ANALYSIS OF 2019 ANS OIL SAMPLE

Merv Fingas Spill Science

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BACKGROUND

- PWS RCAC requested Environment Canada to perform an oil analysis of an ANS sample taken from 2024
- Analysis sent to Merv Fingas to analyze and report on

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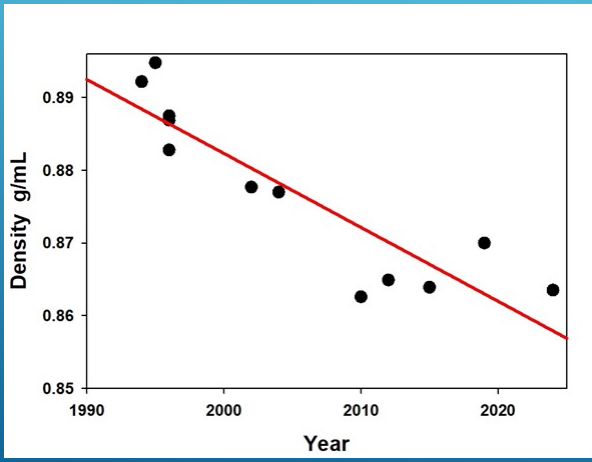
SUMMARY – ANS TURNED INTO A LIGHTER OIL IN THE PAST DECADE



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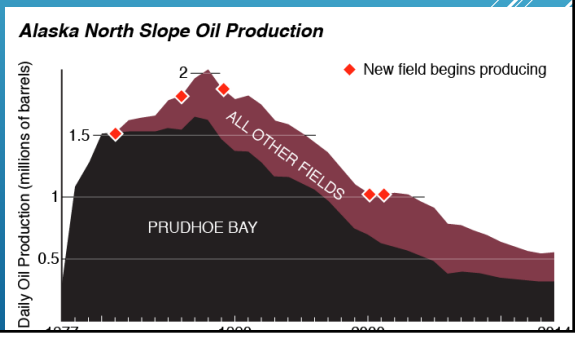
ORIGIN OF THE CHANGE

- The North Slope has several different oil fields with slightly different properties
- Around 2010 some of the heavier oil producing areas were terminated – this lowered the density and viscosity of the output to the pipeline



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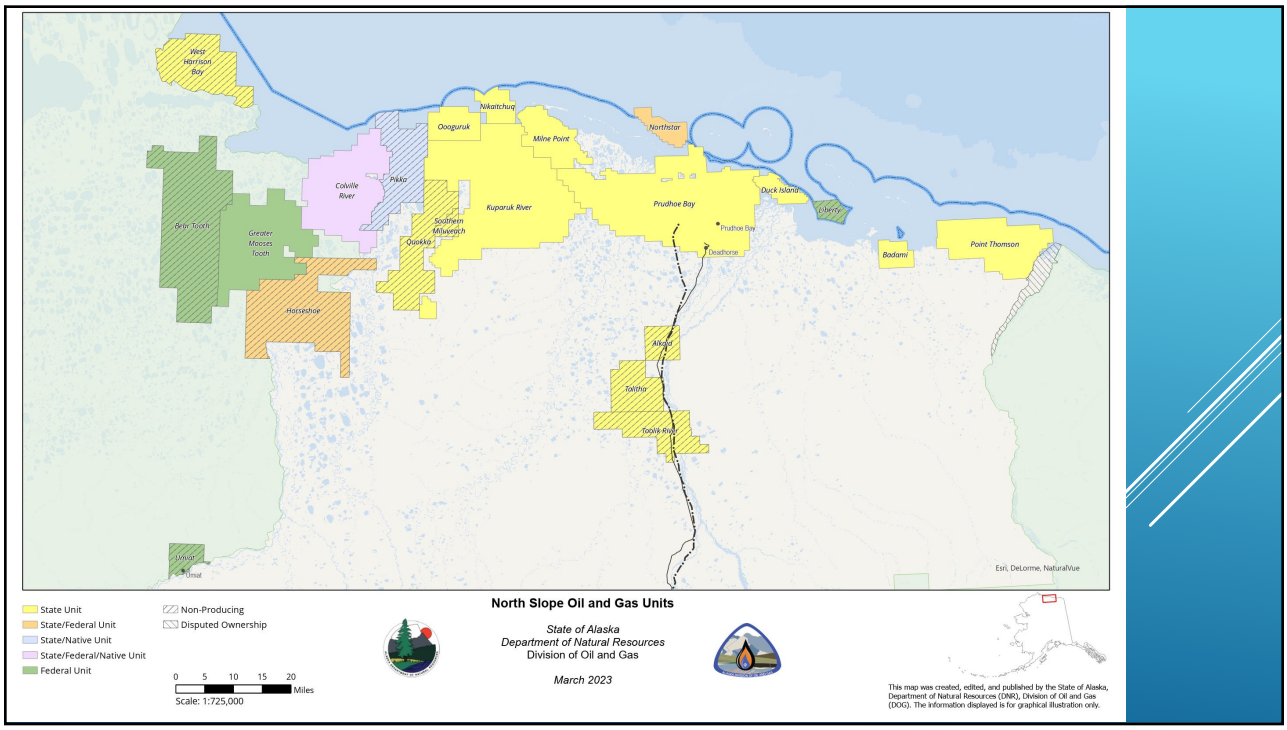

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EFFECTS ON OIL PROPERTIES AND BEHAVIOR OF SPILLED OIL IN THE ENVIRONMENT

- 1. Evaporation
- 2. Viscosity
- 3. Emulsion Formation
- 4. Composition

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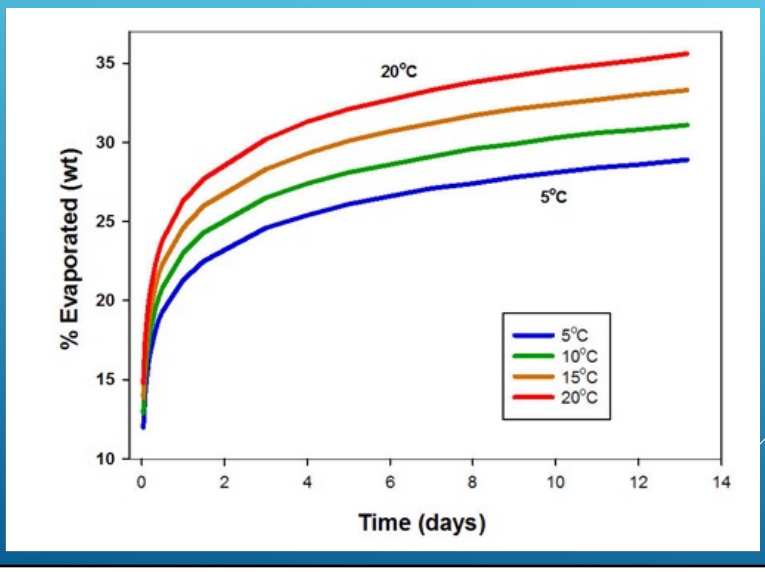
EVAPORATION



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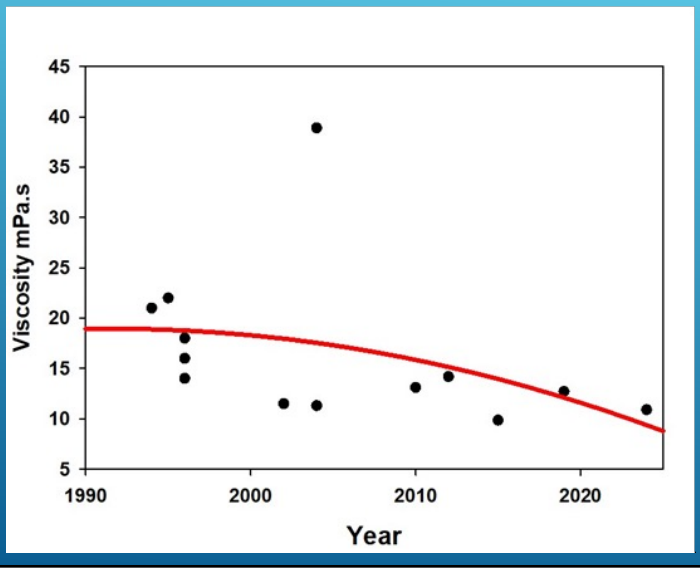
VISCOSITY PUMPABILITY



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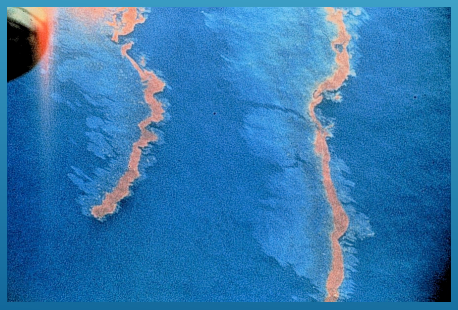
EMULSION FORMATION

- The latest sample does not form a stable emulsion
- Highly weathered ANS will entrain water



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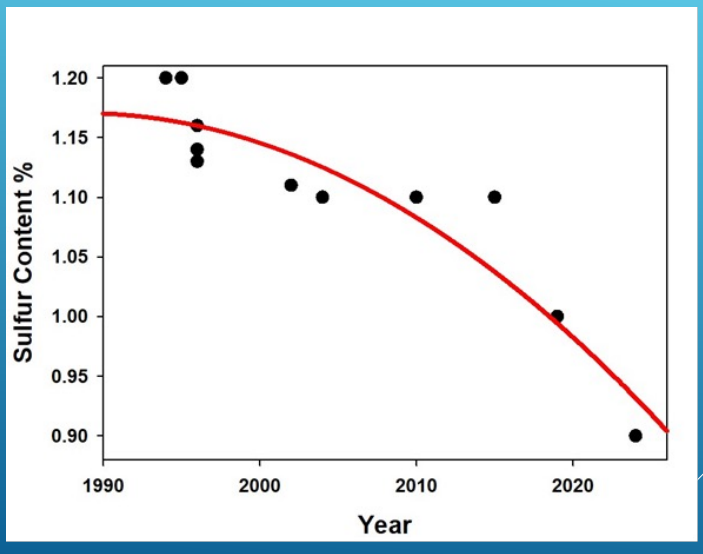
COMPOSITION

Sulfur as example



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EFFECT ON SPILL BEHAVIOR, EFFECTS

- Evaporation – recently about 33% would evaporate at 20°C (room temperature) over about 7 days
- Weathered ANS would not be dispersible
- Weathered ANS would be hard to recover (but easier than before)

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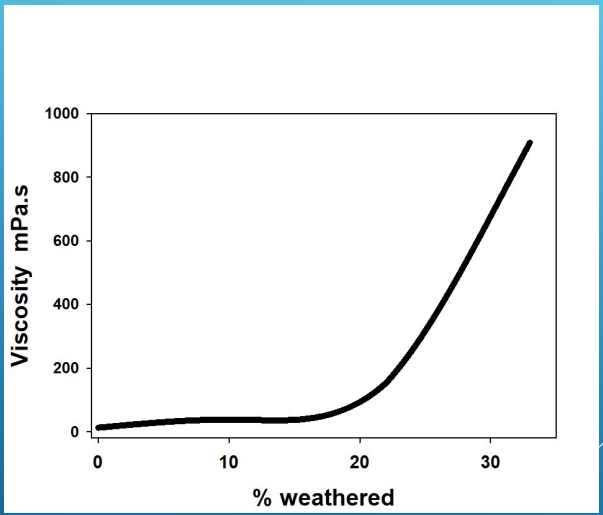
VISCOSITY INCREASE WITH WEATHERING



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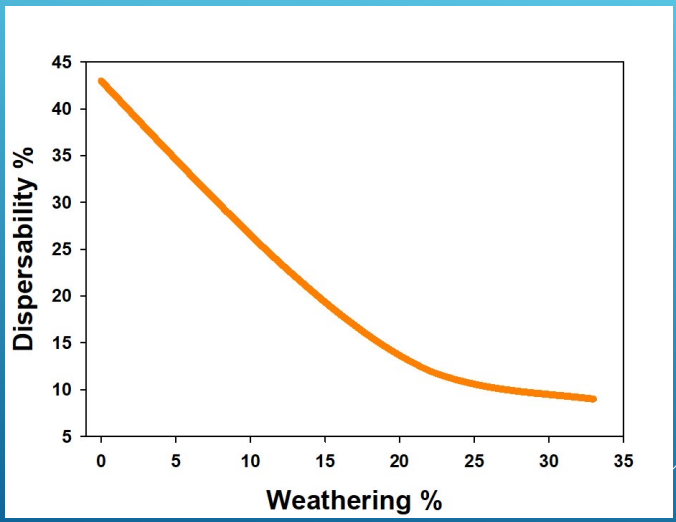
DISPERSIBILITY



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SUMMARY

- ANS has slowly turned into a lighter oil
- This is good for economics and oil spill countermeasures
- ANS is still an oil that when spilled is best dealt with booms and skimmers

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BEAUFORT SEA
MAP LOCATION
NPRA
Prudhoe Bay
ANWR
Trans Alaska Pipeline
Fairbanks
Anchorage
Valdez
Juneau
N
0 5 10
MILES
Nikaitchuq
Oooguruk
Fiord
Alpine
Nanuq
Alpine Pipeline
Nuiqsut
Tarn
NPRA
Meltwater
Kuparuk
Milne Point
Northstar
Point McIntyre
West Beach
Niakuk
Lisburne
Endicott
Liberty Prospect
Greater Prudhoe Bay
Deadhorse
Trans Alaska Pipeline System (TAPS)
Dalton Highway
Badami Pipeline
Badami
Pt. Thomson Prospect
ANWR

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