

List of projects for the COMNAP Antarctic Fellowship 2021

Priority Topics for the COMNAP Antarctic Fellowship 2021	
Priority	<ul style="list-style-type: none"> • Alternative non-fossil fuel energy systems in cold climate and any cold climate engineering: including, but not limited to buildings, mechanical, systems, remote autonomous systems • Understanding the environmental issues from direct human impacts arising from Antarctic science and operations including cumulative impacts; Understanding plastic waste introduction and removal options so as to eliminate introduction of plastics including micro-plastics from the Antarctic environment; Understanding management implications of environmental change to National Antarctic Program activities; Development of best practice related to risk reduction from non-native species intra-regionally in the Antarctic • Operation and management of Antarctic aviation capabilities, including, but not limited to application of remotely piloted aircraft for scientific, operational or conservation purposes • Best collaborative use of new marine research vessels in support of science, including advanced exchange of science voyage information • Human safety, including, but not limited to equipment, clothing, operating procedures and search and rescue.
Broader Topics of COMNAP interest	
Air Operations	<ol style="list-style-type: none"> a. Implementation of aircraft tracking technologies and deconfliction of airspace (also linked with safety) b. Use of Remotely Piloted Aircraft Systems in support of Antarctic science c. Use of Remotely Piloted Aircraft Systems in support of Antarctic operations d. Use of Remotely Piloted Aircraft Systems in support of Antarctic logistics e. Use of Remotely Piloted Aircraft Systems in support of Antarctic science and understanding of wildlife benefits and risks
Energy & Technology	<ol style="list-style-type: none"> a. Stream-lining remote field camp set-up b. Reduction of fossil fuel use at remote field camps c. Reduction of fossil fuel use at winter-over stations d. Reduction of fossil fuel use at seasonal stations e. Cost/benefit analysis of fossil fuel use in Antarctic logistics COMNAP Antarctic Roadmap Challenges (ARC) results with a focus on filling a gap in one of the technologies required but not currently available
Engineering	<ol style="list-style-type: none"> a. Station design b. Remote Field Camp/"Super-site" design c. Ship design d. Science support equipment design e. Medical-related design

Environment	<ul style="list-style-type: none"> a. Waste treatments and waste management at Antarctic facilities b. Mitigation strategies for the introduction of non-native species in the Antarctic c. Vessel marine noise reduction
Law	<ul style="list-style-type: none"> a. COMNAP's role within the ATCM b. COMNAP's contribution to discussions in ATCM Working Group 2 c. COMNAP's contribution to discussions within the CEP
Medical	<ul style="list-style-type: none"> a. Pandemic preparedness and response b. Best practice for returning medical supplies and medicines from Antarctica c. Ensuring quality of drinking water on stations and in the field, and at those stations which have them, the monitoring of the quality and/or bacteria content of spa waters and the need for associated bacteria monitoring programmes d. Transportation of patients onto and between various aircraft (also linked with engineering/technology) e. Inability to hold certain drugs, such as narcotics, at stations due to legal definitions and domestic legislation restrictions f. Mental wellbeing of Antarctic expeditioners (also linked with social science and humanities)
Safety	<ul style="list-style-type: none"> a. Clothing fit for purpose b. Crevasse detection c. Education on and avoiding carbon monoxide poisoning d. Reducing risk related to fire emergencies e. Snow mobile/ski-doo safe use f. Diving safety g. Technology to deconflict airspace (also linked with air operations)
Science	<ul style="list-style-type: none"> a. Increasing understanding in relation to any of the 80 SCAR Horizon Scan critical science questions b. Understanding uptake and implementation of the recommendations in the COMNAP Antarctic Roadmap Challenges (ARC) project c. Improving facilitation of science d. Improving international co-operation on big science projects e. Data Management f. Requirements for successful monitoring programmes
Search and Rescue	<ul style="list-style-type: none"> a. Improving co-ordination and response in times of Antarctic emergency and medical evacuations (also linked with medical)
Shipping/Ship Operations	<ul style="list-style-type: none"> a. Efficient design strategies for ice-breaking vessels b. The Implementation of the IMO Polar Code c. Technology to better understand sea-ice conditions
Social Science & Humanities	<ul style="list-style-type: none"> a. Human dimension of winter-over situation b. Education c. Outreach/Media/Communications