

# Project Dashboard

Shipping Emissions in the Arctic and North Atlantic Atmosphere (149759)

## Proposal Status: Conformity Determination Issued

- **Overview**
- Documents
- Correspondence
- Questionnaire

### Project Overview

Type of application: **New**

Proponent name:	Zongbo Shi
Company:	University of Birmingham

#### Schedule:

Start Date:	2022-05-19
End Date:	2022-06-27
Operation Type:	Annual

#### Project Description:

Ship emissions have a marked influence on the marine aerosol load significantly affecting global climate. Melting sea ice in the Arctic will lead to increased shipping in the region, which could significantly affect the atmospheric composition and climate. Quantifying these influences is challenging, however, due to a lack of understanding of marine aerosol sources (a dynamic baseline from which predictions are made) as well as uncertainty in current / future shipping emissions. This is particularly true at high-latitudes. SEANA aims to better understand the impact of i) increasing future ship traffic and ii) the IMO emission regulation upon atmospheric aerosols and the climate in the Arctic and North Atlantic atmosphere (ANAA). To this aim, SEANA will for the first time carry out synergistic yearlong observations at fixed-stations and intensive field studies on mobile platforms along the Northwest Passage (NWP), with a focus on aerosol / CCN sources and processes. As part of this, we will sail to the Labrador Sea and David Strait using the RRS Discovery ship from 19 May to 27 June 2022 to make a comprehensive observation of gases and aerosols, as well as cloud condensation and ice nuclei. The new data will be integrated with recent / ongoing measurements at existing ANAA stations in order to generate a benchmark dataset on aerosol baselines in ANAA. SEANA will employ a 'before and after' regulation observation to determine the "real-world" impact of IMO regulation on aerosol and CCN. The new datasets will be used to evaluate and improve a state-of-the-art global aerosol model to represent key aerosol sources and processes, including shipping emissions as well as model responses to emission changes in ANAA. SEANA will apply the improved model to provide robust predictions on both the impact of future ship traffic and IMO regulation on aerosol and the climate in the NWP

#### Personnel:

Persons:	19
Days:	20

### Project Map

#### List of all project geometries:

ID	Geometry	Location Name
8681	polyline	New project geometry
8682	polygon	New project geometry
8683	polygon	New project geometry

8684	polygon	New project geometry
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**Planning Regions:**

Qikiqtani

Kivalliq

**Affected Areas and Land Types**

Inuit Owned Surface Lands

Settlement Area

North Baffin Planning Region

## Project Land Use and Authorizations

**Project Land Use**

Scientific Research

**Licensing Agencies**

NRI: [Scientific Research Licence](#)

**Other Licensing Requirements**

No data found.

## Material Use

**Equipment**

Type	Quantity	Size	Use
Research Ship RRS Discovery	1	96 m long	To carry out scientific research on the sources of airborne particles that are important for the clouds and climate in the Arctic

**Fuel Use**

Type	Container(s)	Capacity	UOM	Use
Diesel	14	14	Cubic Meters	low sulphur fuel

**Hazardous Material and Chemical Use**

Type	Container(s)	Capacity	UOM	Use
Chemical - acids	3	1	Liters	Chemical reagents for research
chemicals - organic solvents	6	2	Liters	For use within different instruments
chemicals - bases / neutral	8	1	Kg	For use in the lab

**Water Consumption**

Daily Amount (m³)	Retrieval Method	Retrieval Location
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## Waste and Impacts

### Environmental Impacts

All chemicals will have accompanying COSHH and risk assessments. They will be stored, handled and disposed of appropriately as per standard NMF procedure. No waste will be released to the natural environment. All cardboard and paper products are incinerated at sea on the Discovery. Recyclable items are stored for appropriate recycling upon arrival into port. Any non-burnable or non-recyclable waste (e.g. batteries) is stored appropriately and disposed of upon arrival into port. See more details in Environment Impact Assessment document.

### Waste Management

Waste Type	Quantity Generated	Treatment Method	Disposal Method
Combustible wastes	1000 kg	N/A	combustion
Hazardous waste	100 L	N/A	Stored in dedicated containers and take back to the UK for disposal
Non-Combustible wastes	5000 kg	n/a	Any non-burnable or non-recyclable waste (e.g. batteries) is stored appropriately and disposed of upon arrival into port.