|  |
| --- |
| **Table 5.** Canadian volcanoes listed in five threat groups, with required level of monitoring indicated. Recommended monitoring levels, and format of table, are from Ewert et al. (2005). |
| **Volcano** | **Recommended Level of Monitoring** |
| **Level 4: Well monitored in real time**  |
| Mt. MeagerMt. Garibaldi | ***Monitoring should provide the ability to track detailed changes in real-time and to develop, test and apply models of ongoing and expected activity.*** **Seismic:** 12-20 stations within 20 km of vent, including several near-field sites. Network includes numerous three-component stations and mix of other instrument types, including digital broadband stations, acoustic sensors, and accelerometers. Borehole instruments where practicable. **Deformation:** Routine surveys along with sufficient continuous stations (GPS, tiltmeters, and/or borehole dilatometers) to track closely geodetic changes in space and time and do detailed source modeling. **Gas:** Frequent airborne or campaign gas measurements. Arrays of continuous sensors and other types of gas measurements as appropriate for the volcano. **Hydrologic:** Level-3 coverage along with real-time monitoring of hill-slope soil moisture, stream discharge, etc., as appropriate. Systems for lahar early detection where warranted.  |
| Mt. CayleyMt. PriceMt. Edziza |
| **Level 3: Basic real-time monitoring** |
| Nass RiverMt. Silverthrone | ***Monitoring should provide the ability detect and track pre-eruptive and eruptive changes in real-time, with a basic understanding of what is occurring.*** **Seismic:** Network with 3-4 near-field stations and a total of at least six within 20 km of vent. **Deformation:** Routinely repeated surveys. At least six continuous stations (GPS and/or tiltmeters) in vicinity of volcano. LIDAR-derived images available for active features. **Gas:** Frequent airborne or campaign measurements of gas emissions (annually to monthly, as appropriate) along with support of 1-2 telemetered continuous sensors. **Hydrologic:** Level-2 coverage along with continuous-sensing probes in features of primary interest, including water wells. LIDAR-derived DEMs for lahar-runout modeling. **Remote sensing:** Level 2 coverage along with routine use of multi-channel thermal-infrared data from ASTER-class satellite. Thermal and/or SAR overflights, as indicated by other monitoring data. Where practicable, remote video camera in operation…*continued on next page.* |

|  |
| --- |
| **Level 2: ﻿Limited monitoring for change detection** |
| Hoodo Mt.Nazko ConeClearwater-QuesnelLevel Mt.Heart PeaksSurprise LakeMilbanke Sound | ***Monitoring should provide the ability to detect and track activity frequently enough in near real time to recognize that anomalous activity is occurring.*** **Seismic:** Regional network with 1-2 near-field stations in place (within ~10 km of volcano). **Geodetic:** Two or more surveys for establishing baseline. InSAR observations possible on summerto-summer basis. At least three continuous stations (GPS or tiltmeters) in vicinity of volcano. **Gas:** Baseline of carbon-dioxide emission rate (or other gas as appropriate to the volcano).**Hydrologic:** Comprehensive database on temperatures and chemistry of springs and fumaroles. **Remote-Sensing:** Regular processing and review of near-real-time meteorological satellite images (AVHRR, GOES), and/or review of non-real-time research satellite images (e.g., MODIS) by an observatory. Baseline inventory of air photos and/or satellite images with high spatial resolution (1 m).  |
| **Level 1: Minimal monitoring** |
| Fort SelkirkIskut-UnukCrow LagoonTuya-TeslinSatah-BaldfaceChilcotin BasaltsMonmouth Creek-Watts PointCheakamus-ElahoBridge River-Salal CkDark Mt.Watson LakeLlangorse Mt.The ThumbBell-Irving | ***Monitoring should provide the ability to detect that an eruption is occurring or that gross changes are occurring/have occurred near a volcano.*****Seismic:** Volcano lies within a regional network; no near-field stations are in place but at least one station is within 50 km of the volcano. Or, a single near-field station is present, but no regional network exists.**Remote sensing:** Baseline inventory exists of Landsat-class satellite images. Routine scans for eruption clouds are conducted by meteorological agencies. |