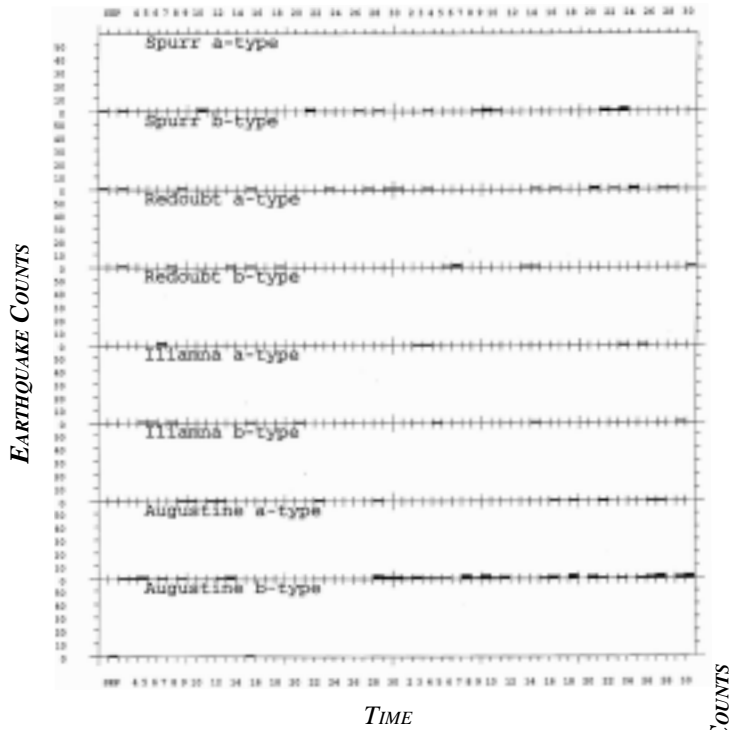
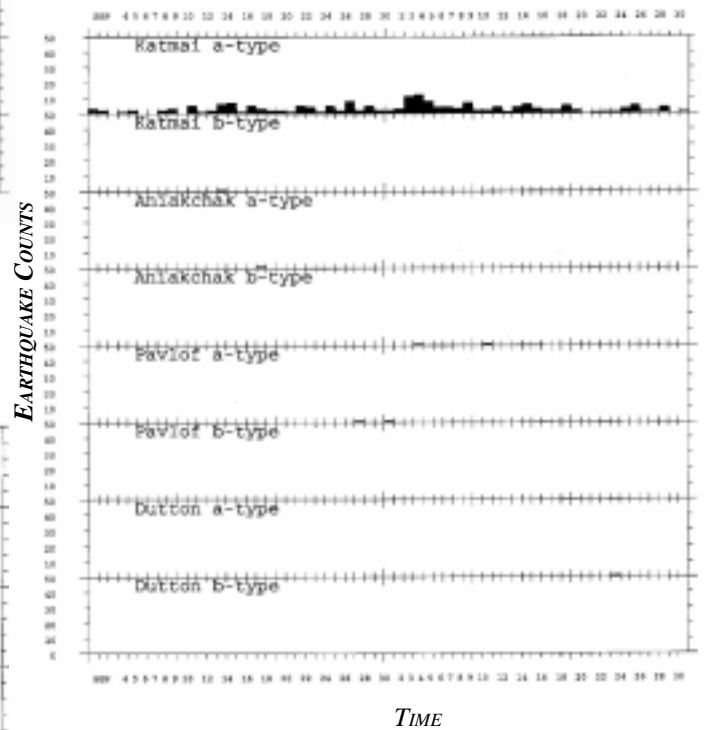


**EARTHQUAKE COUNTS FROM DETECTED EVENTS OF
COOK INLET VOLCANOES**



**EARTHQUAKE COUNTS FROM DETECTED EVENTS OF
ALASKA PENINSULA VOLCANOES**



**EARTHQUAKE COUNTS FROM DETECTED EVENTS OF
ALEUTIAN ISLANDS VOLCANOES**

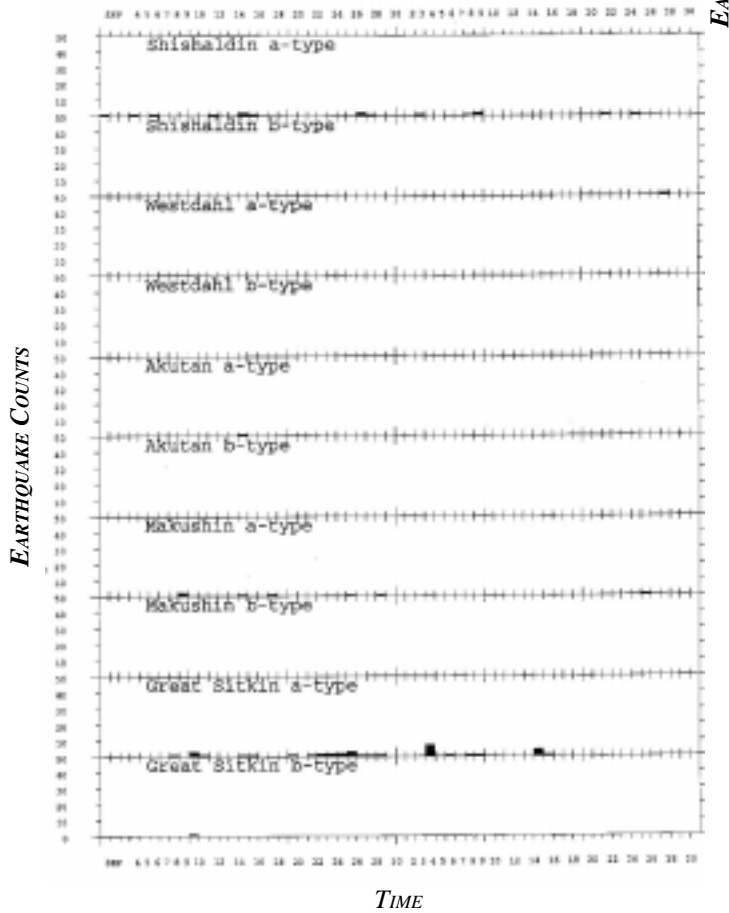
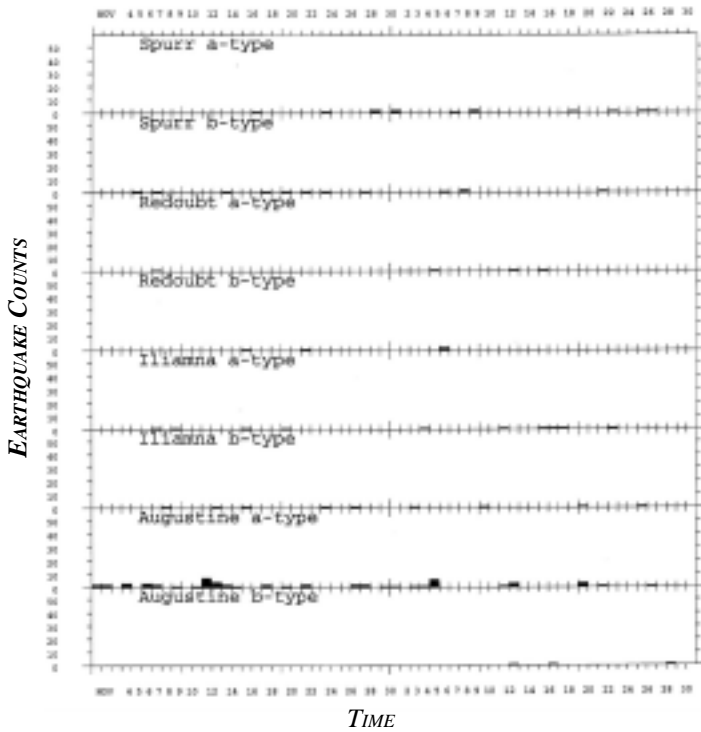
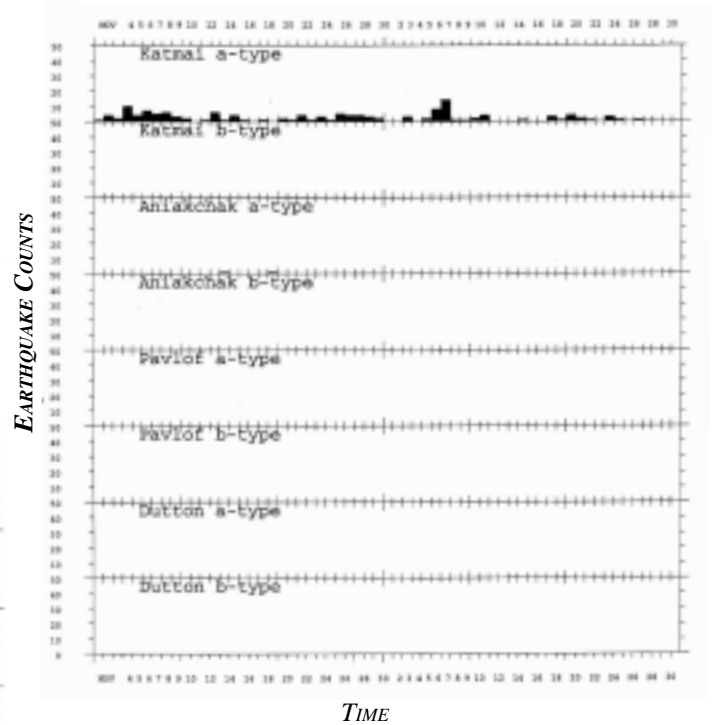


Figure 30a: Histogram of computer-detected ("Willie system") seismic events during September through October.

**EARTHQUAKE COUNTS FROM DETECTED EVENTS OF
COOK INLET VOLCANOES**



**EARTHQUAKE COUNTS FROM DETECTED EVENTS OF
ALASKA PENINSULA VOLCANOES**



**EARTHQUAKE COUNTS FROM DETECTED EVENTS OF
ALEUTIAN ISLANDS VOLCANOES**

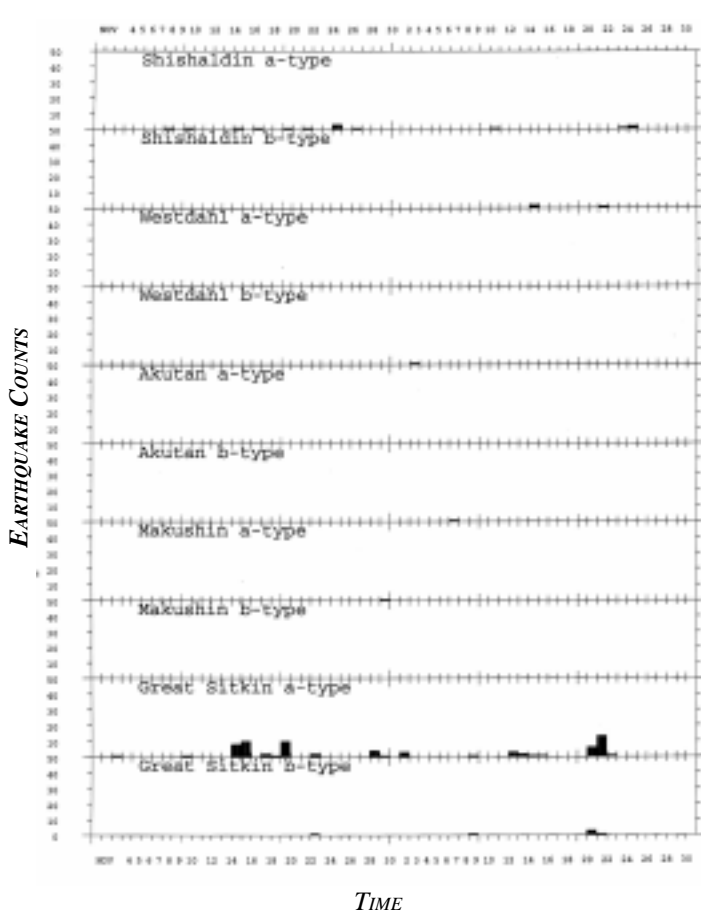


Figure 30b: Histogram of computer-detected (“Willie system”) seismic events during November through December.

Augustine Deformation

Winter has come to the island in October and November. Everything except for DOMO seems to be working fine. Tom Murray had the site working when he left, but we think the problem is in the radio modems and is intermittent, so it is hard to pin down. Hopefully everything else will work this winter, because we have plans to do a lot of work next summer.

GPS

The MOUND-WINDY plots (fig. 31) show that things are still quiet. We are having more communication problems (mid September to early November), this may be due the older radio modems we are using. I do not show the MOUND-DOMO plots because we have only 2 data points before we lost communication with DOMO. We are planning to upgrade both the GPS and radio communication next summer.

TILTMETERS

DOMO tiltmeter (fig. 32) was intermittent and then died in early September. This is too early for winter conditions, so we are assuming it is the radio communications. WINDY tiltmeter (fig. 33) shows its annual winter time cycle (large radial tilt). MOUND tiltmeter (fig. 34) started having radio communication or telemetry problems in November. ORCA tiltmeter (fig. 35) shows a drop in radial tilt in early December, it is probably weather (snow) related. OTTER tiltmeter (fig. 36) shows nothing unusual during the reporting period. WALRUS tiltmeter (fig. 37) continues to have little or no change.

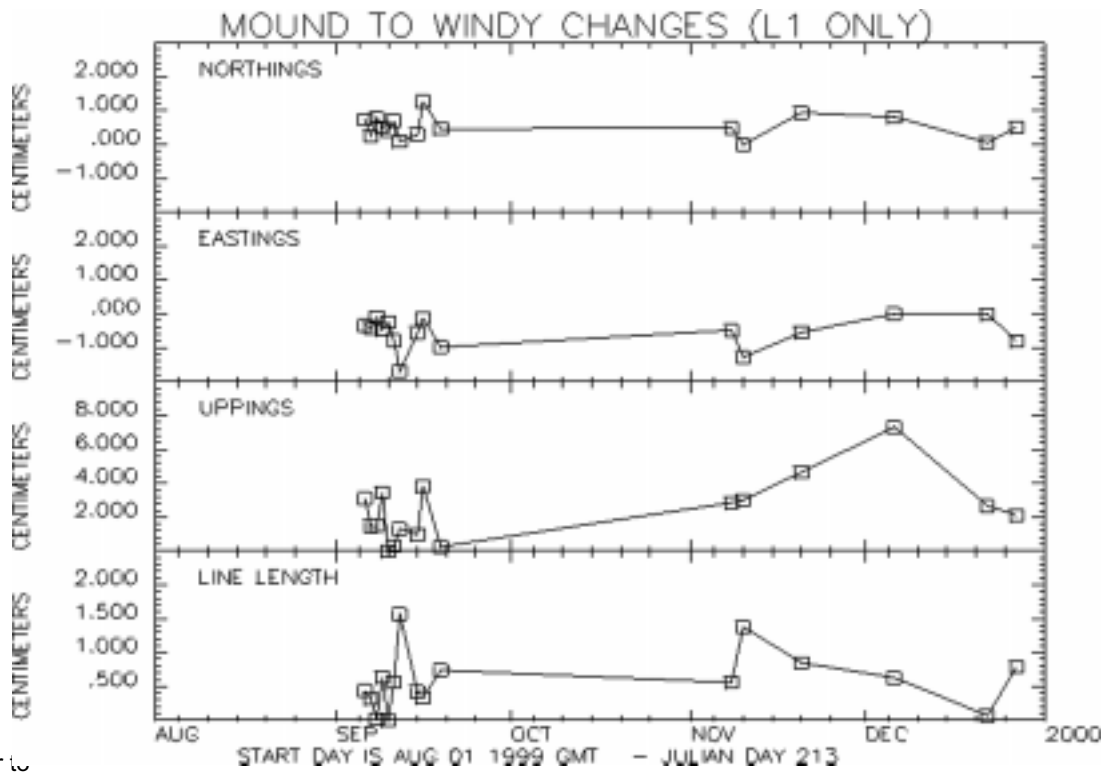


Figure 31: MOUND-WINDY GPS plots. No significant changes during the reporting period.

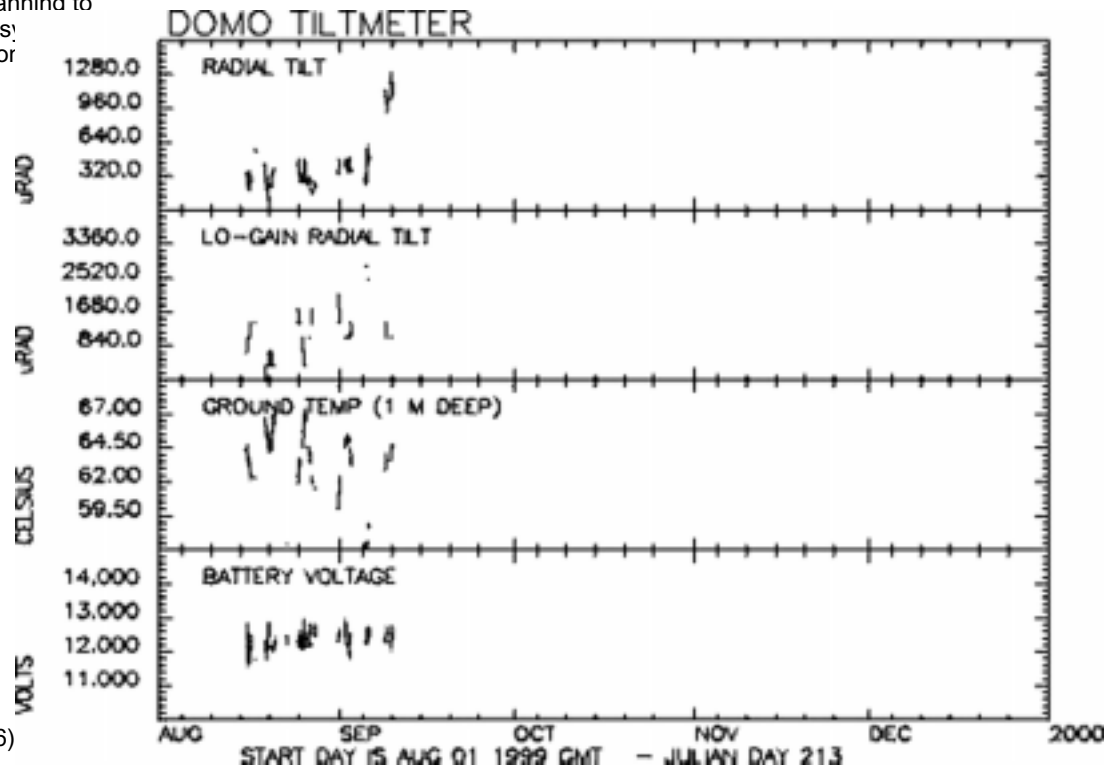


Figure 32: DOMO tiltmeter plots. Very little data as we lost radio communications in early September.

Gene Iwatsubo

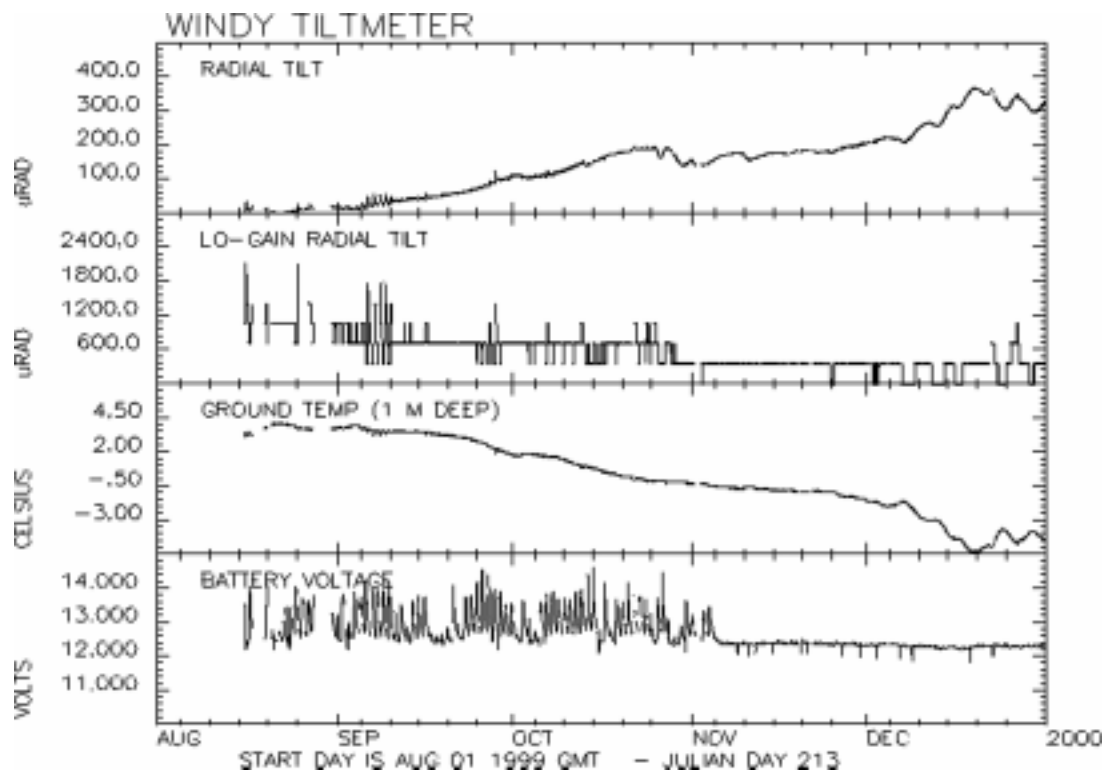


Figure 33: WINDY tiltmeter plots. Large radial tilt is seasonal at this site.

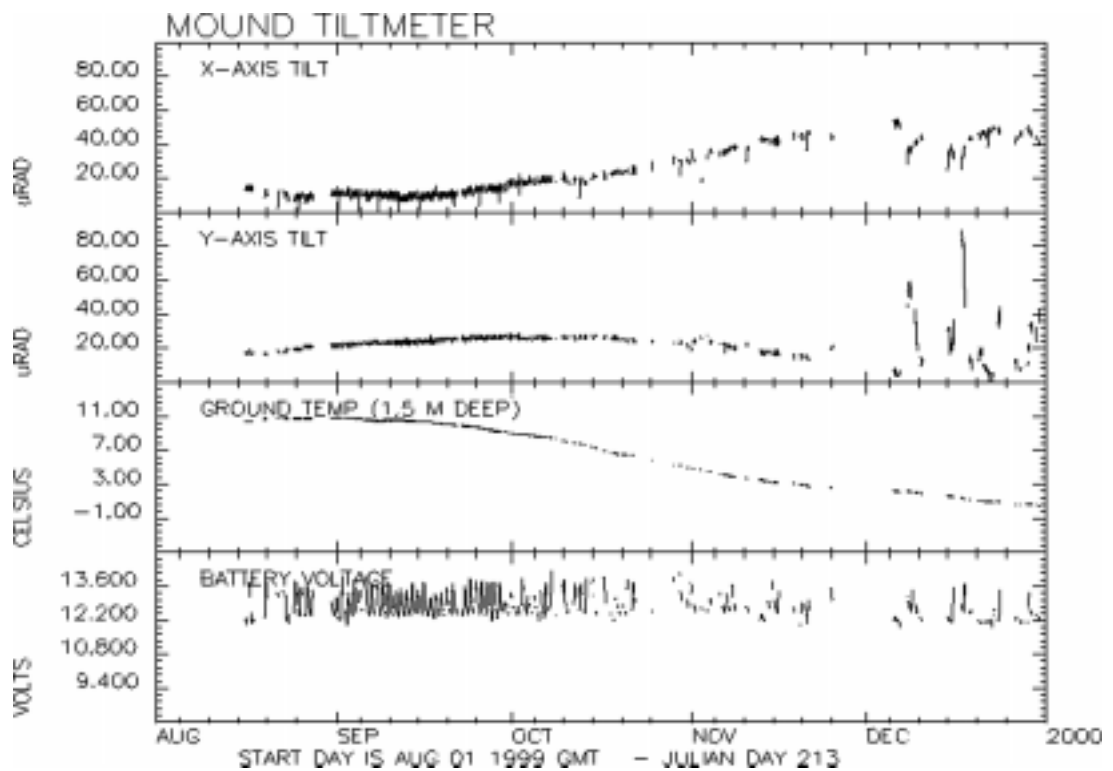


Figure 34: MOUND tiltmeter plots. Sporadic data starting in November. Possibly due to bad radio communications or telemetry. No significant changes seen.

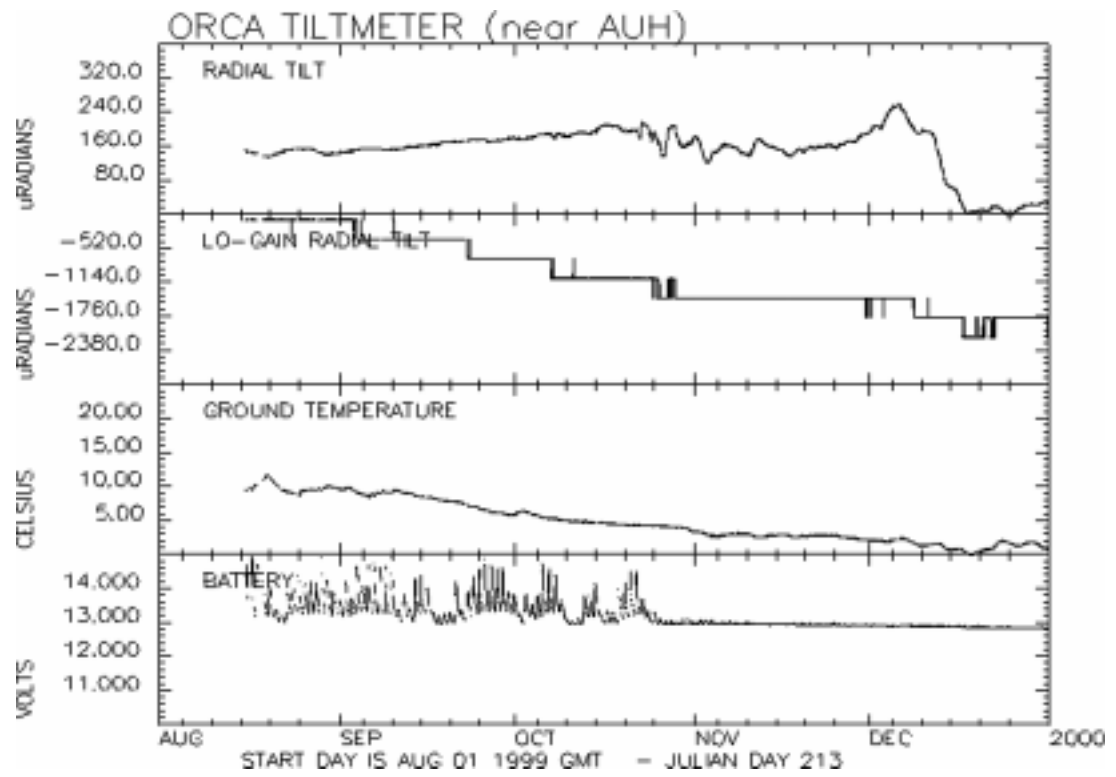


Figure 35: ORCA tiltmeter plots. Large drop in radial tilt is probably snow related and not unusual for this site.

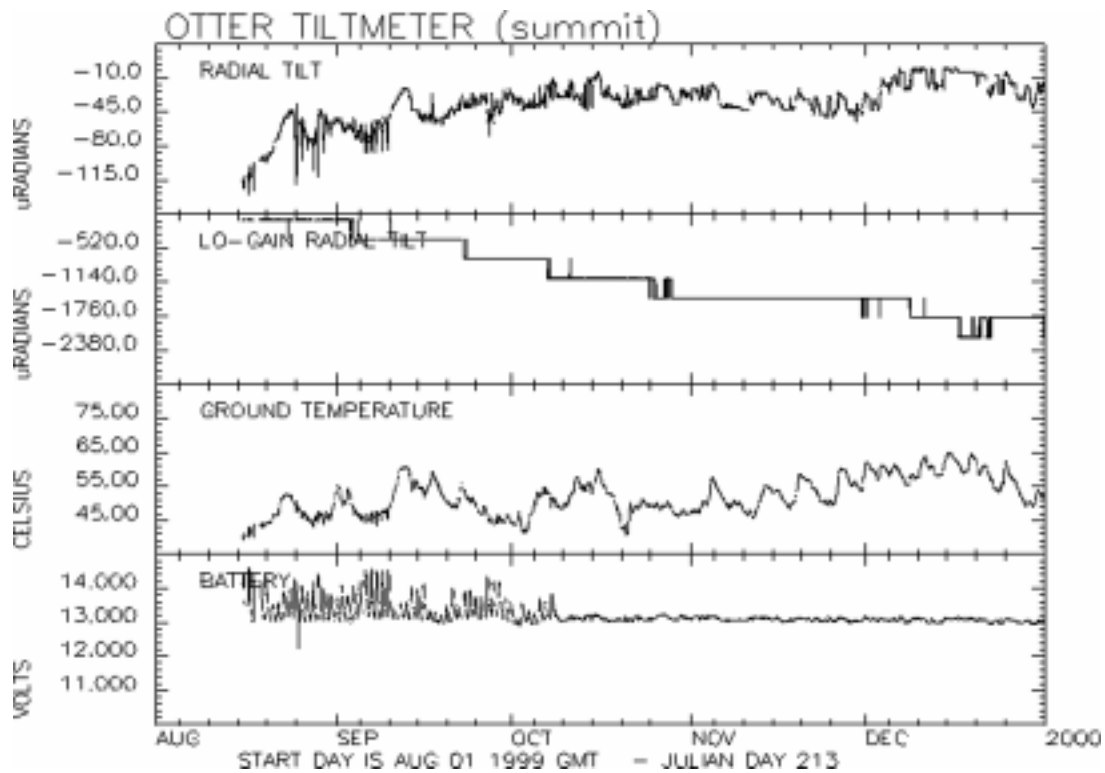


Figure 36: OTTER tiltmeter plots. Very quiet data for the reporting period.

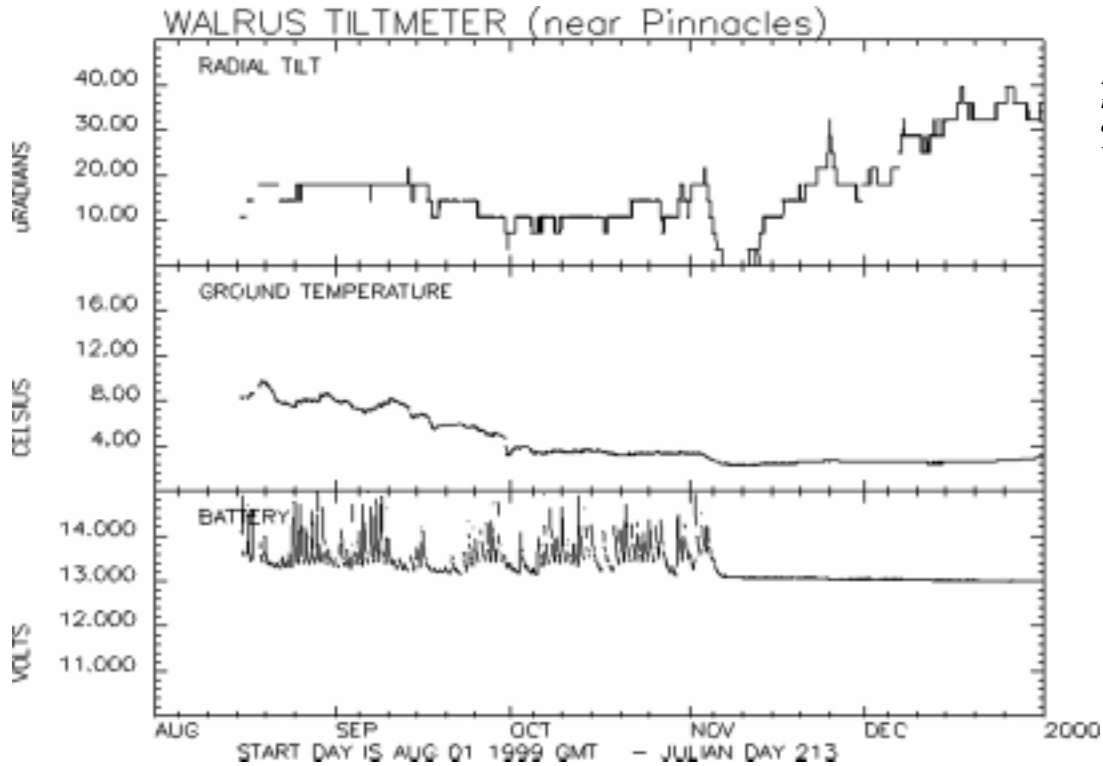


Figure 37: WALRUS tiltmeter plots. Station continues to show no or very little change.

OPERATIONS

Experimental Petrology Lab Update

During August to December, the second stage of the new Experimental Petrology Laboratory at the University of Alaska Fairbanks was constructed by Jim Gardner. This part of the lab consists of four vertically aligned Rene-style, cold-seal pressure vessels and furnaces. The design includes extensions and water cooled jackets fitted to the pressure vessel that allow rapid quenching of the experimental charge. Charges are manually pulled from the hot zone within the pressure vessel into the water cooled jacket by means of external magnets. Quench rates of samples are estimated at $\sim 150^{\circ}\text{C}$ per second. The rapid quench pressure vessels are attached to the already existing pressure line which is equipped with a double head, air-driven pump that can generate up to 500 MPa (5000 bars) of pressure. Temperatures within the rapid-quench vessels can be up to $\sim 900^{\circ}\text{C}$. A hand-cranked pressure intensifier is also attached on line for precise control of pressure, allowing for controlled decompression of experiments.

Jessica Faust Larsen (UAF/GI Faculty) is using the new rapid-quench pressure vessels to carry out extensive experiments investigating the nucleation, growth, and coalescence of gas bubbles in silicate melts, the fundamental driving force behind explosive eruptions. In addition, continued experiments in the experimental laboratory include examination of the pre-eruptive phase equilibria conditions for the 1912 eruption of the Valley of Ten Thousand Smokes, being carried out by Michelle Coombs (Ph.D. student at UAF), and of the large volume rhyolite eruption of Karymsky Caldera and the granitic xenoliths included in the most recent basaltic-andesitic eruption of Karymsky Volcano, being carried out by Pavel Izbekov (Ph.D. student at UAF).

Jim Gardner



Figure 38: Photograph of the four new vertical furnaces. Note that a vertical pressure vessel with rapid quench extension is in place in one of the middle furnaces. Temperature controllers are grouped below the furnaces.

Figure 39: Photograph of five horizontal furnaces, each with a pressure vessel inside. Thin metal tubing connects the vessels to the main pressure line and hydraulic pump. Temperature monitors are grouped below the furnaces.

1999 AVO/AEIC Field Work Summary

(ordered by station code)

AVO stations in normal font**AEIC stations in italics font**

Date	Code	Station Name	What Was Done
990715	ACH	Angle Creek Headwaters	Removed Prostar regulator; Paskievitch
990716	ACH	Angle Creek Headwaters	replaced L-22, systems check; Paskievitch
990707	ADAG	Adagdak	Installed new station
9907		Adak receivers	Install new receiver site
990924		Akutan Repeater	Replaced solar reg., rotate antenna; Tytgat
990824	AKT	Akutan Village	Adjust circuit levels, install broadband VCOs; Tytgat
990825	AKT	Akutan Village	Completed broadband VCO installation; Tytgat
990709		<i>Anchor GPS</i>	<i>Set up GPS; Foshe, Estes</i>
990712		<i>Anchor GPS</i>	<i>Remove GPS; Foshe, Estes</i>
990715	ANCK	Martin	Fixed bad solder joint at VCO audio output, systems check; Paskievitch
990808	ANIA	<i>Aniakchak Crater</i>	<i>Repaired coax, replaces aircells, aligned antennas; Hammond, Sanchez</i>
990807	ANNE	<i>Aniakchak Northeast</i>	<i>Replaced aircells; Hammond, Sanchez</i>
990808	ANNW	<i>Aniakchak Northwest</i>	<i>Replaced aircells; Hammond, Sanchez</i>
990806	ANPB	<i>Aniakchak Plenty Bear</i>	<i>Repaired coax, replaced aircells; Hammond, Sanchez</i>
990806	ANPK	<i>Aniakchak Peak</i>	<i>Replaced Prostar 12, Celiares; Hammond, Sanchez</i>
990807	ANSL	<i>Aniakchak Surprise Lake</i>	<i>Dropped off batteries; Hammond, Sanchez</i>
990807	ANSL	<i>Aniakchak Surprise Lake</i>	<i>Repaired coax, replaced aircells; Hammond, Sanchez</i>
990928	AUC	Augustine Crater	New McVCO @ -54dB; Lawson
990808	AUE	Augustine East	Replaced celairs, found bad solar panel; Lawson
990925	AUE	Augustine East	Replaced solar panel, and recharge bats; Lawson
990925	AUH	Augustine Dome "H"	Replaced celaire; Lawson
990928	AUI	Augustine Island	Replaced VCO-z, power switcher, solar reg.; Lawson
990808	AUL	Augustine Lava	Installed one set celairs for broadband; Lawson
990925	AUL	Augustine Lava	Installed 3 set celaires, new power switcher and solar panel; Lawson
990926	AUL	Augustine Lava	Installed hut, new solar panels, batteries; Lawson
990926	AUP	Augustine Pinnacle	Replaced celairs; Lawson
990926	AUR	Augustine Rim	Replace VCO; Lawson
990928	AUR	Augustine Rim	Installed new celairs; Lawson
990926	AUS	Augustine Summit	Replace celairs; Lawson
990928	AUS	Augustine Summit	New McVCO @ -54dB, power switcher; Lawson
990818	BGL	Barrier Glacier	Site visit, systems check; Paskievitch
990911	BGM	Big Mountain	Inspected, suspect tx problem; Tytgat
990915	BGM	Big Mountain	Installed new Hamtronics transmitter, replaced 2 concords & celairs; Lawson
990928	BGM	Big Mountain	Replaced coax; Lawson
990828	BGR	Barries Glacier	Replaced VCO, systems check; Paskievitch
990826	BKG	Blockade Glacier	Replaced batteries, replaced antenna, relocated geophone within culvert; site had suffered bear damage; Paskievitch
990818	<i>BLHA</i>	<i>Black Hills</i>	<i>Replaced McVCO and replaced one voltage reg; Estes</i>
990708	<i>BMR</i>	<i>Bremner</i>	<i>Recon for new broad-band site; Estes, Foshe</i>
990807	BRPK	Brown Peak	Inspected; Tytgat
990716	CAHL	Cahill	Replaced L-4, systems check; Paskievitch
990815	CAHL	Cahill	Replaced door of Plaschem hut, systems check; Paskievitch
990529	CBY_R	Cold Bay receivers	Adjust levels; Tytgat
990817	CBY_R	Cold Bay receivers	Adjust levels; Estes
990818	CKL	Chakachamna Lake	Site visit, systems check; Paskievitch
990818	CKN	Chakachatna North	Replaced batteries, systems check; Paskievitch
990826	CKT	Bend	Site visit, systems check; Paskievitch
990723	CNP	China Poot	Inspect, needs new coax, batts; Lawson, Hammond
990911	CNP	China Poot	Replaced batteries, coax, solar reg.; Tytgat, Lawson
990715	CNTC	Contact Creek	opened squelch on KJL receiver, systems check; Paskievitch
990818	CP2	Crater Peak Two	replaced power regulator, systems check; Paskievitch
990826	CRP	Crater Peak	replaced batteries at CRP-old, systems check of CRP-old and CRP-new; Paskievitch
990828	CRP	Crater Peak	Replaced batteries at CRP-old, systems check of CRP-old and CRP-new; Paskievitch
990708	<i>CRQ</i>	<i>Cirque</i>	<i>Inspect station, looks good; Estes, Foshe</i>
990712	<i>CYK</i>	<i>Cape Yakataga</i>	<i>Inspect, SMA count=1, WRG filter=off; Estes, Foshe</i>
990828	DFR	Drift River	Site visit, systems check; Paskievitch
990722	DMR_R	Diamond Ridge	Reset AUL modem parameters, drop AUP, add AUP to filter bridge; Lawson
990929	DMR_R	Diamond Ridge	Ran AUS & AUC receiver directly to mixer; Lawson
990711	ETKA	Kagalaska Island	Installed new station
990709	<i>FID</i>	<i>Fidalgo</i>	<i>Inspect site, all is fine; Estes, Foshe</i>
990708	<i>GLB</i>	<i>Glahina Butte</i>	<i>Replace N-S seismic cable; Estes, Foshe</i>
990712	<i>GLI</i>	<i>Glacier Island</i>	<i>Inspect site, looks good; Estes, Foshe</i>
990321	<i>GOU</i>	<i>Gould Hall</i>	<i>Replace anti-alais filters, remove inverter; Estes</i>
990812	<i>GOU</i>	<i>Gould Hall</i>	<i>Replace receiver for RC01; Estes</i>

991012	GOU	Gould Hall	Emergency repair of Sun Computer; Estes, Robinson
991105	GOU	Gould Hall	Install box on roof for Freewave, run power cable. Install new Arise computer; Estes, Tytgat
990706	GSCK	Great Sitkin Cape Kiugilak	Installed new station
990709	GSIG	Great Sitkin Igitkin Island	Installed new station
990709	GSMY	Great Sitkin Middle Yoke Creek	Installed new station
990705	GSSP	Great Sitkin Saddle Point	Installed new station
990705	GSTD	Great Sitkin Triple Divide	Installed new station
990719	GSTR	Great Sitkin Teapot Rock	Installed new station
990712	HIN	Hinchinbrook	Inspect, hut abraided, 34.75" lid needed; Estes, Foshe
990929	HOM	Homer	New McVCO; Lawson
990909	ILI	Iliamna Volcano	Inspect, looked beautiful! Tytgat, Lawson
990909	ILW	Iliamna NWT	Replace celairs; Tytgat, Lawson
990909	ILS	Iliamna Low S	Inspected station; Laswon
990909	INE	Iliamna NE	Replace celairs; Tytgat, Lawson
990528	ISNN	Isanotski North	Inspect, station looks good; Tytgat, Nye, Begét
990727	ISNN	Isanotski North	Replace solar reg; Tytgat
990727	ISTK	Isanotski Volcano	Replaced power switcher & solar reg; Tytgat
990909	IVE	Iliamna VolcanoE	Replace N-S VCO, rewire; Tytgat, Lawson
990909	IVS	Iliamna VolcanoS	Replaced two set of celairs, righted antenna; Tytgat, Lawson
990815	KABR	Katmai Barrier Ridge	Systems check; Paskievitch
990714	KAHC	Katmai Hardscrabble Creek	Changed gain 66 to 78, systems check; Paskievitch
990717	KAHG	Katmai Hook Glacier	Changed gain 60 to 66, systems check; Paskievitch
990712	KAI	Kyak Island	Inspect site, needs chains & bolts; Estes & Foshe
990717	KAPH	Katmai Pasha	Secured station enclosure, replaced both SS6 reg., systems check; Paskievitch
990714	KARR	Katmai Rainbow River	Site visit, systems check; Paskievitch
990714	KAWH	Katmai What	Systems check; Paskievitch
990715	KBM	Katmai	Replaced batteries, systems check; Paskievitch
990715	KCE	Katmai	Replaced batteries, systems check; Paskievitch
990714	KCG	Katmai	Replaced batteries, systems check; Paskievitch
990715	KEL	Kaitmai	Replaced batteries, systems check; Paskievitch
990716	KICM	Kanaga Island Cape Miga	Installed new station
990716	KIKV	Kanaga Island Kanaga Volcano	Installed new station
990717	KIMD	Kanaga IslandMID Benchmark	Installed new station
990715	KINC	Kanaga Island North Cape	Installed new station
990716	KIRH	Kanaga Island Round Head	Installed new station
990709	KIWB	Kanaga Island Westway Bight	Installed new station
990717	KJL	Kejulik	Opened squelch on CAHL receiver, systems check; Paskievitch
990714	KVT	Katmai	Replaced batteries, systems check; Paskievitch
990709	LTI	LaTouche Island	Replace batteries; Estes, Foshe
990716	MGLS	Observation	Systems check; Paskievitch
990815	MGLS	Observation	Systems check; Paskievitch
990517	MID	Middleton Island	Service SMA; Estes
990911	MMN	McNeil River	Replace antenna, coax & new tx; Tytgat & Lawson
990825	MNAT	Makushin Nateekin Bay	Troubleshoot VCO of frequent problem; Tytgat
990826	MNAT	Makushin Nateekin Bay	Replaced corroded L4, VCO & solar reg; Tytgat
990709	MTU	Montague Island	Remove L-4, A1VCO, 1 batt & culvert lid; Estes, Foshe
990712	MTU	Montague Island	Remove reminder of station; Estes, Foshe
990818	NCG	North Capps Glacier	Site visit, systems check; Paskievitch
990723	NNL	Ninilchick	Replace celaires; Lawson, Hammond
990909	OPT	Oil Point	Inspect, needs new coax; Tytgat
990911	OPT	Oil Point	Replaced coax; Tytgat
990911	PDB	Pedro Bay	Inspect, needs new solar panel, VCO, aircells; Tytgat
990915	PDB	Pedro Bay	Install new solar panel, new McVCO, new celaires+ 2 concords; Lawson
990805	PHD_R	Port Heiden	Checked receiver site; Hammond & Sanchez
990809	PHD_R	Port Heiden	Set levels with GI, measure fade margins; Hammond & Sanchez
990818	PN7A	Pavlof North 7A	Replace upper solar panel and both voltage regs; Estes
990818	PV6	Pavlof Volcano 6	Replaced upper solar pannel and one voltage reg; Estes
990828	RDN	Redoubt North	Site visit, systems check; Paskievitch
990828	RDT	Redoubt	Site visit, systems check; Paskievitch
990828	RED	Redoubt	Replaced batteries, replaced RED(e) geophone, systems check; Paskievitch
990828	REF	Redoubt Flank	Snow and drift conditions at this site were to severe to allow for a safe landing (attempted); Paskievitch
990631	REP1	Adak repeater one	Install new repeater
990631	REP2	Adak repeater two	Install new repeater
990325	RC01	Rabbit Creek	Unplugged 409MHz transmitter due to interference; Strid & RC with follow-up note from FCC
990812	RC01	Rabbit Creek	Replace transmitter, install DCI filter, check levels; Estes
991110	SAW	Sawmill	Install Guralp broad band system; Estes, LaFevers, Foshe
990709	SGA	Sherman Glacier	Replace batteries, fix coax & solar cable; Estes, Foshe

990829	SLK	Skilak	Replaced regulator, systems check, installed new station SLK-new?; Paskievitch
990528	SSLN	Shishaldin North	Inspect, station in great shape; Tytgat, Nye, Begét
990726	SSLN	Shishaldin North	Replaced power switcher and solar regs.; Tytgat
990528	SSLS	Shishaldin South	Inspect, bad solar reg; Tytgat, Nye, Begét
990726	SSLS	Shishaldin South	Replace power switcher, solar reg & aircells; Tytgat
990807	SSLS	Shishaldin South	Added reinforcement rail to solar panels, modify VCO; Tytgat
990726	SSLW	Shishaldin West	Replaced power switcher & solar regs, aircell=6416 hrs; Tytgat
990807	SSLW	Shishaldin West	Added reinforcement rail to solar panels; Tytgat
990826	STLK	Strandline Lake	Replaced antenna, cabling and batteries, systems check; Paskievitch
990722	STR_R	Sterling	Reinstalled recivers and filter bridge which had been damaged by lighting; Lawson
990708	TGL	Tana Glacier	Replace boom on LP antenna; Estes, Foshe
990707	THY	Trimms	Inspect site; Estes, Foshe
990223	UNV	Unalaska Valley	Install Guralp 40T system; Larsen, McNamara
991130	UNV	Unalaska Vally	Replace modem; Marshall
990710	VLZ	Valdez	Inspect and calibrate; Estes & Foshe
990709	VZW	Valdez West	Remove everthing; Estes, Foshe
990712	WRG	White River Glacier	Inspect, needs new antenna; Estes, Foshe
990812	WESE	Westdahl East	Replace air cells, power switcher & solar reg; Tytgat
990731	WESN	Westdahl North	Replaced solar reg; Tytgat
990812	WESS	Westdahl South	Replace lower solar panel, solar reg, reinforced panel; Tytgat
990731	WFAR	Farris Peak	Replaced solar reg; Tytgat
990731	WPOG	Pogromni Volcano	Replaced solar reg; Tytgat
990528	WTUG	Tugamak Mt.	Inspect, station on aircells? Tytgat, Nye, Begét
990807	WTUG	Tugamak Mt.	Replace air cell, power switcher & solar reg; Tytgat
990928	XLV	Seldovia	Discovered bad sp4; Lawson

Steve Estes

AVO = 130 station*visits

Some of the sites not visited during summer 1999:

AVO: AHB, AKS, AKV, BLDY, CDD, CGL, DOL, DRR3, DT1, DTN, HAG, HSB, KAIC, KMC_R, NCT, LVA, MCIR, MSOM, MSW, MTBL, NCT, PS1A, PS4A, PVV, RDW(abandoned), RSO, SKN, SPU, SYI, ZRO

AEIC: KTH, NKA, PRG, SSN

SEM Imaging of Hydromagmatic Quench Crack Structures on Alaskan Tephra Grains

We have identified quench crack structures on Alaska tephra grains (fig. 40) using the scanning electron microscope (SEM) at the University of Alaska in Fairbanks. SEM imaging of quench crack structures on pyroclasts and tephra grains constitutes a new and potentially useful research approach to understanding hydromagmatic explosive eruption mechanisms in Alaska.

Quench cracks (fig. 40) are a newly recognized surface feature found on particles generated in hydromagmatic explosive eruptions, and reproduced in experimental hydromagmatic explosions (Buttner and others, 1999). Quench cracks form when fragmented hot magma is rapidly chilled by contact with liquid water. In the past, complicated granulometric crossplots have been used to identify deposits of hydromagmatic eruptions. Quench cracks can help in these interpretations by providing direct evidence of water-magma interactions

Extremely violent explosive eruptions, such as that at Krakatoa in 1883, can occur when magma comes into contact with water. Water is abundant at most Alaskan volcanoes, as some are covered with glacier ice, some are associated with extensive hydrothermal systems, some contain crater lakes, and some are on islands.

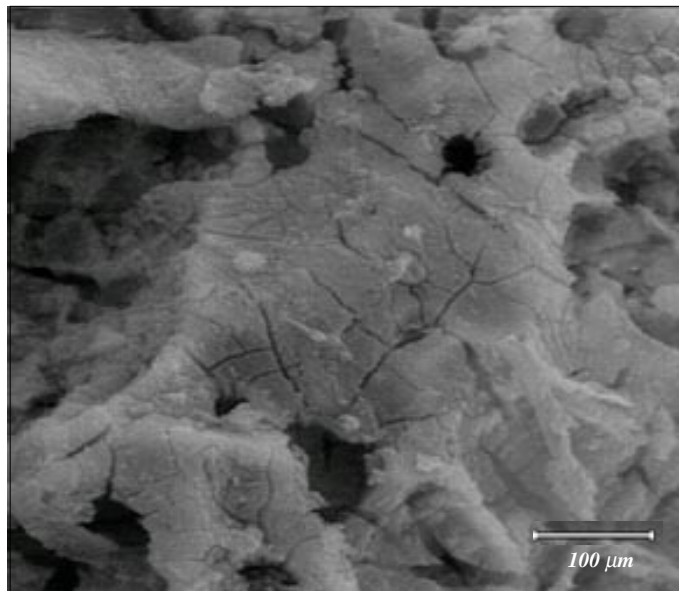


Fig. 40: SEM image of cooling fractures on a micropumice particle from a late Pleistocene Alaskan tephra fall deposit. Scale bar = 10 microns.

Reference:

Buttner, R., Dellino, P. and Zimanowski, B., 1999. Identifying magma-water interaction from the surface features of ash particles. *Nature* v.401, 688-690.

Jim Begét and Ben Wolfe

Ongoing Investigations

Annual Report/ Progress Summary

My thesis project is focused on the pyroclastic flow, surge, fall, and possibly co-ignimbrite fall deposits from the caldera forming eruption of Volcan Ceboruco (~1000 AD), in central Mexico. This eruption produced ~3.5 km³ (DRE) of magma and ranged in composition from hybrid dacite to rhyolite.

The transport and depositional mechanics acting within the pyroclastic density currents responsible for the flow, surge, and possibly co-ignimbrite ash deposits will be the main focus of the study. More generalized aspects of this eruption that this study will address involve the development of a complete eruptive time scale and stratigraphy. This will include the timing for the deposition at the more isolated localities that have been ambiguous in nature due to their distance from the more straight forward proximal stratigraphy. I also will determine the timing within the eruptive sequence for when caldera collapse was initiated, and when it may have ceased.

An addition aspect of this study will involve the examination of the Ceboruco banded pumices. Although these pumices are widespread within the Ceboruco deposits, the frequency of their abundance, and the textural morphology vary throughout the eruptive sequence. The investigation into this variation may lead to critical insight relating to pre-eruptive conditions within the magma chamber, and the changing withdrawal mechanisms acting on the magma as the eruption continued.

The field research, sample collection, and mapping of these deposits was performed in mid-October to mid-November, 1999 with the assistance of Jim Gardner. The vast majority of the lab analysis will be completed by the end of summer, 2000, and preliminary analysis of several pyroclastic flow samples are already underway. This project is expected to be completed by Spring, 2001.

This work is supported by NSF. However, results may be of interest to AVO as well.

Brandon Browne:
Advisor-James Gardner

Outreach

Steve McNutt responded to several email requests during the September through December timeframe of this issue:

- ◆ Sent information on volcanoes to a potential grad student (Vicki Miller) in Australia.
- ◆ Also answered questions from a Swiss doctor (Johan Ursing) interested in health effects of eruptions.
- ◆ Sent station lists and maps to Rick Clark of National Park Service.
- ◆ Sent volcano information to Bernice Hicks in New Zealand.
- ◆ Sent information on Redoubt to Lisa Shannon:

Dear Sir/Madam,
I am a third year geography student researching for a project on the subject of volcanic hazards and aeroplanes, bearing in mind the Redoubt incident in 1989 specifically.

Do you have archive material or information on this eruption and the consequent damage to the Boeing 747?

Lisa Shannon
gg0u70f4@liverpool.ac.uk
University of Liverpool
England

- ◆ Sent information on Shishaldin. Below is the request.

Hi,
I'm a 10th grade student at the Pocono High School. I had some trouble finding information on Shishaldin volcano. I wanted to know how it affected people. All I could find was a sentence that said airline flights were canceled. Do you know anything about this volcano, or where she can find more info? If you could help me before Friday it would be greatly appreciated.

- ◆ Dave Schneider presented a talk to the Alaska Geographic Society at the Hilton Hotel in Anchorage entitled "Monitoring and Analysis of Volcanic Activity at the Alaska Volcano Observatory".
- ◆ Game McGimsey led a field trip of 20 junior high school students through AVO.

Jean Chiu

Publications

Anders, A. and J. Begét, 1999, Giant landslides and coeval tsunamis in lower Cook Inlet, Alaska: *Geol. Soc. Am. Abst. Prog. Vol. 31, No. 7, p. A-48.*

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Addendum

Log of Updates for the Current Period

ALASKA VOLCANOES UPDATE

Friday, September 3, 1999, 10:30 AM ADT (1830 UT)

Alaska Volcanoes:

Seismic activity is monitored in real time at 20 volcanoes in Alaska. Some of these volcanoes may currently display anomalous seismicity, but they are not considered to be at a dangerous level of unrest.

Spurr, Redoubt, Iliamna, Augustine, Snowy, Griggs, Katmai, Novarupta, Trident, Mageik, Martin, Aniakchak, Pavlof, Dutton, Isanotski, Shishaldin, Fisher, Westdahl, Akutan, and Makushin volcanoes are all at or near normal levels of background seismicity.

ABBREVIATED COLOR CODE KEY (contact AVO for complete description)

- GREEN volcano is dormant; normal seismicity and fumarolic activity occurring
- YELLOW volcano is restless; eruption may occur
- ORANGE volcano is in eruption or eruption may occur at any time
- RED significant eruption is occurring or explosive eruption expected at any time

Volcano Information n The Internet: <http://www.avo.alaska.edu>
Recording of the status of Alaska's Volcanoes (907) 786-7478

INFORMATION RELEASE 99-43 KAMCHATKAN VOLCANIC ACTIVITY

Monday, Monday September 6, 1999, 12:00 KDT (2300 UTC)

The following Release was received by e-mail from KVERT (Kamchatkan Volcanic Eruptions Response Team).

All times are Kamchatkan Daylight Time (KDT), 21 hours ahead of ADT.

Klyuchevskaya Group of Volcanoes: Klyuchevskoy Volcano:

56°03' N, 160°39' E; Elevation 4,750 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

During the last week (August 30-September 6), seismicity at the volcano was at background levels. On August 30-31, a gas and steam plume rose to a height of 500-1500 m above the crater. On September 2, 4, and 5, the plume rose only 50-100 m above the volcano. On other days the volcano was obscured by clouds.

Bezymianny Volcano:

55°58' N, 160°36' E; Elevation 2,895 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

No seismicity was registered under the volcano. On September 2, the fumarole plume rose 50 m above the volcano, extending more than 10 km plume to the southeast. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity under the volcano was about at background levels. On August 30, a gas and steam plume rose 1200 m above the crater. On September 4 and 5, a gas and steam plume rose 100-200 m, extending 5 km to the southeast. On other days the volcano was obscured by clouds.

Karymsky Volcano:

54° 03' N, 159° 27' E; Elevation 1,486 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the last week, the number of gas and ash explosions was more than 75 per day, to a height of 300-1000 m above the volcano. Visual observations by KVERT staff on September 1 and 5 confirm that explosive activity occurred every 10-20 minutes.

continued

Avachinskaya Group of Volcanoes:
153° 15'N, 158° 51'E;

CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, September 10, 1999, 10:00 AM
ADT (1800 UT)

Alaska Volcanoes:
No Change.

INFORMATION RELEASE 99-44
KAMCHATKAN VOLCANIC ACTIVITY
Monday, September 13, 1999, 12:00
KDT (2300 UTC)

Klyuchevskaya Group of Volcanoes:
Klyuchevskoy Volcano:
56° 03' N, 160° 39' E; Elevation 4,750m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

During the last week (September 6-12), seismicity at the volcano was at background levels. On September 7, 8, and 12, a gas and steam plume rose to a height of 50-100 m above the crater. On other days the volcano was obscured by clouds.

Bezymianny Volcano:
55° 58' N, 160° 36' E; Elevation 2,895 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

No seismicity was registered under the volcano. On September 12, the fumarolic plume rose 50 m above the volcano. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:
56° 38' N, 161° 19' E; Elevation 2,447m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity under the volcano was about at background levels. On September 12, a gas and steam plume rose 50 m. On other days the volcano was obscured by clouds.

Karymsky Volcano:
54° 03' N, 159° 27' E; Elevation 1,486 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the last week, the number of gas and ash explosions decreased from 130 on September 6 to 80 on September 12. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:
153° 15'N, 158° 51'E;
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, September 17, 1999, 10:30 AM
ADT (1830 UT)

Alaska Volcanoes:
No Change.

INFORMATION RELEASE 99-45
KAMCHATKAN VOLCANIC ACTIVITY
Monday, September 20, 1999, 12:00
KDT (2300 UTC)

Klyuchevskaya Group of Volcanoes:
Klyuchevskoy Volcano:
56° 03' N, 160° 39' E; Elevation 4,750m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

During the last week (September 13-19), seismicity at the volcano was at background levels. On September 15, a gas and steam plume rose 600 m above the crater, and on September 16, the plume rose 200 m above the volcano extending 5 km to the east. On other days the volcano was obscured by clouds.

Bezymianny Volcano:
55° 58' N, 160° 36' E; Elevation 2,895 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

No seismicity was registered under the volcano. During the last week, the volcano was obscured by clouds.

Sheveluch Volcano:
56° 38' N, 161° 19' E; Elevation 2,447m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity under the volcano was about at background levels. During the last week, the volcano was obscured by clouds.

Karymsky Volcano
54° 03' N, 159° 27' E; Elevation 1,486 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the last week, the number of gas and ash explosions was about 80 per day. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:
153° 15'N, 158° 51'E;
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, September 24, 1999, 10:30 AM
ADT (1830 UT)

Alaska Volcanoes:
No Change.

INFORMATION RELEASE 99-46
KAMCHATKAN VOLCANIC ACTIVITY

Monday, September 27, 1999, 12:00
KDT (2300 UTC)

Klyuchevskaya Group of Volcanoes:
Klyuchevskoy Volcano:
56° 03' N, 160° 39' E; Elevation 4,750m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

During the past week (September 20-26), seismicity at the volcano was at background levels. Only shallow earthquakes were registered. On all days, a gas and steam plume rose 50-100 m above the crater, extending less than 5 km to the east or south-east.

Bezymianny Volcano:
55° 58' N, 160° 36' E; Elevation 2,895 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

No seismicity was registered under the volcano. On September 22, a gas and steam plume rose 150 m above the crater, extending fan-like 10 km to the east. On September 23-24, weak fumarolic activity was registered. On September 26, a gas and steam plume rose 100 m above the volcano, extending 5 km to the northeast. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:
56° 38' N, 161° 19' E; Elevation 2,447m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity under the volcano was about at background levels. On September 23, a gas and steam plume rose 100 m above the crater, extending 5 km to the east. On September 24-25, a fumarolic plume rose 200 m above the volcano. On other days, the volcano was obscured by clouds.

Karymsky Volcano:
54° 03' N, 159° 27' E; Elevation 1,486 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions decreased from 80 per day to 60. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:
153° 15'N, 158° 51'E;
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, October 1, 1999, 10:00 AM
ADT (1800 UT)

Alaska Volcanoes:
No Change.

**INFORMATION RELEASE 99-47
KAMCHATKAN VOLCANIC ACTIVITY**

Monday, October 4, 1999, 12:00 KDT
(2300 UTC)

Klyuchevskaya Group of Volcanoes:
Klyuchevskoy Volcano:
56° 03' N, 160° 39' E; Elevation 4,750m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

During the past week (September 27-October 3), seismicity at the volcano was at background levels. Only shallow earthquakes were registered. On September 28, a gas and steam plume rose 500 m above the crater, extending 5 km to the south. On October 3, a fumarolic plume rose 300 m above the volcano. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:
55° 58' N, 160° 36' E; Elevation 2,895 m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

No seismicity was registered under the volcano. On September 28, a gas and steam plume rose 100 m above the crater, extending more than 10 km to the south. On October 3, weak fumarolic activity was registered. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:
56° 38' N, 161° 19' E; Elevation 2,447m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity under the volcano was about at background levels. During the past week, the volcano was obscured by clouds.

Karymsky Volcano:
54° 03' N, 159° 27' E; Elevation 1,486 m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions was 60-75 per day. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:
153° 15' N, 158° 51' E;
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, October 8, 1999, 10:00 AM
ADT (1800 UT)

Alaska Volcanoes:
No Change.

**INFORMATION RELEASE 99-48
KAMCHATKAN VOLCANIC ACTIVITY**

Monday, October 11, 1999, 12:00 KDT
(2300 UTC)

Klyuchevskaya Group of Volcanoes:
Klyuchevskoy Volcano:
56° 03' N, 160° 39' E; Elevation 4,750m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

During the past week (October 4-October 11), seismicity at the volcano was at background levels. Only shallow earthquakes were registered. On October 5, a gas and steam plume rose 200 m above the crater, extending 3 km to the east. On October 7, a fumarolic plume rose 100 m above the volcano. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:
55° 58' N, 160° 36' E; Elevation 2,895 m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

On October 6, a shallow earthquake was registered under the volcano. On October 7, weak fumarolic activity was registered. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:
56° 38' N, 161° 19' E; Elevation 2,447m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity under the volcano was about at background levels. On October 7, a fumarolic plume rose 100 m above the volcano. During the past week, the volcano was obscured by clouds.

Karymsky Volcano:
54° 03' N, 159° 27' E; Elevation 1,486 m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions decreased from 60-75 per day to 15-30. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:
153° 15' N, 158° 51' E;
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, October 15, 1999, 10:00 AM
ADT (1000 UT)

Alaska Volcanoes:
No Change.

ALASKA VOLCANOES UPDATE

Friday, October 22, 1999, 10:00 AM
ADT (1800 UT)

Alaska Volcanoes:
No Change

**INFORMATION RELEASE 99-50
KAMCHATKAN VOLCANIC ACTIVITY**

Monday, October 25, 1999, 15:00 KDT
(0200 UTC)

Klyuchevskaya Group of Volcanoes:
Klyuchevskoy Volcano:
56° 03' N, 160° 39' E; Elevation 4,750m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

During the past week (October 18-October 24), seismicity at the volcano was at background levels. Mainly shallow earthquakes were recorded. On October 20-21 and 24, a gas and steam plume rose 50-200 m above the crater. On October 22-23, a fumarolic plume rose 700-1000m above the volcano extending 5-20 km to the east and southeast. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:
55° 58' N, 160° 36' E; Elevation 2,895 m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

On October 22-24, a gas and steam plume rose 50-100 m above the crater extending 5-10 km to the E and SE. On other days, the volcano was obscured by clouds. No seismicity was registered beneath the volcano.

Sheveluch Volcano:
56° 38' N, 161° 19' E; Elevation 2,447m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity under the volcano was about at background levels. On October 23, a fumarolic plume rose 100 m above the volcano. On other days, the volcano was obscured by clouds.

Karymsky Volcano:
54° 03' N, 159° 27' E; Elevation 1,486 m
**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions was 20-35 per day. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:
153° 15' N, 158° 51' E;
**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

Gorely Volcano:

52°33'N, 158°02'E, Elevation 1,829 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

On October 22, at 18:32 (KDT), a 10-minute series of shallow earthquakes was recorded at the volcano. The last Gorely eruptive activity occurred in 1980-81 and 1984-86.

ALASKA VOLCANOES UPDATE

Friday, October 29, 1999, 10:30 AM
ADT (1830 UT)

Alaska Volcanoes:

No Change.

INFORMATION RELEASE 99-51

KAMCHATKAN VOLCANIC ACTIVITY

Friday, October 29, 1999, 10:00 KDT
(2100 UTC)

Please note that this Weekly Information Release will be transmitted on Fridays beginning today.

Klyuchevskaya Group of Volcanoes:

Klyuchevskoy Volcano:

56°03' N, 160°39' E; Elevation 4,750m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

**PREVIOUS LEVEL OF CONCERN
COLOR CODE WAS GREEN**

During October 25-28, seismicity at the volcano was above background levels. Shallow earthquakes and volcanic tremor were recorded. On October 25 and 27, a gas and steam plume rose 50-300 m above the crater, extending to the east and northeast. On October 26, a fumarolic plume rose 1000 m above the volcano extending 40 km to the northeast. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

On October 25-27, a gas and steam plume rose 50 m above the crater extending 5-10 km to the E and SE. On October 28, the volcano was obscured by clouds. No seismicity was registered beneath the volcano.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity under the volcano was about at background levels. On October 25-26, a fumarolic plume rose 50-100 m above the volcano. On October 27, at 8:59 AM KDT, a short-lived ash explosion was observed. Accompanying 20-minute burst of seismic activity was recorded. According to a Japanese satellite image taken at

12:32 KDT, an ash plume extended northeast at an altitude of 6,900 m ASL. On October 28, the volcano was obscured by clouds.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions was 20-35 per day. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:

153°15'N, 158°51'E;

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, November 5, 1999, 10:30 AM
AST (1930 UT)

Alaska Volcanoes:

No Change.

INFORMATION RELEASE 99-52

KAMCHATKAN VOLCANIC ACTIVITY

Friday, November 5, 1999, 10:00 KST
(2200 UTC)

Klyuchevskaya Group of Volcanoes:

Klyuchevskoy Volcano:

56°03' N, 160°39' E; Elevation 4,750m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

**PREVIOUS LEVEL OF CONCERN
COLOR CODE WAS YELLOW**

During the last week (October 29-November 4), seismicity at the volcano was at background levels. Shallow earthquakes and volcanic tremor were recorded. On October 29-31 and November 4, a gas and steam plume rose 50-300 m above the crater, extending 5 km to the southeast. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

On October 29-31, a gas and steam plume rose 50 m above the crater. On November 1, the plume rose 200 m above the crater, extending 10 km to the south. On other days, the volcano was obscured by clouds. No seismicity was registered beneath the volcano.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

**PREVIOUS LEVEL OF CONCERN
COLOR CODE WAS GREEN**

Seismicity under the volcano was above background levels. On October 30, the volcano was quiet but on October 31 at 6:32 KDT, a 20-minute series of shallow earthquakes and tremor were registered that may have been associated with explosions on the dome. At daylight October 31, a fumarolic plume rose 50 m above the volcano. According to visual reports from Klyuchi town, on November 1 at 10:10 KST, a short-lived explosive eruption sent an ash plume to height s of 5.5-6.0 km ASL; an accompanying increase in seismic activity occurred. This plume extended to the south. On November 2, a fumarolic plume rose 50 m above the volcano. On other days, the volcano was obscured by clouds.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions was 20-35 per day. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

INFORMATION RELEASE 99-53

KAMCHATKAN VOLCANIC ACTIVITY

Friday, November 12, 1999, 10:30
KST (2230 UTC)

Klyuchevskaya Group of Volcanoes:

Klyuchevskoy Volcano:

56°03' N, 160°39' E; Elevation 4,750m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

During the last week (November 5-11), seismicity at the volcano was slightly above background levels. Shallow earthquakes and volcanic tremor were recorded. On November 5, 7-8, and 10-11, a gas and steam plume rose 100-300 m above the crater, extending 5 km to the southeast on November 7. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

On November 5 and 11, a gas and steam plume rose 50-200 m above the crater. On other days, the volcano was obscured by clouds. No seismicity was registered beneath the volcano.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

Seismicity under the volcano was above background levels. On November 8 and 10, three 20-50 minute long series of shallow earthquakes and tremor were recorded that may have been associated with explosions on the dome. The volcano was obscured by clouds November 5-10. On November 11, a fumarolic plume rose 200 m above the volcano.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions was 20-50 per day. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATEFriday, November 12, 1999, 10:30 AM
AST (1930 UT)*Alaska Volcanoes:*

No Change.

INFORMATION RELEASE 99-54KAMCHATKAN VOLCANIC ACTIVITYFriday, November 19, 1999, 12:00
KST (2400 UTC)

The following Release was received by e-mail from KVERT
(Kamchatkan Volcanic

*Klyuchevskaya Group of Volcanoes:**Klyuchevskoy Volcano:*

56°03' N, 160°39' E; Elevation 4,750m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

During the last week (November 12-18), seismicity at the volcano was above background levels. Shallow earthquakes and volcanic tremor were recorded especially on November 15. On November 12 and 18, a fumarolic plume rose 100 m above the crater. On November 15, a gas and steam plume rose 1000 m above the volcano, extending more than 7 km to the northeast. On November 16, a gas and steam plume rose 200 m, extending 5 km to the southeast. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

No seismicity was registered beneath the volcano. On November 12, a gas and steam plume rose 50 m above the crater. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN****PREVIOUS LEVEL OF CONCERN
COLOR CODE WAS YELLOW**

Seismicity under the volcano was at background levels. On November 17 at 08-31 KST, a 5 minute long series of shallow earthquakes and tremor were recorded that may have been associated with an explosion on the dome. On November 12 and 16, a fumarolic plume rose 200 m above the crater. On other days, the volcano was obscured by clouds.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions decreased from 20-50 per day to 10-20. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATEFriday, November 19, 1999, 1:30 PM
AST (2230 UT)*Alaska Volcanoes:*

No Change.

ALASKA VOLCANOES UPDATEFriday, November 26, 1999, 9:00 AM
AST (1800 UT)*Alaska Volcanoes:*

No Change.

INFORMATION RELEASE 99-56KAMCHATKAN VOLCANIC ACTIVITYFriday, November 26, 1999, 12:00
KST (2400 UTC)*Klyuchevskaya Group of Volcanoes**Klyuchevskoy Volcano:*

56°03' N, 160°39' E; Elevation 4,750m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

During the past week (November 19-25), seismicity at the volcano was above background levels. Shallow

earthquakes and volcanic tremor were registered, especially on November 21 and 25. On November 19 and 22-24, a fumarolic plume rose 100 m above the crater, extending more than 5 km to the east. On November 21 and 25, a gas and steam plume rose 1000 m above the volcano, extending more than 7 km to the east. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

No seismicity was registered beneath the volcano. On November 19 and 22, a fumarolic plume rose 50 m above the crater. On November 23, a gas and steam plume rose 500 m above the volcano. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity under the volcano was at background levels. On November 19 and 22, a fumarolic plume rose 200 m above the crater. On November 24 at 08:44 KST, a gas and ash plume rose 3 km above the crater. This plume disappeared within one hour. On other days, the volcano was obscured by clouds.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions decreased from 10-20 per day to 2-5. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;

**CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN**

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

INFORMATION RELEASE 99-57KAMCHATKAN VOLCANIC ACTIVITYFriday, December 3, 1999, 12:00 KST
(2400 UTC)*Klyuchevskaya Group of Volcanoes**Klyuchevskoy Volcano:*

56°03' N, 160°39' E; Elevation 4,750m

**CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW**

During the past week (November 26-December 2), seismicity at the volcano was above background

levels. Shallow earthquakes and volcanic tremor were registered. On November 26, 28, and December 1, a fumarolic plume rose 50-200 m above the crater. On November 29 and December 1, a gas and steam plume rose 1500 m above the volcano and extending more than 20 km to the southeast. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

No seismicity was registered beneath the volcano. On November 26, 29, and December 2, a fumarolic plume rose 50-200 m above the crater. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity under the volcano was at background levels. On November 26, 29, 30 and December 1-2, a fumarolic plume rose 50-200 m above the crater. On November 27 at 20:31 and December 2 at 2:37 KST, a gas and ash plume rose 1000-2000 m above the crater. These plumes disappeared within one hour. On other days, the volcano was obscured by clouds.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

The low level strombolian eruptive activity that has characterized the volcano for more than three years continues. During the past week, the number of gas and ash explosions 1-10 per day. These explosions sent material to 300-1000 m above the volcano.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, December 3, 1999, 10:30 AM
AST (1930 UT)

Alaska Volcanoes:

No Change.

INFORMATION RELEASE 99-58
KAMCHATKAN VOLCANIC ACTIVITY

Friday, December 10, 1999, 12:00
KST (2400 UTC)

Klyuchevskaya Group of Volcanoes
Klyuchevskoy Volcano:

56°03' N, 160°39' E; Elevation 4,750m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

During the past week (December 3-9), seismicity at the volcano was above background levels. Shallow earthquakes and volcanic tremor were registered. On December 3, a fumarolic plume rose 200-300 m above the crater and extended 5 km to the east. On December 8, a gas and steam plume rose 2500 m above the volcano. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

No seismicity was registered beneath the volcano. On December 3, a fumarolic plume rose 300 m above the crater, extending to the southeast. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity under the volcano was at background levels. The volcano was obscured by clouds on December 3-8; on December 9, no plume was visible.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

We have no data on activity of this volcano because the nearest seismic station KRY is out of order. According to the regional seismic net, no strong events occurred during the past week.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, December 10, 1999, 12:30 PM
AST (2130 UT)

Alaska Volcanoes:

No Change.

This past summer AVO installed a new seismic network on Great Sitkin volcano. It is located (52°05, N, 176°08, W) among the Andreanof Islands in the Central Aleutians. AVO has received sufficient information on background seismicity, and will now include the volcano in the Weekly Updates.

INFORMATION RELEASE 99-59
KAMCHATKAN VOLCANIC ACTIVITY

Friday, December 17, 1999, 10:00
KST (2200 UTC)

Klyuchevskaya Group of Volcanoes

Klyuchevskoy Volcano:

56°03' N, 160°39' E; Elevation 4,750m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

During the past week (December 10-16), seismicity at the volcano was above background levels. Shallow earthquakes and volcanic tremor were registered. On December 10, a fumarolic plume rose 200 m above the crater and extended 5 km to the east. On December 16, weak fumarolic activity was observed. On other days, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

No seismicity was registered beneath the volcano. On December 10 and 16, weak fumarolic activity was observed at the volcano. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity under the volcano was at background levels. On December 10, a fumarolic plume rose 100 m above the crater. On other days, the volcano was obscured by clouds.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m
CURRENT LEVEL OF CONCERN
COLOR CODE IS YELLOW

We have no data on activity of this volcano because the nearest seismic station KRY continued to be out of order. According to the regional seismic net, no strong events occurred during the past week.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;
CURRENT LEVEL OF CONCERN
COLOR CODE IS GREEN

Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

ALASKA VOLCANOES UPDATE

Friday, December 17, 1999, 12:30 PM
AST (2130 UT)

Alaska Volcanoes:

No Change.

ALASKA VOLCANOES UPDATE

Thursday, December 23, 1999, 10:00
AM AST (1900 UT)

Merry Christmas from AVO!!!

Alaska Volcanoes:

No Change.

INFORMATION RELEASE 99-60
KAMCHATKAN VOLCANIC ACTIVITY

Friday, December 24, 1999, 12:00
 KST (0000 UTC)

Dear colleagues:

Have a Merry Christmas!

Klyuchevskaya Group of Volcanoes

Klyuchevskoy Volcano:

56°03' N, 160°39' E; Elevation 4,750m

CURRENT LEVEL OF CONCERN

COLOR CODE IS GREEN

PREVIOUS LEVEL OF CONCERN

COLOR CODE WAS YELLOW

During the past week (December 17-23), seismicity at the volcano was at background levels. Shallow earthquakes and volcanic tremor were registered. On December 17 and 19-21, a fumarolic plume rose 50-200 m above the crater and extended 1-3 km to the east. On December 23, a fumarolic plume rose 700 m above the crater and extended to the northeast. On December 19, the volcano was obscured by clouds.

Bezymianny Volcano:

55°58'N, 160°36'E; Elevation 2,895 m

CURRENT LEVEL OF CONCERN

COLOR CODE IS GREEN

No seismicity was registered beneath the volcano. On December 17 and 22, weak fumarolic activity was observed at the volcano; on Dec. 20-21, no plume was visible. On other days, the volcano was obscured by clouds.

Sheveluch Volcano:

56°38' N, 161°19' E; Elevation 2,447m

CURRENT LEVEL OF CONCERN

COLOR CODE IS GREEN

Seismicity under the volcano was at background levels. On December 17 and 20-21, a fumarolic plume rose 100-200 m above the crater. On other days, the volcano was obscured by clouds.

Karymsky Volcano:

54°03'N, 159°27'E; Elevation 1,486 m

CURRENT LEVEL OF CONCERN

COLOR CODE IS GREEN

PREVIOUS LEVEL OF CONCERN

COLOR CODE WAS YELLOW

The seismic station KRY was restored to operation on Dec. 19. Seismicity at the volcano has now decreased to background levels. About 1-2 local earthquakes occur every day and the volcano has returned to its normal state.

Avachinskaya Group of Volcanoes:

53°15'N, 158°51'E;

CURRENT LEVEL OF CONCERN

COLOR CODE IS GREEN

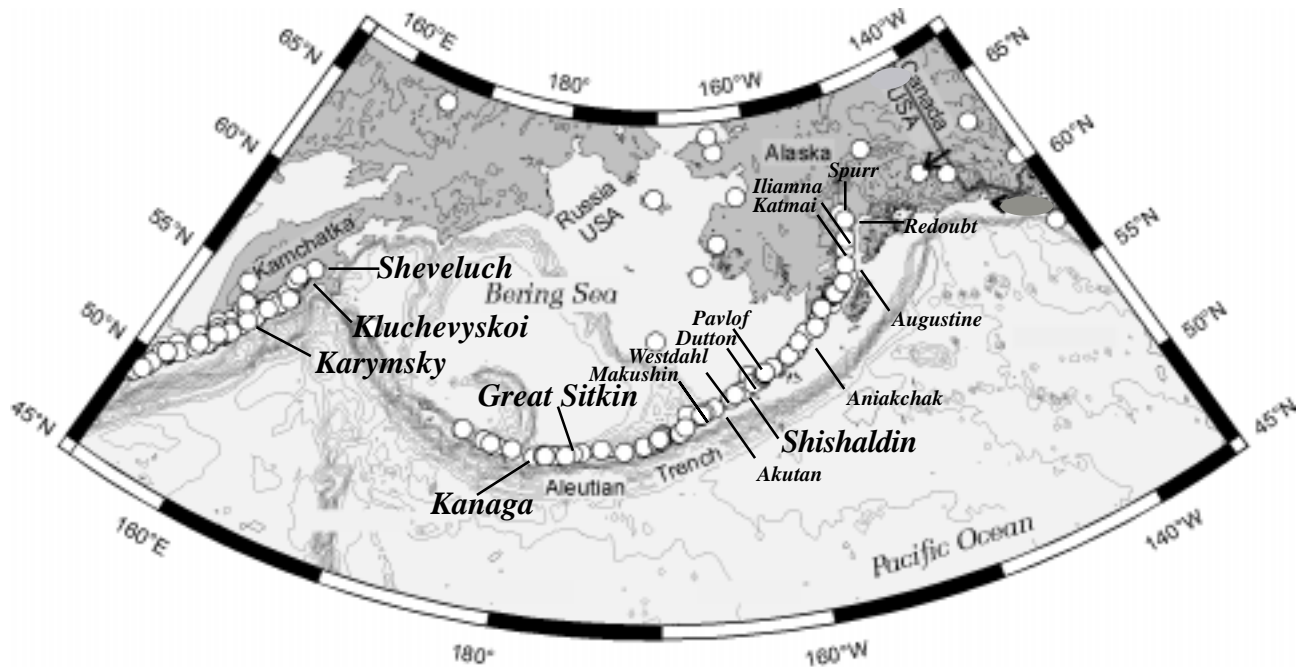
Seismicity at Avachinsky and Koryaksky volcanoes is at normal levels.

INFORMATION RELEASE 99-61
KAMCHATKAN VOLCANIC ACTIVITY

Thursday, December 30, 1999, 12:00
 KST (0000 UTC)

Dear colleagues:

Have a Happy 2000 New Year!



Map showing Alaska Peninsula, Aleutian arc and Kamchatka Peninsula and subregions of study. White circles are volcanoes. Names are given for all monitored volcanoes, including Kamchatkan volcanoes mentioned in this report.

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