USArray TA Alaska and Planned CCArray

~170 Stations

(Courtesy of S. Azeveda & R. Busby; IRIS)
CCArray Outlook

- Bridge the plate-boundary gap in the Yukon and British Columbia
- Complete synoptic investigation of the North American plate margin north of Mexico

(After Mazzotti et al., 2008)
Proposed Instrumentation

- Broadband seismometers
- GNSS
- Meteorology
- Still and video cameras
- Magnetotelluric
- Riometers
- Atmosphere, permafrost and groundwater monitoring
- Absolute, relative and superconducting gravimetry
- Supplement with remote sensing (InSAR, LIDAR, satellite gravity, etc.)
CCArray – Goal:

New Research Network – Entire Earth Systems from Magnetosphere through Lithosphere Deep into Mantle

Auroras
To
Critical Zone
To
Tomography

Magnetosphere & Auroras
(SWARM (ESA) logo)

Critical Zone Science

Earth's permeable near-surface layer from the tops of the trees to the bottom of actively cycling groundwater.

- Where rock, soil, water, air, and living organisms interact and shape the Earth’s surface
- Critical to sustaining services
  - Clean water
  - Productive soil
  - Balanced atmosphere

Hillslope ↔ Catchment ↔ Watershed

(ahm-2014-Integrated-data-management)

(Sigloch et al, 2008; Nature Geoscience)
Critical Zone Observatory Plan for CCArray

“Legacy Stations”

- Partial CZO in place
  - T – Tuktoyaktuk
  - Kl – Kluane*
  - C – Calvert Island*
  - Q – Quesnel River
  - Ka – Kananaskis
  - A – ASCCA
  * sensor installation summer 2018

- Proposed new CZO
  - In – Inuvik
  - NW – Norman Wells
  - EP – Eagle Plains
  - WL – Watson Lake
  - PR – Prince Rupert
  - GP – Grand Prairie (or)
  - TR – Tumbler Ridge
Collaboration Opportunities

CCArray is exploring avenues for retention of some TA sites in Canada
~13 – 2019
~21 – 2020

(From Busby, AGU 2017)