS Meeting 2019, Geneva.
9. **Franchi, F.,** Rossi, V., Vaiani, S., Mackay, R., Malaspina, P., Barbieri, R., 2019. Layered deposits from the Makgadikgadi Pan (Botswana) as possible analogues of Martian evaporites. 34th International Meeting of Sedimentologists, Rome, September 10th-13th 2019.
10. Johwa, G., Geris, J., Comte, J-C., **Franchi, F.,** 2018. Characterization of recent sediments from the Notwane dam (Botswana): preliminary results from the PULA project. ISC 2018, 13th – 17th August 2018, Quebec City, Canada.
11. **Franchi, F.,** Tisane, R., 2018. Dolomitization and diagenesis of Precambrian carbonates: the case of the Lower Transvaal Supergroup of Botswana. ISC 2018, 13-17/08/2018, Quebec City, Canada.
12. **Franchi, F.,** Frisia, S., 2017. Desert spring mounds: new insights on the resilience of life. IMS 10th – 12th October 2017, Toulouse (France) [159468]
13. Tisane, R., Kemiso, O., **Franchi, F.** 2016. Facies analyses of the Diphawana Paleoproterozoic succession (Kanye, Botswana): implications for the paleo environmental reconstruction of the lower Transvaal Supergroup. 32nd IAS Meeting of Sedimentology, 23rd -25th May 2016, Marrakech, Morocco.
14. **Franchi, F.,** Turetta, C., Cavalazzi, B., Corami, F., Barbieri, R., 2015. Early diagenetic modification of the trace and rare earth elements record of Devonian carbonates: Maïder Basin conical mounds (Eastern Anti-Atlas, Morocco). 31ST IAS Meeting of Sedimentology, 22nd -25th of June 2015, Krakow, Poland.
15. **Franchi, F.,** Cavalazzi, B., Hofmann, A., Wilson, A., Barbieri, R., 2014. Rare earth element geochemistry of the Early Devonian Kess Kess carbonate mounds (Eastern Anti-Atlas, Morocco). 19th International Sedimentological Congress, 18th – 22nd August, Geneva, Switzerland.

Other publications and datasets

1. **Franchi, F.,** L'Incredibile storia del Meteorite 'Motopi Pan': da pericolo spaziale a tesoro nazionale. Geologicamente. https://doi.org/10.3301/GM.2022.03 [*in italian*]
2. Panieri, G., Bünz, S., Savini, A., Jensen, A., Løfquist, B., Olsen, . B. R., Willis, C., Argentino, C., Bertin, C., Oddone, D., Kalenitchenko, D., Rosnes, E., Cusset, F., Maric, F., **Franchi, F.,** Pawlowski, J., Zimmermann, J., Todd, J. E., Meyer, J. P., Waghorn, K. A., Losleben, L. K., Poto, M. P., Eilertsen, M. H., Stiller-Reeve, M. A., Clerici, M., Dessandier, P.-A., Moncelon, R., Ramalho, S., Mohadjer, S., Vågenes, S., Aune, V., Os, V., Poddevin, V., & Holm, V. D. (2022). CAGE22-2 Scientific Cruise

Report: AKMA 2/Ocean Senses. *CAGE – Centre for Arctic Gas Hydrate, Environment and Climate Report Series, 10*. https://doi.org/10.7557/cage.6755

3. Comte, J.-C., **Franchi, F.**, Villholth, K., Geris, J., Petros, A. (2022). Conceptual hydrogeological cross-section across the Gaborone catchment from Kanye area to Gaborone city, Botswana. NERC Environmental Information Data Centre. https://doi.org/10.5285/4731c4da- 91fc-4762-9c17-74c8749d4227.
4. **Franchi, F.**, Comte, J.C. (2019). Sediment records of the 2016-2017 flood from Notwane dam, Upper Limpopo basin, Botswana. NERC Environmental Information Data Centre. https://doi.org/10.5285/022b3fff-55d7-46f5-b11f-2f7366e508b0
5. Comte, J.-C., Geris, J., **Franchi, F.** (2019). Water resources quality data following extreme rainfall and floods in the Gaborone catchment, Upper Limpopo basin, Botswana. NERC Environmental Information Data Centre. https://doi.org/10.5285/c7793128-1961-45d5-aa18-5f023116784b

The story of Motopi Pan Meteorite: from impact threat to Botswana heritage

On the 2nd of June 2018, the asteroid 2018LA exploded over the skies of Botswana. The object has been spotted in orbit, several hours before the impact by the Catalina Sky Survey that monitors the skies for potential threats coming from space.
The analysis of the existing ccv camera footages of the bolide explosion allowed teams from NASA and the Finnish Fireball Network to triangulate the exact position of the explosion, occurred 27km over the skies of the Central Kalahari Game Reserve (CKGR). One of the wildest and unhospitable places in Botswana.

A team of local scientists and international collaborators carried out 6 field trips in the CKGR between June 2018 and November 2020 securing 24 fragments of what became known as the Motopi Pan meteorite. This was the second time in history that an asteroid discovered in its pre-impact orbit was then tracked all the way to the ground.

Petrographic and geochemical analyses revealed the Motopi Pan to be an HED meteorite with an howardite, eucrite e diogenite composition. The new data set combined with astronomical data collected before the impact allowed to track the source of 2018AL to Vesta, one of the largest objects in the asteroids belt. Subsequent geochemical analysis of the Motopi Pan meteorite, and in particular studies on the cosmogenic radionuclides, revealed that, although the rock itself is 4.2 billion years old, the impact that removed it from Vesta occurred ca. 22.8 million years ago. The Motopi Pan meteorite comes from an area of Vesta called Rubria. The Motopi Pan can ultimately teach us about the early stages of formation of our Solar System and prompt the interest of the public into Planetary and Space Sciences.

This seminar will present the fascinating story of Motopi Pan, and the impact that this kind of discovery can have on the scientific community of Botswana.