



## **IGLUNA – Habitat in Ice: An ESA\_Lab project hosted by the SSC**

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IGLUNA is the first ESA\_Lab interuniversity demonstrator project, and is hosted by the Swiss Space Centre (SSC) with the vision to create an analogue habitat inside lunar ice caps. 18 student teams from 9 countries across Europe will develop modular demonstrators that will be constructed and tested in the field test in June 2019. This field test will be conducted inside the moon-like extreme environment of the Glacier Palace inside the Matterhorn glacier from 17 – 30 June 2019. During these two weeks, all the student demonstrators will be combined to make a 36m<sup>2</sup> human habitat. The Glacier Palace will be open for the public during the tests, so that visitors have the opportunity to observe or even participate in the experiments.

Building a habitat in ice on the moon has several large advantages; besides not having to bring a large, pressurized habitable structure, water (ice) is a great insulator for cosmic radiation and radiation from the Sun. Furthermore, a close proximity of water is of high priority to enlarge the chances of human survival, as water is essential for life, but it can also be used to produce oxygen, as fuel, and energy storage. Lastly, building a covered or subterranean on the moon also protects against micrometeorites or dust storms from landing rockets or large nearby impacts [1].

Besides the protection inside the polar crater from heat from the sun, the exact opposite goes for the crater rims. There are several points known on the south pole of the moon where the sun shines for over 90% of the time during a lunar year, meaning that a solar power facility is able to almost constantly produce energy for a nearby lying facility [2-3].

Having a lunar habitat inside a crater on the south pole of the moon thus seems to be the most viable option for a near-future semi-permanent human habitat. To inspire students to think about this habitat and increase international relations and experience with designing a lunar habitat, is the main goal of IGLUNA.

IGLUNA: Being the demonstrator pilot project of the ESA\_Lab initiative, IGLUNA aims to inspire students to participate in a space project by designing a lunar ice habitat and foster international collaboration between the next generation of space experts. IGLUNA builds on the experience of EuroMoonMars research programme and analogue field campaigns involving young professionals [4]. With the analogue base inside a (terrestrial) glacier, IGLUNA will provide public outreach and raise international awareness, by improving education about the durability and self-sustainability of space missions. IGLUNA will also function as a test for future (spacefaring) missions [1].

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References:

[1] SSC, <https://www.spacecenter.ch/igluna/media/>, [2] B.Foing (2005) <https://www.astrobio.net/news-exclusive/peaks-of-eternal-light/>, [3] D.B.JBussey (2010), [4] B.Foing et al <https://www.hou.usra.edu/meetings/leag2017/pdf/5073.pdf>