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Community Science Liaison Program: Transforming Arctic scientific outreach by connecting K-12 Citizen Science Groups with EON-ROSE scientists

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Enabling Canadian kindergarten to grade 12 (K-12) school groups to monitor Earth Systems across Canada themselves will empower and cultivate their passion for the sciences, guiding them to become the scientists of the future. The innovative Community Science Liaison (CSL) program will support this aim by transforming Canadian scientific outreach practices, establishing long-term two-way relationships between kindergarten to grade 12 (K-12) schools and scientific programs such as EON-ROSE (**E**arth-System **O**bserving **N**etwork - **R**éseau d'**O**bservation du **S**ystème **t**errestre**E**). The CSL concept emerged from the pan-Canadian EON-ROSE research collaboration that was inspired by the serendipitous outcomes from EarthScope to monitor entire Earth Systems across Canada. EON-ROSE will include ~1400 observatories across the Canadian landmass with broadband seismometers, GNSS receivers, infrasound and pressure sensors, weather packages, riometers, permafrost monitors, etc. that will produce openly available real-time data. The first EON-ROSE station was installed in the Yukon (2018) and a multi-sensor deployment to monitor Mt Meager in the Garibaldi volcanic belt (150 km north of Vancouver, BC) started during the summer 2019. The EON-ROSE collaboration consists of more than 300 scientists from Canadian universities, federal-provincial-territorial government agencies, industry, and international collaborators. The CSL program will use the EON-ROSE connections to network with, and include, other scientific research programs across Canada.

Local community members with a passion for science will be recruited as CSLs from communities across Canada starting in northwestern Canada where there are 36 EarthScope stations. The CSL program will seek to foster scientific curiosity among these northwestern communities, including their Indigenous populations. Many of these communities lack scientists, or even qualified science teachers. CSL training workshops, designed by the scientists, will run concurrently with EON-ROSE conferences (starting with the EarthScope transition to EON-ROSE meeting May 2020). Scientists from EON-ROSE and other programs will provide mentorship, enabling CSLs to lead community consultations while designing and guiding hands-on, place- and curriculum-based K-12 Citizen Science projects to address community curiosity or concerns. The Geological Bumble Bee (GBB; Figure 1) program is an example of a Citizen Science program that will expand under the CSL umbrella, to permit these K-12 groups to monitor these important pollinators, which are under threat due to climate change. The GBB program (2012 to present) has involved ~800 Calgary grade 2-9 students building and installing