



# Arctic shipping and ArkGIS

Mapping conservation interests

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The aurora borealis creates swirls of light across the night sky over a snowy winter landscape, Northwest Territories, Canada.

## ARKGIS GOAL:

Enhance our general knowledge base on arctic values (species, ecosystems, cultures) and the industrial sectors which are a potential threat to these values (fishing, mining and oil and gas) with the purpose of deriving concrete policy recommendations pertaining to Arctic ship traffic.

**ArkGIS (Arctic Geographical Information System)** is a project that seeks to combine and integrate existing environmental, human activity and use data in the Arctic into a common mapping platform. The project has a central place in WWF's work furthering a conservation agenda for an Arctic undergoing rapid change, by enabling learning, awareness-raising and capacity building on one hand, and allowing for vulnerability and risk assessments as well as ecosystem-based management and resilience-building on the other.

## The need for a fact-based approach to arctic shipping regulation

Driven by an ever increasing global demand for commodities such as energy and mining products and the decreasing summer ice-coverage in the Arctic, it is expected that ship traffic will grow significantly the next decades, increasing the pressure on the environment in this relatively pristine area. There is on-going policy development which seeks to derive the future regulatory regime for ships in arctic waters. Of particular importance is the Polar Code

currently being discussed in the International Maritime Organization which will set legally binding environmental requirements for all ships in the Arctic. However, one critical weakness with the current regulatory processes is a general knowledge deficit in the Arctic, in particular related to the understanding on how regulation should be designed to ensure management which sustain the functioning of ecosystems for all uses.

# A multi-disciplinary and multi-stakeholder project

ArkGIS will be a platform developed using GIS on the basis of current spatially explicit data on conservation interests in the Arctic. Stakeholders are invited to partner in the development of the application, and use the application once developed.

## ArkGIS will be developed in five distinct phases:

### 1. Compile existing data

ArkGIS will take advantage of existing data relating to conservation interests (species, ecosystems) and threats (shipping and oil and gas).

### 2. Establish an integrating mapping framework

As it is likely that existing geographical reference data exists in different formats and specifications, we will establish an integrating framework. ArkGIS will be aligned with the Spatial Data Infrastructure project of the Arctic Council.

### 3. Define an analytical framework

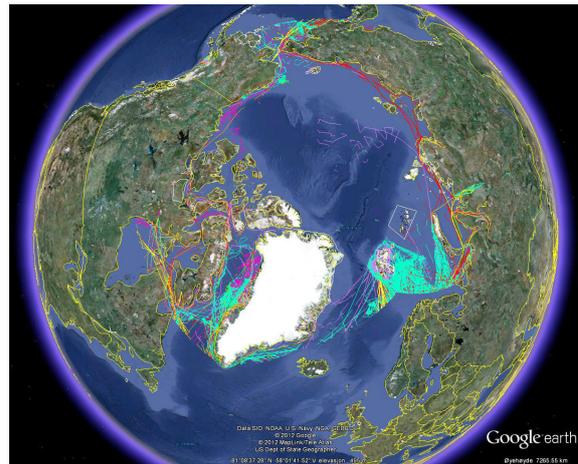
We will propose a method for conducting environmentally focused risk assessment based on the compiled, harmonized data.

### 4. Derive future scenarios

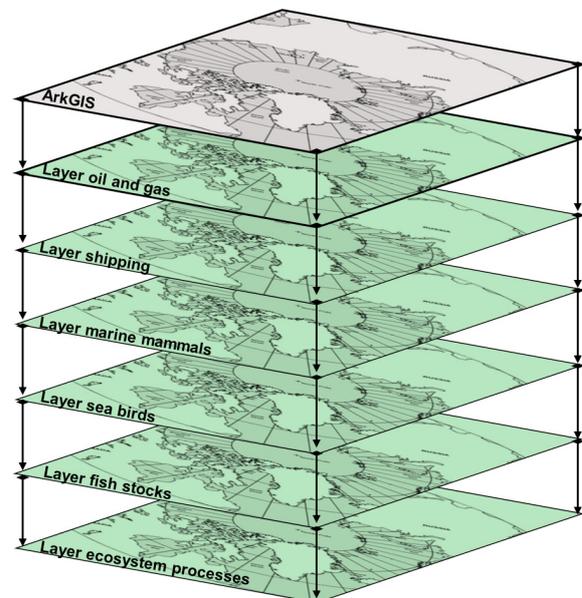
As substantial change is taking place in the Arctic and will continue in the future, we must anticipate the consequences. To inform current policy development on possible future conditions, we will derive scenarios to depict the most important future characteristics and threats to the Arctic environment.

### 5. Derive policy recommendations for ecosystem-based management

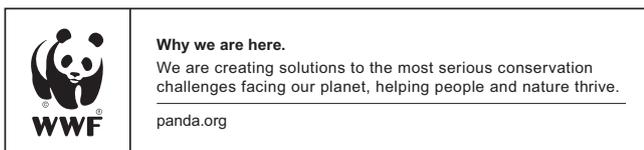
Our main goal in the ArkGIS project is to use the compiled spatial data, resulting risk assessments and scenarios to engage with stakeholders and policy makers to identify suitable policy recommendations.



Arctic ship traffic lanes for all vessels in 2011. Source: Norwegian Coastal Administration (2011) and DNV (2011).



Conceptual presentation of the integrating approach in ArkGIS. Source figure: WWF (2012)



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## Information

Lars Erik Mangset  
Advisor Shipping and Climate, WWF-Norway  
lemangset@wwf.no  
+47 93 20 94 94

Dr. Martin Sommerkorn  
Head of Conservation, WWF Global Arctic Programme  
msommerkorn@wwf.no  
+47 22 20 53 09