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Polar Research: the bridge to Space Research

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In the last decade Polar Research in Germany became increasingly an important focus in Space Research activities, particularly in Planetary Research and Astrobiology. The reason is obvious, because the planets and moons in our Solar System, with a potential to be habitable and also being promising candidates for the search for life beyond Earth, are icy worlds. These icy conditions on those worlds show some analogies to the environment in the polar regions of our home planet Earth. Therefore, the Polar Regions on Earth are often used in Space Research for technology and operational tests as well as for environmental research investigations with probes (landers, rovers, melting probes) and their payloads under these extreme conditions. The tests include either topics of robotic exploration scenarios and crewed astronautic activities. A special trigger for these activities is the question about life and the search for life in the universe as well as investigations on searching for habitable niches on and in the extreme worlds in our solar system. The disciplines of natural sciences (what includes disciplines of geology, geomorphology, physics, chemistry and biology), using and developing the necessary technologies for the described extreme cold environments, are mainly driven by the astrobiological questions of the origin, the evolution and distribution of life in the universe. Examples about the German polar activities in space research will be presented to show perspectives how the journey through Polar Research could support investigations to reach the stars and their planets.

Primary author: Dr DE VERA, Jean-Pierre Paul (German Aerospace Center (DLR), MUSC, Space Operations and Astronaut Training, Cologne)

Presenter: Dr DE VERA, Jean-Pierre Paul (German Aerospace Center (DLR), MUSC, Space Operations and Astronaut Training, Cologne)

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