

ARCTIC SHIP TRAFFIC DATA PROGRAM (ASTD)

STATUS REPORT

MAY 2025



ARCTIC COUNCIL

PAME
Protection of the Arctic Marine Environment

ARCTIC SHIP TRAFFIC DATA (ASTD) PROGRAM

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PROJECT CO-LEADS:
NORWAY
USA

Summary from 2021 to date. Annex I contains a list of affiliations who have received access to ASTD.



*The project gratefully
acknowledges funding
from the US Government.*



BACKGROUND

PAME's Arctic Ship Traffic Data (ASTD) Program has been developed in response to a growing need to collect and distribute accurate, reliable, and up-to-date information on shipping activities in the Arctic. The ASTD Program includes the ASTD System, a database containing wide range of historical ship-related information for the Arctic, including ship tracks by ship type, information on the number of ships in over 400 Arctic ports and communities, detailed measurements of ship emissions, shipping activity in specific Arctic areas (e.g., the EEZs, Arctic Large Marine Ecosystems, and the IMO Polar Code area in the Arctic), and ship fuel consumption.

The ASTD Program also encompasses the ongoing maintenance of the ASTD System (software and hardware), the development and regular updating of user manuals and related instructional materials, the maintenance of the public ASTD website, the vetting and processing of ASTD access applications, troubleshooting and diagnosing ASTD System issues, funding of the ASTD System by participating Arctic States, accounting, budgeting, contract maintenance and related financial, administrative, and legal issues.

PAME and the Arctic Council use the data from the ASTD System to generate output and conduct analyses that support and advance many Working Group projects. ASTD Participating Arctic States have full, free, and unfettered access to the ASTD System for research and analysis, while Permanent Participants, Arctic Council Observers, and other eligible entities such as research institutions and universities, may gain access upon request. Each applicant granted access, called a user provided access via a username and password and may download ASTD data for analysis. Users are also able to add their own data to the system, including shapefiles, to display in the System.

Over 300 individuals from some 100 different affiliations have applied for and been granted access to ASTD data. See Annex II for a list of affiliations.

The ASTD Program has been a significant step by PAME to reduce the knowledge gap regarding ship traffic in the Arctic. With changes in the Arctic sea ice extent and projected increase in Arctic shipping, the ASTD Program allows the Arctic Council to remain at the forefront of monitoring trends and assessing changes for use in studies, assessments, analyses, and the development of recommendations that enhance Arctic marine safety and support protection of Arctic people and the environment.

The ASTD System is a logical outgrowth of the shipping data collected in 2005 for the release of the Arctic Marine Shipping Assessment Report (AMSA 2009). The ASTD System is far more technologically advanced, comprehensive, versatile, and accessible.

The ASTD Program looks to secure ongoing relevance and utility by collecting and making available ship-related data on an ongoing and continuously updated basis, rather than collecting static information for a given year like the 2005 AMSA database did.

The ASTD Program is governed by the 2017 Cooperative Agreement among the Arctic States Regarding Arctic Ship Traffic Data Sharing.

DEVELOPMENTS SINCE 2021

The ASTD Program has evolved significantly over the years. Since 2021, the ASTD Program has been updated, expanded, and enhanced in numerous ways:

- **ASTD System**
 - Download capability added: Users can now easily download data for further analysis.
 - Ports: Over 400 new ports added to ASTD for port statistics.
 - Background maps: Several new background maps added for ship track analysis.
- **ASTD FTP Server:** Access to uncleaned but filtered data
 - Added as a component of the ASTD Program.
 - Eligible users get access to the server to batch-download datasets for analysis.
- **ASTD Website:** Augmented and expanded to include descriptive information about the ASTD System, streamlined access applications, and more user-friendly descriptions.
- **ASTD User Guide:** Created to help current and future users of the ASTD with detailed information on the full range of topics related to the ASTD System, from how to apply for access, how to obtain the data once downloaded, how frequently the data is updated, etc.
 - Version history:
 - V. 1: April 2020
 - V. 2: August 2022
 - V. 3: February 2023
- **ASTD Data Document:** Describes different types of ASTD data, including where relevant the source of that data. The document is intended for all ASTD users.
 - Version history:
 - 1.1: January 2019
 - 1.2: April 2020
 - 1.3: January 2021
 - 1.4: March 2021
 - 1.5: November 2022
 - 1.6: January 2023
 - 1.7: March 2023
 - 1.8: September 2023
 - 1.9: September 2024
- **ASTD Application Form:** The form eligible applicants complete and submit to the PAME Secretariat for processing.
 - The form was updated following an ASTD Workshop in Washington in 2024 to streamline access to ASTD.

ASTD FUNDING

As per the ASTD Framework Agreement, participating Arctic States pay an annual voluntary contribution to run, update and maintain the ASTD Program. In addition to this funding, Arctic Council Observers and Not-for-Profit Professional, Academic, Research, and Environmental Organizations who apply for and are granted access to ASTD pay a modest user fee to help defray the costs of the Program. Annual ASTD running costs include administration, data storage, maintenance, operation, update of hardware, and related aspects. Running costs also include license fees and software upgrades.

MEETINGS

The ASTD Program co-leads have met several times since 2021 with regular online meetings and several face-to-face workshops, including in the USA, Iceland and Norway.

USERS

A list of successful ASTD applicants is available in Annex I.

NEXT STEPS

The ASTD Program Co-leads plan to meet in Washington, D.C. in May 2025 to discuss necessary updates, new functionalities, additional data sources, and funding.

ANNEX I: AFFILIATIONS WHO HAVE RECEIVED ACCESS TO ASTD

Aalto University	Icelandic Road and Coastal Administration	Ocean Conservancy
Aarhus University	Icelandic Transport Authority	Pacific Northwest National Laboratory
Arctic Logistics	IMO	PAME
Arctic Monitoring & Assessment Programme	Indiana University	Pennsylvania State University
Arctic Passion Project	Institute of Arctic Logistics	Planning Agency of Iceland
Arctic University of Norway	Institute of Global Climate and Ecology	Polestar
Asplan Viak	Institute of Marine Research	Pulitzer Center investigation
Avinet	Inuit Circumpolar Council	Swedish Agency for Marine and Water Management
CAFF	John Hopkins University	Swedish Transport Agency
Canadian Coast Guard	Korea Maritime Authority	The Canadian-American Center at the University of Maine
Canadian Coast Guard – Arctic Region	Kystværet	Transport Canada
CEIP	Los Alamos National Laboratory (PNNL)	U.S. Coast Guard
Center for Arctic Study and Policy U.S. Coast Guard	MARAD (U.S. DEPARTMENT OF TRANSPORTATION Maritime Administration)	U.S. Committee on the Marine Transportation System
Dalian Maritime University	Memorial University of Newfoundland	U.S. Environmental Protection Agency
Danish Geodata Agency	Ministry of Environment and Food of Denmark	UCL
Danish Maritime Authority	Ministry of Foreign Affairs of Denmark	University at Buffalo Department of Political Science
DFO	Ministry of Oceans and Fisheries Marine Development Division (KMI)	University of Alaska
DMI	Ministry of Trade Norway	University of Bath
Environment and Climate Change Canada	MRCC Tórshavn	University of Maine
EFLA	National Geographic	University of Oulu
Environment Agency of Iceland	National Planning Agency of Iceland	University of the Highlands and Islands
Finland	National Research Council of Canada	UPenn
Finnish Transport Infrastructure Agency	NOAA	US Coast Guard
Fisheries and Oceans Canada	NOFIMA	Vanderbilt University
Fiskeridirektoratet	Nord University. Norway	WMU
FMI	Northwester University	Woodwell Climate Research Center
FSUE Rosmorport	Norwegian Coastal Administration	WWF
Georgetown University	Norwegian Mapping Authority	WWF Canada
German Environment Agency	Norwegian Maritime Authority (NMA)	WWF UK
Greenland	Norwegian Meteorological Institute	
GRID-A	Norwegian Polar Institute (NPI)	
Heriot Watt University	NTNU	
ICEBERG	NY Times	

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