Cycle II Research Projects Overview

Irving Shipbuilding Inc. (ISI) Projects

This Call funded nine (9) projects. All nine of these projects concluded on March 31, 2018.

Assisting fisheries management by integration of data from non-specialized assets, ferries, citizens and satellites

PI: Maycira Costa, University of Victoria

This project has leveraged ideas and funds to conduct research on integrating data collected by satellites, sensors aboard ferries, and citizens to provide information with sufficient time and spatial resolutions to address the biological dynamics of the Salish Sea and assist in fisheries management. The project uses British Columbia ferries as moving research platforms (Ferry Ocean Colour Observation System – FOCOS) to help understand the relationship between the dynamic of coastal water colour and ocean productivity. These fluctuations in coastal water productivity are an integral component to understanding the declining salmon population on the British Columbia coast.

Observing and responding to pressures on Arctic marine ecosystems

PI: Brent Else, University of Calgary

The overarching objective of this project is to identify, observe, and respond to risks that may impact marine ecosystem services relied upon by Inuit communities. The project works with community members from Cambridge Bay, Nunavut to identify ecosystem services that the community is most concerned with. Within the project, the team, comprised of both scientific and law experts, is also developing the scientific capacity to study and respond to some of these forthcoming pressures on Arctic marine ecosystem services.

Testing new, innovative and affordable technologies for monitoring and visualizing the impacts of sea level rise, erosion and storm surges on coastal environments

PI: Adam Fenech, University of Prince Edward Island

The heart of the project is the application of a LiDAR sensor aboard a fixed wing small unmanned aerial vehicle to capture imagery: this will in turn be used to develop a tool

that visualizes sea level rise, coastal erosion and storm surges for the vulnerable First Nations community on Lennox Island, Prince Edward Island. The Lennox Island approach to climate visualization has been shared with the United States Geological Survey (USGS) which has asked for future discussions on collaborating on methodology development.

Continuous assessment of plankton abundance and community structure in Canadian coastal waters with a novel, flow-through, high-throughput holographic microscope operated on volunteer observing ships
PI: Julie LaRoche, Dalhousie University

The project is directed towards developing new instrumentations for monitoring of the marine systems. The integration of a holographic microscope into the chemical measurement package will add the biological component necessary to monitor phytoplankton productivity on the Atlantic Condor on the Shelf Waters cca 400 km southeast from Halifax. The project is also in constant interaction with Inwater Imaging (4-Deep) to help the company improve their software identification program.

Safer shipping through summer sea ice: new synthetic aperture radar (SAR) based tools for monitoring and predicting sea ice conditions
PI: Randy Scharien, University of Victoria

The melting state and movement of sea ice is hard to predict, meaning users of the ice are at risk of hazards such as slush zones and disintegration of the ice edge, and users of the sea in ice-prone waters are at risk of being trapped by moving ice. This project has brought together Canadian experts in sea ice, remote sensing, and partners involved in operational ice charting and predictions, to address the need for better sea ice observations and predictions by resolving melt induced uncertainties.

Prioritizing threat management strategies to ensure long-term resilience of the Fraser River Estuary
PIs: Tara Martin, University of British Columbia and Julia Baum, University of Victoria

British Columbia's Fraser River Estuary (FRE) provides valuable goods and services to the people of Canada and abroad. The project is undertaking a priority threat management assessment to identify the management actions required to reduce key

threats to the Fraser River Estuary in order to ensure its long-term resilience. The research is focused on the identification of the key management actions needed to respond to these threats, and emerging risks.

Project #18. Arctic marine activities integration and synthesis (AMAIS) project: Infusing Inuit voices into Arctic marine transportation corridors and oceans
PI: Jackie Dawson, University of Ottawa

Increased navigability of Arctic waters, as a result of climate change, is intersecting with a global appetite for untapped natural resources, increasing Arctic tourism, and growing traffic through the Northwest Passage. These factors must be addressed in the implementation of the Northern Marine Transportation Corridors (NMTC). The project will 1) evaluate historic shipping trends in Arctic Canada from 1990 to present; 2) identify significant sociocultural, archaeological, and ecological sites and travel routes in the Canadian Arctic for overlay and integration into the NMTC; 3) outline potential impacts of shipping on those sites and community members; and 4) make recommendations for management of the NMTC.

Project #19. Ocean observation using microbial genomics: a new baseline tool for environmental effects monitoring of marine pollution
PI: Casey Hubert, University of Calgary

This project uses microbial genomics to examine effects of marine pollution on the ocean environment and has characterized 350 Scotian Slope marine surface and subsurface sediment samples. Genomic sequencing of these samples has provided an initial microbial baseline in the Scotian Slope region that could inform oil spill bioremediation strategies. Although not completed, through this project the work will continue with the Genome Canada GAPP project, "Microbial genomics for de-risking offshore oil & gas exploration in Nova Scotia".

Project #20. Monitoring marine plastics in Canada's North
PI: Max Liboiron, Memorial University

The project established the first studies and the first baseline for plastic ingestion in food fish central to northern sustenance and livelihoods, partnered on the first monitoring exhibition for surface plastics through the arctic, and invented, validated,

and released the first inexpensive, do-it-yourself scientific trawl for surface plastic exploration designed explicitly for northern waters.

Bridging the Gap and KTEE Call

The Bridging the Gap Call funded ten projects, while the KTEE Call funded two projects. The two KTEE projects, run by Bill Merryfield and Hal Ritchie, end on March 31, 2018. Nine of the Bridging the Gap projects run from April 1, 2017 until March 31, 2019. Brent Else's Bridging the Gap project runs from April 1, 2018 until March 31, 2020.

User-driven monitoring of adverse marine and weather states, Eastern Beaufort Sea

PI: David Atkinson, University of Victoria

This project will 1) develop and provide wave or sea-state climatology products that have been tailored for open-water users (hunters, tug-boat operators, Coast Guard) and for coastal engineering considerations, 2) increase the liaison work that has been established between Atkinson's existing MEOPAR and Environment and Climate Change Canada (ECCC) regarding the on-the-ground impacts of particular synoptic patterns, and 3) provide technical training opportunities for end users.

Marine acoustic disturbances: shipping and marine renewable development across Canada, mitigation, management and monitoring of associated noise

PI: Rosaline Canessa, University of Victoria

Ship- source noise and noise from marine renewable energy (MRE) developments can have negative effects on marine species (e.g. masking of calls/communications, navigation, foraging and hazard avoidance), all of which can lead to increased stress, disturbance, deafness and mortalities. The project will give wider consideration to managing marine noise in specific physical bottlenecks that constrain marine mammal (MM) and vessel movements. The project will consider: 1) Active Pass and Boundary Pass within the current Salish Sea site (Pacific), 2) Prince of Wales Strait associated with the current Sachs Harbour site (Arctic) and 3) the Laurentian Channel MPA to be announced (Atlantic).

Integrated Fukushima Ocean Radionuclide Monitoring (InFORM) Network: a collaborative radiation monitoring network to determine and communicate

environmental risks for Canada's Pacific and Arctic Oceans from the Fukushima-Daiichi nuclear accident

PI: Jay Cullen, University of Victoria

The magnitude 9.0 Tohoku earthquake and resulting tsunami led to meltdowns in three of six nuclear reactors at the Fukushima Dai-ichi nuclear power plant and the discharge of large quantities of radionuclides. The environmental and public health impacts in Canada associated with the disaster are likely to be small, but there is still insufficient monitoring of radionuclides in seawater and marine biota in time and space to adequately quantify these risks. To bridge this critical knowledge gap, the research team has built a distributed monitoring network involving government, academic, private sector and citizen scientists. The InFORM network will be a model linking scientists with health professionals and outreach specialists that could be rapidly adapted and employed to address marine environmental emergencies in the future.

Improving marine drift and dispersion forecasts

PI: Dany Dumont, UQAR

This project builds on achievements realized during Cycle I trying to improve our understanding and ability to forecast surface drift. In partnership with the St. Lawrence Global Observatory (SLGO), the high-frequency radar (HFR) observations of surface currents will be made available to emergency responders through a mobile application. The application will allow users to compute and display surface drift trajectories on demand, which is critical in emergency situations. This application will also constitute a powerful educational tool for anyone interested in ocean dynamics. The team will also explore the feasibility of using sea surface temperature remote sensing data and surface drift forecasts to help fishermen collect floating algae and plastic debris.

Observing and Responding to Pressures on Arctic Marine Ecosystems

PI: Brent Else, University of Calgary

As Canada's Arctic is changing, different people see different risks and opportunities. This project aims to reconcile those viewpoints, by bringing together diverse partners and an academic team with expertise in oceanography, meteorology, anthropology, microbiology, and legal studies, who can work collaboratively to develop observation and response strategies for the changing Arctic. The project builds on Dr. Else's Irving

project of the same name and will use contemporary social science methods to create an inventory of ecosystem services through community consultation and will investigate two potential pressures on ecosystem services – oil spills and ocean acidification. With a two-year extension, the project will also build a knowledge transfer mechanism which will target all key receptor groups.

Integrated Coastal Acidification Program (ICAP-2)
PI: Karen Kohfeld, Simon Fraser University

The Integrated Coastal Acidification Project (I-CAP2) conceptual framework provides a means of structuring and integrating interdisciplinary knowledge about ocean acidification (OA) so as to quantify and communicate the socio-economic risks that face Canadian fisheries, coastal communities and Indigenous peoples. The project will emphasize on a connection with coastal communities through graduate student and postdoctoral support, and will hold a workshop to finalize research results.

Climate change and extreme events in the marine environment
PI: Bill Merryfield, University of Victoria

This project will transfer new capabilities for forecasting seasonal storm activity, developed in MEOPAR's initial project 2.1, from academia to government. A new methodology for improving regionally downscaled climate change projections will also be transferred from academia to government. Third, a white paper will be published outlining how modelling capabilities developed under MEOPAR could be applied to enable real time operational forecasting for Canada's coastal oceans on subseasonal to multiseasonal time scales. Lastly, new knowledge about best practices for municipal coastal hazard preparedness will be transferred through a series of workshops and publications.

Downscaling atmosphere-ocean forecasts from global to harbour scales with application to the Maritimes
PI: Hal Ritchie, Dalhousie University

This project builds on MEOPAR initial project (IP1.1) entitled "A Relocatable Coupled Atmosphere-Ocean Prediction System". This initial project has resulted in capabilities

and forecast systems that are more sophisticated than originally proposed. These new capabilities are put to practical use by developing and demonstrating a new real-time "pre-operational" atmosphere-ocean forecast system, engaging users in the evaluation and use of the outputs from the high resolution atmospheric and ocean models, and overcoming challenges in the communication of information on marine risk from the perspectives of organizations and individual users.

Improved observation and prediction of sea ice hazards to assist decision-making in safe and efficient Arctic shipping and offshore operations

PI: Andrea Scott, University of Waterloo

Changes of sea ice conditions and the world's hunger for natural resources are leading to increased shipping and offshore activities in the Arctic. However, these activities are affected by sea ice, which can be hazardous due to its presence alone, or due to ice drift, ridging, and pressure. The team will develop improved observations and forecasting capabilities of sea ice type, thickness, ridging, drift, and pressure in the Beaufort Sea by means of airborne surveying, satellite remote sensing, and sea ice forecasting.

Whales, Habitat and Listening Experiment (WHaLE)

PI: Christopher Taggart, Dalhousie University

There is an urgent need for flexible and economic monitoring of whales and vessels that provides vessel-whale strike-risk reduction information and response options. The research team and partners will collaborate to address this need by generating, exchanging and exploiting new knowledge derived from passive acoustic monitoring (PAM), oceanographic, and vessel automatic information system (AIS) observational data obtained from various platforms. The team will also develop the in-house infrastructure to communicate whale locations (whale alerts) derived from PAM and other complimentary data products to vessels in near real-time.

Canadian Ocean Acidification Research Project (COARP)

PI: Helmuth Thomas, Dalhousie University

CO_2 emissions caused by human activities have increased CO_2 concentrations in the atmosphere and ocean, causing deleterious effects on Earth's climate and marine ecosystem. COARp investigates the vulnerability of living marine resources and related industries to ocean acidification (OA) in Canada, using selected coastal marine sites distributed along Canada's coastline for case studies. COARp will investigate the threats of OA, directly and by engaging stakeholders. The project will furthermore aim to strength knowledge mobilization pathways by developing and mobilizing data products and tools.

Year of Polar Prediction (YOPP) Call

This Call funded five (5) projects. All projects began on April 1, 2017 and conclude on March 31, 2020. These projects are funded 50/50 between MEOPAR and Polar Knowledge Canada (POLAR).

Enhancing Arctic Ocean monitoring and prediction with autonomous sensors, numerical models and social networks

PI: Philippe Tortell, University of British Columbia

Canada does not have sufficient maritime resources (*i.e.* ice-capable research vessels) to conduct robust measuring and monitoring programs across its vast Arctic territorial waters. The project aims to make significant improvements in Arctic Ocean remote sensing and numerical modelling through the deployment of ship-based autonomous sensors, while facilitating better knowledge sharing with northern communities in partnership with the Vancouver Aquarium.

Forecasting Regional Arctic Sea Ice from a Month to Seasons (FRAMS)

PI: Bruno Tremblay, McGill University

The objective of this project is to develop improved operational products and services relating to forecasting of Arctic sea ice on time scales from a month to seasons. These sea ice forecasts will be based on ensembles of global climate model simulations, initialized with observations in the manner of weather predictions, from WMO's Global Producing Centres (GPCs) for Long-Range Forecasts.

Southampton Island Marine Ecosystem Project (SIMEP)

PI: CJ Mundy, University of Manitoba

The project brings together a multi-disciplinary and multi-sectoral team of social and natural scientists, from both academic and government sectors, to study the marine environment around Southampton Island, and establish links to climate sensitive variables (e.g., ice cover, ocean temperature, ocean acidification). Little is known about this region's oceanography, productivity or biological community and trophic structure, though it is an important support for local human habitation in Dorset, Thule and Sadlermiut.

Improving visibility forecasting in summer time polar fog

PI: Rachel Chang, Dalhousie University

This project targets improved understanding of how fog works in the northern coastal environment. Communities and other groups operating in the North, such as mining/shipping companies, aircraft operators, Coast Guard, or tourism operators, are all very dependent on surface visibility conditions. Most Northern communities are located on the coast. However, little research focusing on the direct sampling of fog droplets and particles has been performed in the North in the summer.

Predicting the Future(s) of Renewable Energy in Canada's Arctic

PI: Adam Monahan, University of Victoria

Reliance of communities in Canada's Arctic on fossil-fuel based power generation exposes them to high costs and vulnerabilities. The project is a collaboration of atmospheric scientists and engineers from the University of Victoria, the Université de Québec à Montréal, and the University of Alaska, in partnership with the World Wildlife Fund, the Government of the NWT (GNWT), the Hamlet of Sachs Harbour, Hydro-Québec, Manitoba Hydro, and the Ouranos Consortium to produce and study predictions of future wind and solar power resources in Northern Canada, with a particular focus on coastal communities.

Call for Proposals 2017

Several projects were co-funded with partners. These projects began on April 1, 2018. They range between 2-3 years in length.

Model of Impact of Dilbit and Oil Spills in the Salish sea (MIDOSS)

PI: Susan Allen, University of British Columbia
Co-funded by Ocean Networks Canada

The proposed Trans Mountain pipeline will bring a more than six-fold increase in the number of tankers transiting the Salish Sea, and they will be carrying diluted bitumen (Dilbit). This research project will improve scientific knowledge and tools to support evidence-based planning both in preparation for, and in response to, an oil spill. The results of the research will be used by stakeholders, including Canadian Coast Guard (CHS) in products for ship pilots (accident prevention); near surface current model improvements to the Meteorological Service of Canada (MSC) for operational implementation; weathering algorithms for Dilbit to improve the Environment and Climate Change Canada (ECCC) COSMoS model; and oil spill exposure products to local governments to facilitate more effective risk communication and emergency preparedness planning.

Baselines and biodegradation potential in Atlantic Canada's deepwater offshore oil prospects

PI: Casey Hubert, University of Calgary

Baseline assessments in advance of industrial projects, such as those being considered by BP, Shell and Statoil in deepwater offshore Nova Scotia, are essential. They allow for the most robust future environmental effects monitoring (EEM) of ecosystem resilience, background levels of pollution, and overall environmental change, during 'normal' operations of the offshore oil industry. The ability to sensitively monitor the marine environment will be improved by baseline and EEM metrics rooted in microbiology and genomics, which are more sensitive than macro invertebrate survey tools currently used. As such, the project will deliver enhanced environmental monitoring for governments (Nova Scotia), industry (oil companies) and consultants that, recommend, perform and interpreting baselines and EEM (Stantec).

MEOPAR – WHaLE: A crisis-driven renewal with a focus on the Gulf of the St. Lawrence

PI: Chris Taggart, Dalhousie University

There is an urgent need for flexible and economic monitoring of whales and vessels to provide vessel-strike risk-reduction information; especially now focused on the Gulf of St Lawrence (GoSL). The research team, with stakeholder groups, will collaborate to address the need by generating, exchanging and exploiting new knowledge derived from passive acoustic monitoring (PAM), oceanographic, and vessel automatic information system (AIS) observational data. These data will continue to form the basis for characterizing and predicting the spatio-temporal distributions of at-risk whales, habitats, and vessel-threat. Products of this research will afford maritime operators the ability to respond to the unexpected presence of endangered whales with appropriate mitigation actions.

OxyNet: A network to examine ocean deoxygenation trends and impacts

PI: Philippe Tortell, University of British Columbia
Co-funded by Ocean Networks Canada

This proposed network will examine current trends, future trajectories and potential impacts of oceanic oxygen loss. The research team will synthesize observations from the Pacific, Arctic and Atlantic Oceans, to analyze the trends, patterns, and drivers of deoxygenation. The team will collaborate with Ocean Networks Canada to develop and implement improved calibration and quality control of underwater oxygen sensors, enabling better integration of autonomous O2 measurements with ship-board observations. The team will also undertake field studies to quantify the impacts of deoxygenation on oceanic emissions of greenhouse gases, including methane and nitrous oxide. The work will support the development of improved numerical models to inform future projections of ocean deoxygenation, with a particular focus on low O2 waters of the Subarctic Pacific Ocean. Data and model outputs will be used to quantify potential economic impacts of deoxygenation on BC salmon aquaculture, and groundfish distributions along Canada's Pacific and Atlantic coasts.

Coastal Flood Risk Governance in a Changing Climate

PI: Daniel Henstra, University of Waterloo

Flooding is a major climate change risk for coastal communities, with the potential to limit the availability of insurance and depreciate property values. Many countries have embraced flood risk management (FRM), a strategic framework that shares responsibility among public and private stakeholders, and employs diverse policy

instruments to reduce and manage flood impacts. By contrast, the management of flooding in Canada is government-dominated, focused narrowly on prevention and recovery, and guided by historical experience, while ignoring climate change risk. Through case studies in Halifax, Nova Scotia and Vancouver, British Columbia, this research will critically evaluate existing flood risk governance arrangements (FRGAs) and develop strategies to achieve more resilient, efficient, and legitimate FRM outcomes.

Arctic ULINNIQ: Underwater listening network for novel investigations of quakes
PI: Mladen Nedimovic, Dalhousie University

Atlantic and Arctic Canada lacks the scientific knowledge required to inform policies for coastal building, land use, and emergency measures, yet it is in a tsunami-prone region, as recently witnessed by the June 2017 devastating 100-m tsunami in Nuugaatsiaq, Western Greenland. The immediate goal is to determine the location, magnitude, frequency, and cause of submarine earthquakes and submarine or coastal landslides necessary to establish a tsunami risk for communities in northeastern Baffin Island. Consultation, feedback, and involvement of the project's ultimate stakeholders, the citizens of Nunavut, will continue throughout the project to ensure the optimization of the methodologies and impacts of the results.

Investigating and informing Indigenous marine monitoring and management as climate change adaptation strategies
PI: Natalie Ban, University of Victoria

In our changing world, we need novel approaches to inform holistic monitoring and management to adapt to climate change. Indigenous knowledge offers a different perspective on interconnected social-ecological systems. This research addresses a key gap in monitoring: linking social and ecological monitoring, and Indigenous knowledge and science, through interdisciplinary research and modeling. The research will develop an Indigenous-led social-ecological monitoring and modeling framework, benefiting not only our case study (the Gitga'at First Nation, north coast of British Columbia), but also enabling others to implement a similar approach. Our modeling and research on Indigenous management will advance our understanding of ecosystem resilience under climate change, enabling more informed adaptation responses in the future, thereby benefiting the Canadian environment and well-being of coastal communities.

Spatiotemporal dynamics of the coastal ocean biogeochemical domains of British Columbia and Southeast Alaska - following the migration route of juvenile salmon
PI: Maycira Costa, University of Victoria
Co-funded by Ocean Networks Canada

This project aims to quantify the spatial and temporal variability of the physical, chemical, and biological properties of the coastal oceans from BC to SE Alaska, defined as Coastal Ocean Biogeochemical Provinces (COBPs), along the main migration route of different species of juvenile salmon. Analysis will incorporate satellite products from the past two decades, in situ sampling from vessels of opportunity, research cruises, cabled observatories, aquaculture industry surveys, citizen science, and oceanographic and riverine archived data. The outcomes of this project will be translated into actions that impact management practices by the government, industry, and other organization.

Comment passe-t-on à l'action avec les plans d'adaptation et de résilience? Projet de recherche en zone côtière et riveraine du Québec et de l'Ontario (2018-2021).
PI: Steve Plante, UQAR

*Translation to be uploaded.

Mapping & Managing Shipping Risks to Protected Marine Areas in Canada's Northwest Passage: Lancaster Sound and the Franklin Wreck Sites
PI: Jackie Dawson, U. Ottawa
Co-funded by Clear Seas Centre for Responsible Marine Shipping

This project was co-designed with project partners (government, Inuit groups, and industry) and responds to stakeholder-identified research needs focused on understanding the risks, opportunities, and management options for increased marine traffic to two protected marine areas in Canada's Northwest Passage: 1) Tallurutiup Imanga National Marine Conservation Area (Lancaster Sound) and 2) the Wrecks of Erebus and Terror Historic Site (Franklin Wrecks). Parks Canada and relevant Regional Inuit Associations (Qikiqtani and Kitikmeot) are currently establishing interim and full management plans for these two protected marine areas, but are struggling due to a lack of research and data on shipping trends and potential impacts from ships to these

sites. This project will advance scholarly understanding and will also inform the development of federal management strategies for managing shipping risks to nationally and internationally important Arctic marine areas.

Shipping Resilience: Strategic Planning for Coastal Community Resilience to Marine Transportation Risk (SIREN)
PI: Stephanie Chang, UBC
Co-funded by the Province of British Columbia

This project aims to improve understanding of how coastal marine transportation systems would be disrupted in natural hazard events, how such disruption would impact coastal communities, and what strategies could effectively address this risk. Focusing on the movement of people and goods in the emergency response phase of a disaster, the study will develop new tools, information, and risk assessments to support preparedness planning by local and provincial governments and the transportation sector. The research will deliver: (1) workshops for engaging government and transport sector stakeholders; (2) a framework for assessing coastal community resilience to shipping disruption; (3) a simulation tool based on this framework; and (4) specific findings and recommendations for two case studies – a detailed analysis of catastrophic earthquake risk in British Columbia and exploratory analysis of hurricane risk in Atlantic Canada.

Cores

MEOPAR funds three Cores: Observation, Prediction and Response.

Observation Core

PI: Brad deYoung, MUN
Investigators: Marcel Babin, Cedric Chavanne, Mike Smit, Rich Pawlowicz, Richard Dewey, Brent Else, Doug Wallace

The Observation Core supports, developments and coordinates ocean observation capacity for MEOPAR projects and closely-related activities of partners. The functions are to: a) support shared access to observing infrastructure, and encourage technological developments; b) maintain and deploy technical expertise for ocean observation in strategic locations; c) share knowledge and training related to ocean observation; and d) promote national and international sharing of data, expertise and the coordination of observation programs.

Prediction Core

PI: Dany Dumont, UQAR
Investigators: Bill Merryfield, Ron Pelot, Susan Allen, Katja Fennel, Youyu Lu, Rene Laprise, Adam Monahan, Will Perrie, Jinyu Sheng, Jim Christian

The Prediction Core aims at developing and maintaining the capacity of the Network to improve and deliver tools and highly qualified personnel that will enable support Canada's leadership in marine environmental prediction. The four main activities are: a) developing and implementing improved numerical models; b) training the next generation of experts in environmental predictions; c) a code repository; and d) project support and guidance.

Response Core

PI: Stephanie Chang, UBC
Investigators: Jason Thistlethwaite, Paul Kovacs, Joel Finnis, Ron Pelot, Anthony Charles, Greg Oulahen

The Response Core will support the Network by serving as a focal point of expertise, information, and engagement on issues related to response. The goals in Response Core are: a) provide a forum for sharing expertise and ideas regarding impacts and solutions, emphasizing but not limited to social science knowledge; b) to support MEOPAR project teams seeking to conduct research related to Response; and c) to

facilitate stakeholder engagement in order to mobilize the use of knowledge to reduce marine-related risks and develop effective solutions.