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Ocean Science, Ships, Dependency and Inclusion

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Research that covers the open ocean, the deep ocean and the ocean seafloor, is of increasing social and economic significance due to rapidly diversifying uses of the ocean and increased impact of ocean processes on economies and livelihoods. The need to understand ocean processes as a basis for policy formulation (e.g. climate change, climate regulation, biodiversity, mineral resources, etc.) is shared amongst all nations of the world. Yet the ability to conduct modern ocean research is infrastructure-limited in that it requires access to sophisticated, specialized research vessels. These are expensive to build, operate and maintain and therefore tend to be restricted to wealthier nations or made available via philanthropists. In the case of Canada, given the country's extensive, diverse coastline and vast Exclusive Economic Zone and extended continental shelf regions, it has proven problematic to maintain sufficient research vessel capacity. In turn, as with many other nations, especially those in the Global South, Canada has come to depend on access to research vessels of other nations for study and monitoring of its own ocean spaces. Given the growing geopolitical significance of the ocean and its resources, and the importance of ocean data for formulation of climate and resource policy, this dependency may no longer be tenable.

In this presentation, we present the opportunities offered by a system of interoperable, sharable Modular Ocean Research Infrastructure to broaden access to ocean research beyond the countries and organizations that currently operate specialized vessels for research. We introduce the concept of "vessel sharing" and "research vessels of opportunity" that, given access to appropriate technology, can make ocean research more inclusive and accessible and decrease dependency through sharing of vessel time with other sectors. The concept of Modular Ocean Research Infrastructure will be illustrated with recent Canadian-led demonstration projects in Atlantic Canada and Antarctica including the prospects of using this approach to extend access to research and advanced training in Arctic Waters.