Seismic Monitoring in Canada During COVID-19
David McCormack, Director Canadian NDC
CTBT Science & Technology 2021
Background

- Seismic monitoring for Canada conducted by Canadian Hazards Information Service (CHIS) of Natural Resources Canada

  - 2 current primary roles:
    - Earthquake monitoring for Canada - ~180 seismic stations across Canada: Canadian National Seismic Network (CNSN)
    - Operation of 11 seismic, infrasound and hydroacoustic IMS stations in Canada, including Yellowknife array
      (From 2024 – operation of Canadian National Earthquake Early Warning System)

  - 3 operations centres:
    - OTT – eastern and central Canada, eastern Arctic, CTBT NDC
    - PGC – western Canada
    - YKA – western Arctic and Yellowknife array

*TBD if migration can be done over one weekend*
2020 Seismicity
Pre-COVID Earthquake Operations Situation

- 24/7 on-call monitoring and response
  - *Staff were already equipped to respond to issues remotely from home*

- Regionalized operations
  - *Staff were trained to be interoperable*

- Maintenance mode driven by problem identification
  - *Many stations, travel especially in Arctic is very expensive, relatively few techs*
  - *Few preventative maintenance visits*

- Significant business-continuity planning following SARS & H1N1

- We had just finished a major renewal of the CNSN (2014-19) so almost all of the hardware (sensors, digitizers) is early in its life-cycle
Initial COVID Impacts & Responses

- Most staff sent home full-time immediately (still in place)
- Restrictions and closures on internal borders within Canada
- Many domestic flights cancelled
- Lockdowns
- Field staff 50%/50% to enable lab-based work to continue with extreme social distancing (no interaction)
- Focus on using regional staff, particularly staff already based in the Arctic
- Switching to alternative transport modes
- Designation of essential staff
COVID field travel
Summary of Findings

- 98.41% (2020) vs 98.20% (2019) for Canadian IMS but over 3 major outages vs 5
- Insignificant difference, but average downtime significantly longer, due to a combination of complexity arranging contractors and tendency to spend more time on remote troubleshooting.
Nothing ever goes *exactly* as planned
Questions?

- Further reading: