2025
SUPPLY CHAIN CANADA
NATIONAL CONFERENCE
CALGARY, ALBERTA

**WELCOME TO** 

POWERING SUPPLY CHAIN INNOVATION





**Canadian Arctic Security** 

## **Andrea Charron**

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SUPPLY CHAIN CANADA"

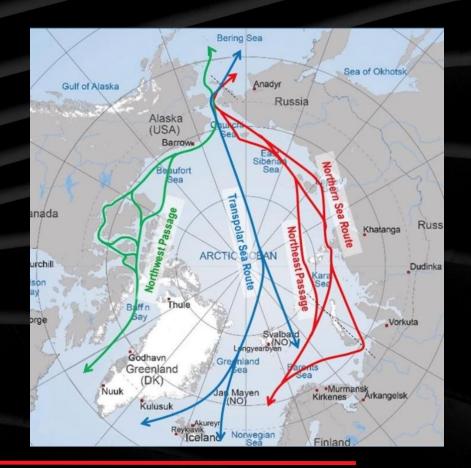


# Canada and the Arctic Andrea Charron, PhD University of Manitoba





# Vote once, 3 choices



## Poll Results - Greatest concern

- 01 State actors
- 02 Climate Change
- 03 Human Security





Inuit Nunangat: the Inuvialuit Settlement Region (northern Northwest Territories), Nunavut, Nunavik (northern Quebec) and Nunatsiavut (northern Labrador). It includes 53 communities and encompasses roughly 35 per cent of Canada's land mass and 50 per cent of its coastline.

### **AGENDA**

Defence of the Arctic (Through)



03 Human Security (In)











01

## State Actors

Russia, China, Iran and North Korea are concerns for Canada's Arctic because of their ability to hit Canadian Arctic targets given new technology.



RUS/ PRC Combined Patrol Intercept 24 July 2024



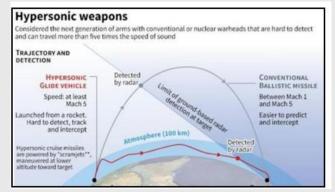


#### **Air Domain-Threats**

#### **UAS Threats**



#### **Hypersonic Threats**



#### Anti Access/ Aerial Denial (A2AD) **Considerations**



trade in goods and half of global maritime trade (the Baltic times, 5 Jul 23).



**Arctic & Domestic Airspace Awareness** 

(U) Russian Icebreaker "TOR" (CSIS)

Potential with Melting I

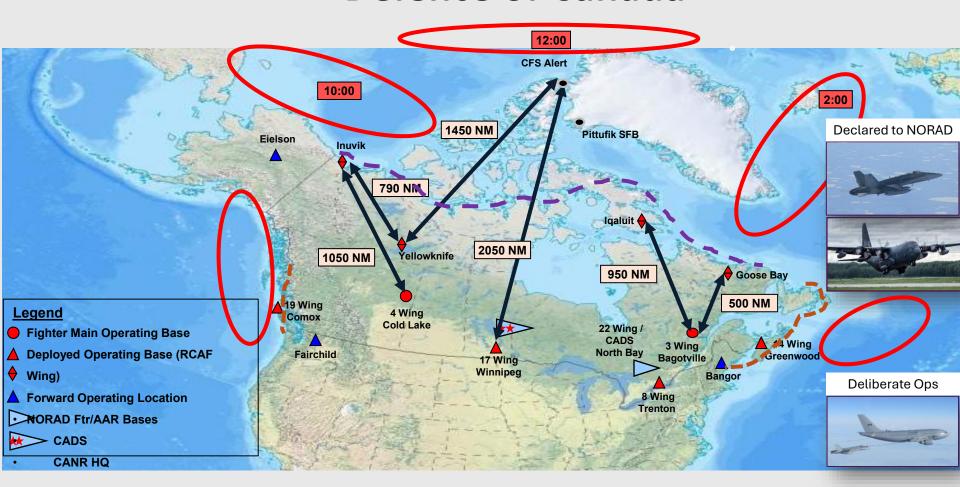
Bussian Airbases/strie

Greenland-Iceland-UK G.





### **Defence of Canada**



#### NORAD Modernization Estimated Schedule\*



- Advanced Short Range Missile
- Medium Range Air-to-Air Missile Long Range Air-to-Air Missile





- Crossbow
- Position Navigation and Timing Air Navigation
- Arctic Over the Horizon Radar
- Polar Over the Horizon Radar



#### Defence Enhanced Surveillance from Space Communications

- High Frequency/Low Frequency Communications
- RCAF Air Weapons Control Coverage Expansion
- Enhanced Satellite Communication Polar



#### Command and Control

- Future Combined Aerospace Ops Centre
- Modernized Command and Control Information Systems
- NORAD Cloud-Based Command and Control



#### Infrastructure

- Operational Training Infrastructure Enterprise Modernization
- Future Fighter Capability Project Fighter Squadron Facilities
- Defence of Canada Fighter Infrastructure
- Northern Basing Infrastructure
- Bagotville Fighter QRA Project

/eapons	Initiatives	Current Status	Definition	IMP	IOC	FOC	
Advanced Short Range Missile Medium Range Air-to-Air Missile Long Range Air-to-Air Missile	dvanced Short Range Missile (ASRM) Proceed as Goods versus Projects						
	Arctic Over the Horizon Radar (A-OTHR)	OA	2024	2026	2028	2031	
	Additional Air-to-Air Refuelling (AAR+/STTC+)	IMP	2023	2023	2029	2033	
tefueling Additional Air-to-Air Refuelling / Strategic Tanker Transport Capability	Operational Training Infrastructure Enterprise Modernization (OTIEM)	OA	2026	2028	2029	2032	
	Crossbow	ID	2025	2027	2029	2030	
ensors	Medium Range Air-to-Air Missile (MRAAM)		Proceed as Goods versus Projects				
Crossbow Position Navigation and Timing Air Navigation Arctic Over the Horizon Radar Polar Over the Horizon Radar Defence Enhanced Surveillance from Space Ommunications High Frequency/Low Frequency Communications RCAF Air Weapons Control Coverage Expansion Enhanced Satellite Communication – Polar Ommand and Control Future Combined Aerospace Ops Centre Modernized Command and Control Information Systems NORAD Cloud-Based Command and Control Infastructure Operational Training Infrastructure Enterprise Modernization Future Fighter Capability Project - Fighter Squadron Facilities Defence of Canada Fighter Infrastructure Northern Basing Infrastructure	Future Fighter Capability Project (FFCP)	IMP	2017	2022	2029	2033	
	Defence of Canada Fighter Infrastructure Project (DCFI)	IMP	2022	2024/25	2029/30	2032/34	
	Air Navigation Aid Systems Replacement Project (AirNAS)	OA	2025	2027	2030	2032	
	Future Combined Aerospace Ops Centre (FCC)	OA	2027	2028	2030	2032	
	Long Range Air-to-Air Missile (LRAAM)	ID	2026	2027	2030	2035	
	High Frequency/Low Frequency Communications (HFLF)	ID	2026	2028	2029	2038	
	RCAF Air Weapons Control Coverage Expansion (RACE)	ID	2026	2028	2031	2032	
	Modernized Command and Control Information Systems (MC2IS)	ID	2025	2029	2032	2034	
	Polar Over the Horizon Radar (P-OTHR)	ID	2029	2030	2032	2033	
	NORAD Northern Basing Infrastructure (NNBI)	ID	2027	2030	2034	2039	
	Defence Enhanced Surveillance from Space (DESSP)	OA	2024	2029	2035	2036	
Bagotville Fighter QRA Project  ID: Identification, OA: Options Analysis, DCB: E	Enhanced Satellite Communication — Polar efence Capability Board, IMP: Implementation, IOC: Initial Operational Capability, FOC: Final Operational Capability					2040	

## Arctic-Over-The-Horizon-Radar (A-OTHR)

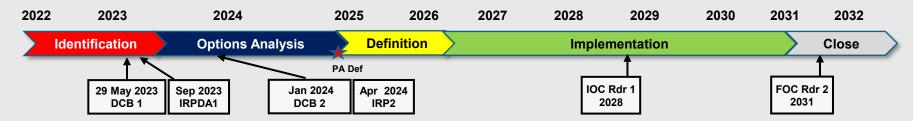


OTH radars to provide a Beyond Line Of Sight (BLOS) radar picture south of 70N latitude to cover much of Canadian airspace and the eastern approaches to the Canadian Air Defence Identification Zone (CADIZ).



The A-OTH will provide advanced warning of air threats facing North America which is essential for deterrence by denial.

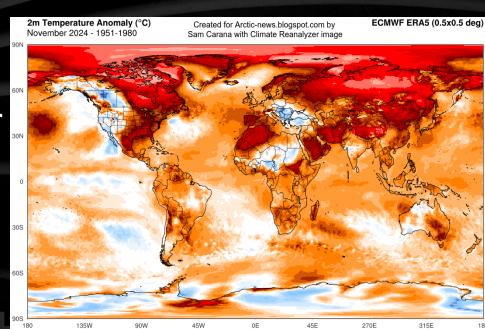
- Collection Capability multi-domain sensing Air, Maritime, Space
- 2. Coverage 500-3000km from S Ontario
- Survivability effective in contested environment
- 4. Persistence 24/7 coverage
- Interoperability USAF ties, compatibility with FVEY
- 6. Data Process and Dissemination
- 7. C2 maximize



02

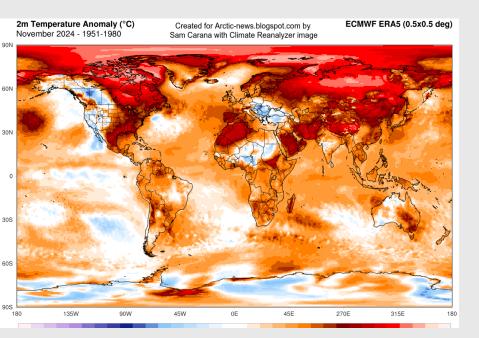
## Climate Change

Climate change affects the Arctic at four times the rate of the rest of the world. It is a threat multiplier.



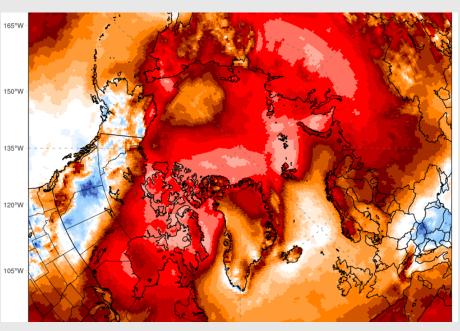


SUPPLY C

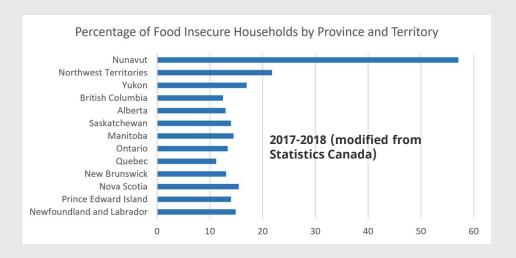


#### **The World**

#### **The Arctic November 2024**







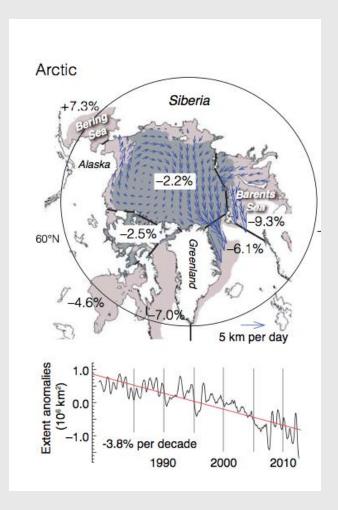
#### Svalbard – World Seed Bank

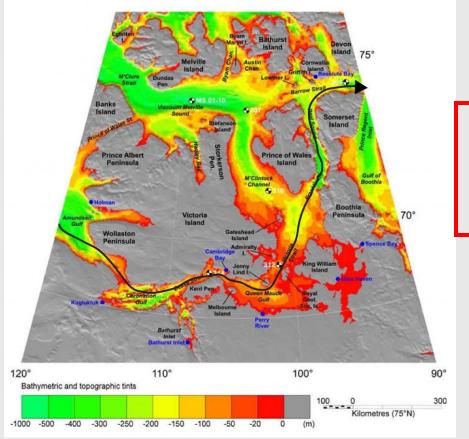
https://svs.gsfc.nasa.gov/vis/a000000/a005000/a005017/salinity\_comp\_1080p30.mp4

This data visualization shows sea surface salinity (i.e., ocean salt concentration) over a ten-year period (2011 to 2021). Warm colors (orange to yellow) are areas of high salinity/hot tropics. Cooler colors (blue to violet) are fresher waters, many of which can be seen coming from rainy/river/wetter tropics. From NASA

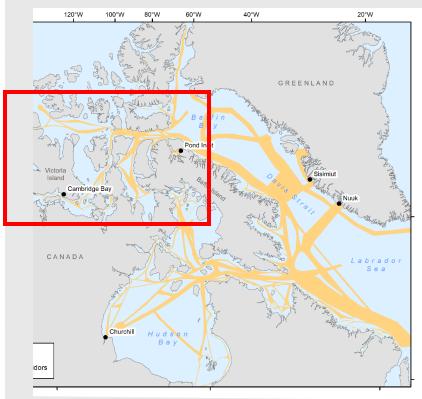


Sea ice extent ("the sum of ice covered areas with concentrations of at least 15%" [IPCC, 2013]) since the late 1970s has shown a decreasing trend during all months of the year (Serreze et al., 2007). The decreasing trend is smallest during the winter and largest during the late summer and early autumn. In recent years the loss of summer sea ice extent has accelerated.





Depth of NWP. Main routes are shallow and narrow.



In comparison, the St. Lawrence Seaway, a vital waterway connecting the Great Lakes to the Atlantic Ocean, has a controlled depth of 8.2 meters (27 feet).

## 03

## **Human Security**

The Arctic peoples have some of the poorest health outcomes in the world. Canada's Arctic lacks adequate, basic infrastructure that the south takes for granted.





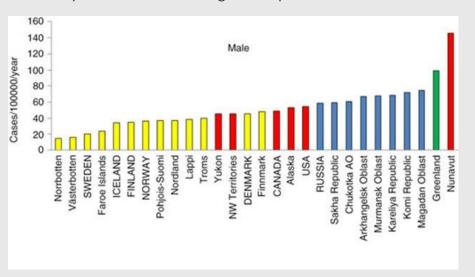


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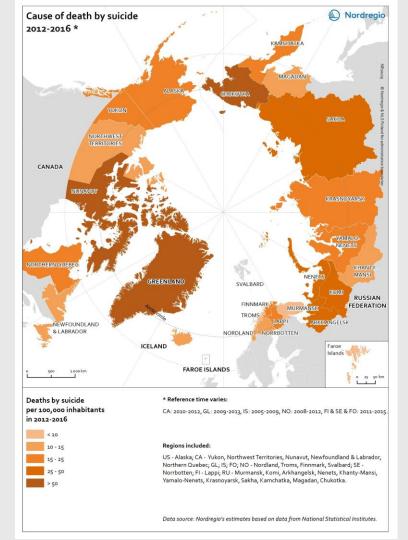
#### Life expectancy in Inuit Nunangat

Life expectancy in the Inuit regions (Inuit Nunangat) is **70.8 years**. **This is 10 years fewer than in the rest of Canada** where it is 80.6 years. **Smoking-related causes of death contribute significantly to the years of life lost—lung cancer and respiratory diseases account for 21% of all deaths in Inuit Nunangat.** 

From https://www150.statcan.gc.ca/n1/pub/82-624-x/2013001/article/11763-eng.htm



## Lung Cancer Rates across the Arctic



The map shows mortality due to suicide in the Arctic regions between 2012 and 2016.

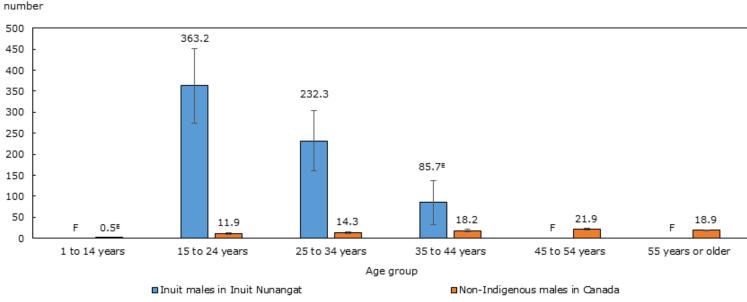
The orange shading indicates the suicide rate per 100 000 inhabitants. The darker the orange, the higher the suicide rate.

Mental health disorders can lead to long-term disability, and the most dramatic manifestation of mental illness is suicide. Greenland had the highest suicide rate in the Arctic (78,6%), and Nunavut in Canada and Chukotka in Russia had relatively high suicide rate over 50% during 2012-2016.

#### From

https://www.nordregio.org/maps/cause-of-death-by-suicide-in-the-arctic/

Chart 2
Age-specific suicide rates (number of deaths by suicide per 100,000 person-years at risk) among Inuit males in Inuit Nunangat and non-Indigenous males in Canada, household population aged 1 year or older, Canada, 2011-2016



E use with caution

F too unreliable to be published

Notes: Error bars denote 95% confidence intervals.

5.6-year follow-up period: May 10, 2011 to December 31, 2016.

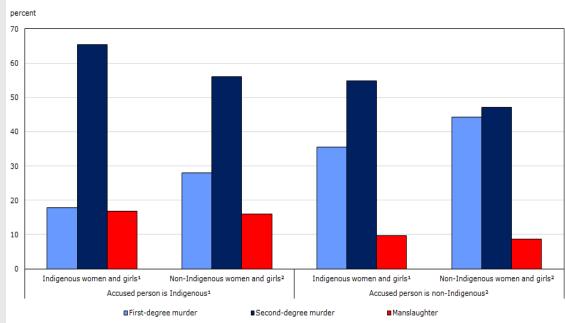
Excluded from data: institutional population at time of census collection (e.g. nursing homes, jails), population living in collective households (e.g. motels, hotels, rooming houses), persons not enumerated by the 2011 National Household Survey, incompletely enumerated reserves.

Source: Statistics Canada, 2011 Canadian Census Health and Environment Cohort integrating the 2011 National Household Survey with Canadian Vital Statistics Database (2011-2016).

In Inuit Nunangat, the Inuit homeland made up of the **Inuvialuit Region** (northwest part of Northwest Territories), Nunavut, Nunavik (Northern Québec), and Nunatsiavut (Northern Labrador), the suicide rate among children and youth was 33 times higher than for the rest of Canada between 2004 and 2008. In fact, suicide is one of the leading causes of death among children and youth in areas with a high proportion of First Matiana nacala

Between 2009 and 2021, the rate of homicide against First Nations, Métis and Inuit women and girls was six times higher than the rate among their non-**Indigenous counterparts** but police were less likely to lay or recommend a charge of first-degree **murder**—the most serious type of homicide charge when the victim was Indigenous (27%) compared to when she was not (54%). From

Chart 1 Charges laid or recommended by police in solved homicide incidents, by Indigenous identity of accused person and Indigenous identity and gender of victim, 2014 to 2021



<sup>1.</sup> Indigenous victims and accused are those identified by police as First Nations (Status or non-Status), Métis, Inuit, or an Indigenous identity where the Indigenous group was not known to police.

Source: Statistics Canada, Canadian Centre for Justice and Community Safety Statistics, Homicide Survey.

<sup>2.</sup> Non-Indigenous victims and accused includes instances where police have confirmed that a victim is not identified as an Indigenous person.
Note: Indigenous identity is reported by the police and is determined through information found with the victim, such as Status cards, or through information supplied by the victims' families, community members, or other sources (i.e., such as band records, or forensic evidence such as genetic testing). Victims and accused persons for whom Indigenous identity was reported as unknown by police are excluded from this table.









- People first is defence of Canada
- Consistent and persistent funding is needed
- NORAD projects online asap



## THANK YOU









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