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INTERNATIONAL ANTARCTIC STATION - INSIGHTS FROM THE LUNARES ANALOG HABITAT

Abstract

Today, in the midst of rapid climate shifts and geopolitical tensions, the importance of having a research station on Earth that is similar to the ISS is even more crucial. Such a station goes beyond having a scientific purpose and national identity and becomes a symbol of unity and international exchange. Antarctica is the only territory that is designated for research, as it has no claim of space and is more protected than any other place on Earth. More specifically, the Ross Sea Marine Protected Area (MPA), the biggest MPA worldwide today safeguarding one of the last unspoiled ocean wilderness areas, would be a desired location for the International Antarctic Station (IAS). It would offer a platform for deepening our understanding of polar climates and at the same time serve as an ICE preparation environment for researchers set for space exploration, while promoting a sensitive and sustainable approach to researching and living in the Antarctica.

The IAS consists of two parts – a modular year-round main habitat located at the Ross Island and a small floatable mobile hub for short-term research missions targeting the Special Research Zone (SRZ) of the Ross Sea MPA. Drawing conclusions from the insights I gained during the 3-week long stay at the LunAres analog habitat in Poland (ICAres-2 M2 mission), as well as from the research I have conducted about the LunAres analog missions, the two-component IAS incorporates various relevant aspects for a comfortable, productive, safe and inclusive stay at an ICE habitat.

This paper proposes architectural solutions based on learnings from a simulation habitat and shape an ICE habitat, which would promote collaborative effort between nations to overcome the shared climate and geopolitical challenges. International Antarctic Station is imagined not only as a research hub, but a beacon of hope, a call to humanity to stand together in times when wars and conflicts cast shadows.