**Biological soil crusts from the Sør Rondane Mountains and their influence on soil stability and fertility**

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Biocrusts are communities colonizing soil surfaces, especially in areas where vegetation is scarce, such as drylands, or completely absent, as in continental Antarctica. Some of the organisms inhabiting these communities in close relation with soil particles are lichens, bryophytes, cyanobacteria, heterotrophic bacteria, archaea, fungi, microarthropods and microalgae. Biocrusts improve soil properties by different processes, such as by fixing C and N and thus increasing soil fertility or by producing an exopolysaccharidic matrix that aggregates soil particles, promoting soil stability and reducing erosion. These communities have been extensively studied in warm drylands, but just a few studies have analyzed their functions and characteristics in cold deserts, especially in Antarctica. In fact, it is only very recently that this type of soil communities growing in polar regions have been recognized as ‘biocrusts’. In this study, we sampled biocrusts in different developmental stages (lichen and cyanobacteria dominated biocrusts) and bare soils, in two nunataks at the Sør Rondane Mountains (Dronning Maud Land) which differed in their bedrock type, gneiss or granite. To elucidate the influence of these biocrusts on soil fertility and stability, we analyzed the soil content of organic carbon, exopolysaccharides, aggregate stability and water repellency. Our results show an increasing fertility and stability in soils of both rock types with biocrust development, as previously shown in warm deserts. This work contributes to a better understanding of how biological soil crusts influence soil properties in inland ice-free regions in Antarctica, which is of importance given their expected coverage increase with global change.