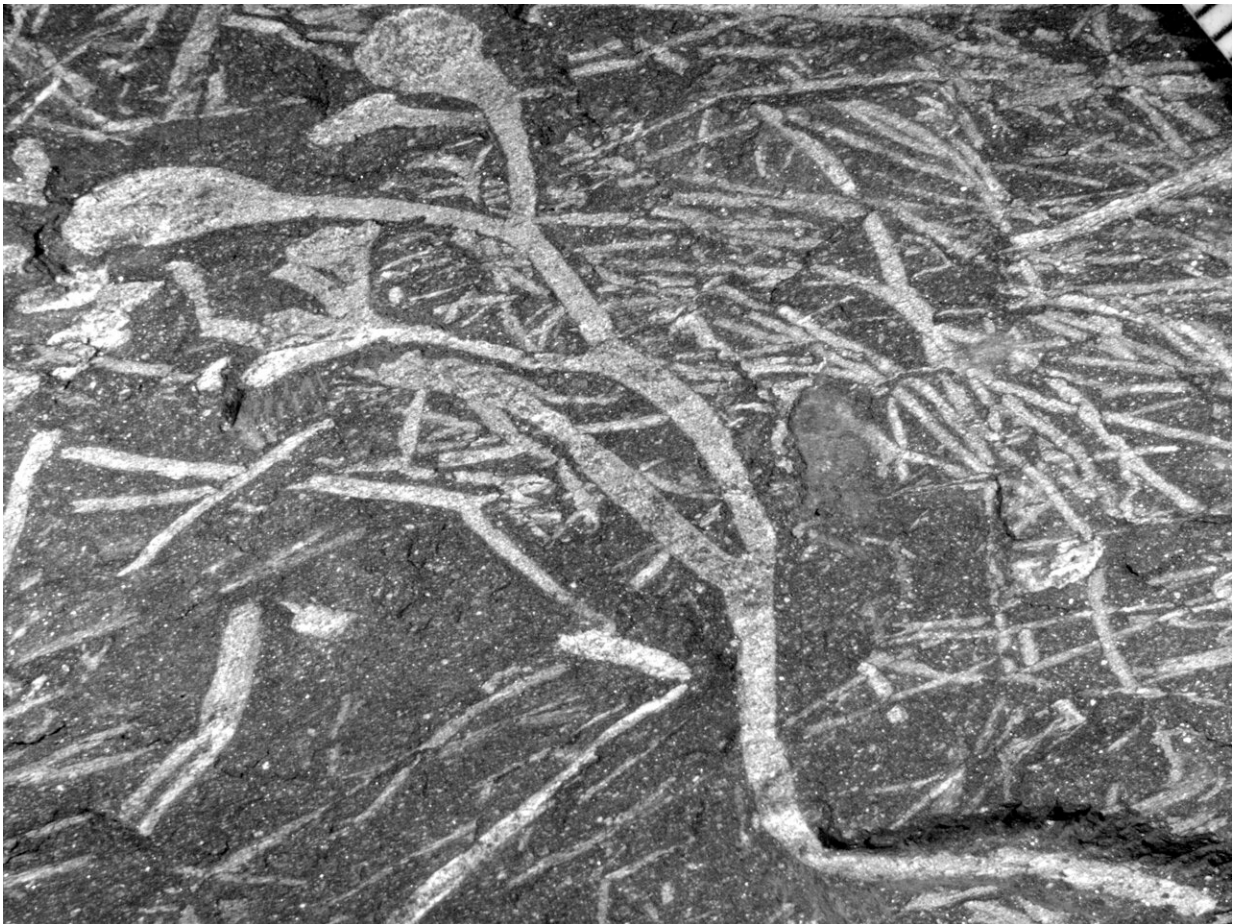


Discovery of the oldest plant fossils on the African continent

June 9 2021, by Cyril Prestianni



A small plant whose axes divide several times before bearing oval sporangia.
Credit: Univeristé de Liège

The analysis of very old plant fossils discovered in South Africa and dating from the Lower Devonian period documents the transition from barren continents to the green planet we know today. Cyrille Prestianni, a palaeobotanist at the EDDy Lab at the University of Liège (Belgium), participated in this study, the results of which have just been published in the journal *Scientific Reports*.

The greening of continents—or terrestrialisation—is undoubtedly one of the most important processes that our planet has undergone. For most of the Earth's history, the continents were devoid of macroscopic life, but from the Ordovician period (480 million years ago) green algae gradually adapted to life outside the aquatic environment. The conquest of land by plants was a very long process during which plants gradually acquired the ability to stand upright, breathe in the air or disperse their spores. Plant fossils that document these key transitions are very rare. In 2015, during the expansion of the Mpofu Dam (South Africa), researchers discovered numerous [plant fossils](#) in geological strata dated to the Lower Devonian (420—410 million years ago), making this a truly exceptional discovery.

Cyrille Prestianni, a palaeobotanist at the EDDy Lab (Evolution and Diversity Dynamics Lab) at the University of Liège, explains: "The discovery quickly proved to be extraordinary, since we are in the presence of the oldest fossil flora in Africa and it is very diversified and of exceptional quality. It is thanks to a collaboration between the University of Liège, the IRSNB (Royal Belgian Institute of Natural Sciences) and the New Albany Museum (South Africa) that this incredible discovery could be studied. The study, which has just been published in the journal *Scientific Reports*, describes this particularly diverse fossil flora with no less than 15 species analysed, three of which are new to science. This flora is also particularly interesting because of the quantity of complete specimens that have been discovered. These plants are small, with the largest specimens not exceeding 10 cm in

height. They are simple plants, consisting of axes that divide two or three times and end in reproductive structures called sporangia."



Mtshaelo kougaensis is a plant that bears complicated sporangia gathered at the end of the axes. Credit: University of Liège

The fossil flora of Mpofu suggests what the world might have been like when the largest plants were no taller than a few centimeters and almost no animals had yet been able to free themselves from the aquatic environment. It provides a better understanding of how the Earth went from a red rock devoid of life to the green planet we know today. These

[plants](#), simple as they are, are a crucial step in the construction of the environments that hosted the first land animals, arthropods. They form the basis of the long history of life on Earth, which continues today from dense tropical forests to the arid tundra of the north.

More information: Robert W. Gess et al, An early Devonian flora from the Baviaanskloof Formation (Table Mountain Group) of South Africa, *Scientific Reports* (2021). [DOI: 10.1038/s41598-021-90180-z](https://doi.org/10.1038/s41598-021-90180-z)

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