NOAA 2020 Arctic Report Card
Observing 15 Years of Arctic Change

133 authors from 15 countries
16 essays including 2 special essays & data portal
➢ 15 year Retrospective of the Arctic Report Card
➢ Observational Foundation of the ARC - the Arctic Observing Network
➢ New Arctic Data Center Portal

Vital Signs
Surface Air Temperature
Terrestrial Snow Cover
Greenland Ice Sheet
Sea Ice
Sea Surface Temperature
Arctic Ocean Primary Productivity
Tundra Greenness

Indicators
Glaciers & Ice Caps outside of Greenland
Permafrost Coastal Erosion
Bowhead Whales
Wildland Fires

Frost Bites
MOSAiC Expedition
Modeling & Projections of Arctic Sea Ice Cover
Barrow Observatory
2020 was Arctic's second-warmest year on record.
2020 ARCTIC SEA ICE SUMMER MINIMUM SECOND LOWEST ON RECORD
Wildland Fire in High Northern Latitudes

Burned area (55°-70°N)
2001-June 2020
Figure by Z. Grabinski

Frozen Calf Fire
near Chalkyitsik, Alaska (66.4°N)
July 2019

Photo by S. Harrel
Large fire seasons or unusual fire activity since 2000

Northern Canada: 2014 and 2016
Greenland: 2017
Fennoscandia: 2018
Northern Russia: 2002, 2012, 2018, 2019, 2020
FIRE FUELS ARE INCREASINGLY FLAMMABLE IN THE NORTHERN HIGH LATITUDES

DUFF FUELS

Photo courtesy R. Jandt
2020 is the record fire year within the Arctic Circle, mostly due to fires in Sakha, Russia.
Bowhead Whales: recent insights into their biology, status, and resilience

J.C. George, S.E. Moore, and J.G.M. Thewissen

- Only true arctic baleen whale
- Bering-Chukchi-Beaufort & East Canada-West Greenland healthy growing
- Okhotsk Sea & East Greenland-Svalbard-Barents at risk
BOWHEAD WHALES HAVE UNIQUE ANATOMICAL & PHYSIOLOGICAL TRAITS

- Thickest blubber, longest baleen, raised rostrum, ice-associated but not dependent
- Can live over 200 years
- Their sequenced genome may advance medical knowledge related to cell senescence, bone biology, fat metabolism, cancer resistance, etc.
- Scientists and Indigenous hunters collaborate on health monitoring
BOWHEAD WHALES ARE A PRIME INDICATOR OF ARCTIC MARINE ECOSYSTEM HEALTH AND VARIABILITY

- Sea ice loss led to increases in primary production & transport of zooplankton, benefitting bowheads

- Threats include industrial fishing & shipping, entanglement, orca predation, oil and gas activity, baleen whale competitors, climate warming
Happy 15 Year Anniversary!

Timely communication of Arctic change to broad audience
15-Year Retrospective

Putting things in context

Accelerated Arctic warming drives unprecedented ice loss

ARCTIC WARMING TWICE GLOBAL AVERAGE IN RECENT DECADES

Data: ARC 2020
Eye Witness to Arctic Change

Alaskan Beaufort Sea, North of Prudhoe Bay, AK

March 1982

February 2018
EXTRA SLIDES
Summer 2020 Arctic Snow and Ice Melt