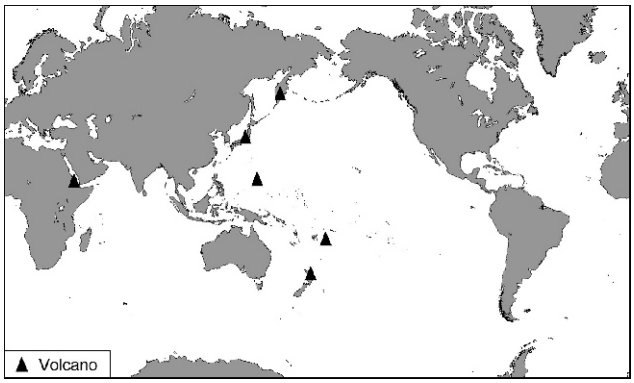
Bulletin of the Global Volcanism Network



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Asama

Honshu, Japan
36.403°N, 138.526°E; summit elev. 2,568 m
All times are local (= UTC + 9 hours)

Asama (figure 1) erupted in January and February 2009. Following three small eruptions in August 2008 (*BGVN* 33:08), glow was frequently reflected by steam over the summit crater. High seismicity began suddenly on 1 January 2009 and prevailed through that month (figure 2). By 21 January 2009 scientists from the Japan Meteorological Agency (JMA) had discovered a thin ash layer covering the NW rim of Asama's summit crater (figure 3).

The highest SO_2 flux in recent years, over 5,000 metric tons/day, was recorded on 15 January 2009 (figure 4). JMA also noted minor crustal deformation.

Yukio Hayakawa visited Maebashi (a town ~ 50 km E of the summit) during January 2009. Local people told him that they felt the intensity of Asama's recent plumes had been high, more vigorous than in 2004 (*BGVN* 29:08).

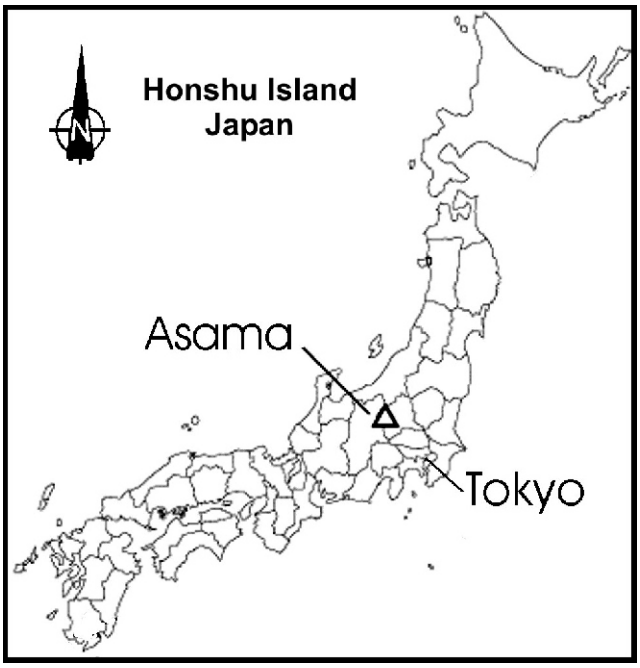

Figure 1. A sketch map centered on Honshu Island (Japan) indicating the location of Asama. The volcano sits 140 km NW of Tokyo. Courtesy of Japan Meteorological Agency (JMA).

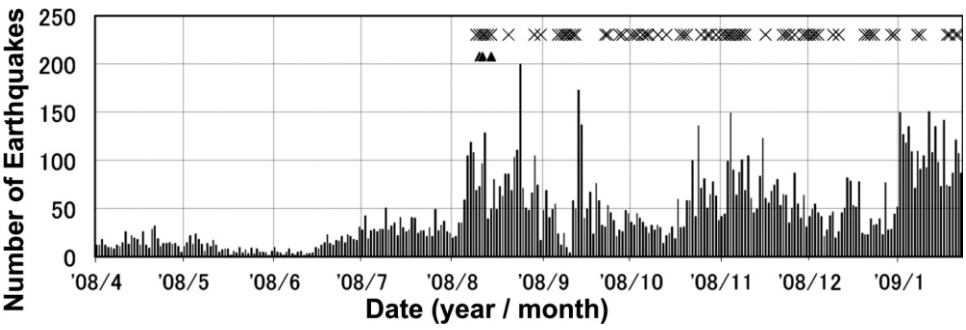

Figure 2. Plot of daily earthquakes registered at Asama during April 2008 through January 2009. At the top of the plot, the triangles indicate times of both earthquake and recognized eruption during the August 2008 eruptive episode; the Xs indicate times of visible glow (common during August 2008 and often visible thereafter). Courtesy of JMA.

Figure 3. Two photos of Asama's steaming summit taken on 16 January (top, looking down on the crater's NW rim) and 21 January 2009 (bottom, viewed from the S). Dark material on 16 January was interpreted as older, perhaps in part from the 2004 eruption; circled areas indicate zones continaing yellow (sulfurous) sublimate. Circled areas on the 21 January photo indicate zones where thin ashfall was noted. Courtesy of JMA.

An Associated Press story issued 2 February 2009 contained a video of Asama's ash- and bomb-peppered summit, with the crater emitting billowing white plumes. At night enormous red areas above the summit suggested the sudden ejection of molten material. That news report stated that JMA had seen an eruption in the early hours of 2 February. They said that some ash fell on parts of Tokyo. Later reports will present more details on that and later eruptions.

Geologic Summary. Asama, Honshu's most active volcano, overlooks the resort town of Karuizawa, 140 km NW of Tokyo. The volcano is located at the junction of the Izu-Marianas and NE Japan volcanic arcs. The modern cone of Maekake-yama forms the summit of the volcano and is situated E of the horseshoe-shaped remnant of an older andesitic volcano, Kurofu-yama, which was destroyed by a late-Pleistocene landslide about 20,000 years before present (BP). Growth of a dacitic shield volcano was accompanied by pumiceous pyroclastic flows, the largest of which occurred about 14,000-11,000 years BP, and by growth of the Ko-Asama-yama lava dome on

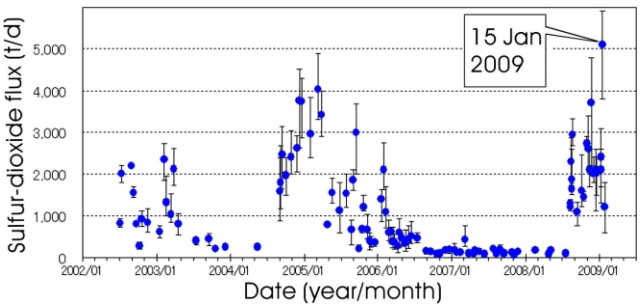

Figure 4. A plot of SO_2 flux emitted from Asama between January 2002 and January 2009. Error bars indicate the high and low values of 5-7 measurements. Courtesy of JMA.

the E flank. Maekake-yama, capped by the Kama-yama pyroclastic cone that forms the present summit of the volcano, is probably only a few thousand years old and has an historical record dating back at least to the 11th century AD. Maekake-yama has had several major plinian eruptions, the last two of which occurred in 1108 AD (Asama's largest Holocene eruption) and 1783 AD.

Information Contacts: *Japan Meteorological Agency (JMA)*, Otemachi, 1-3-4, Chiyoda-ku, Tokyo 100-8122, Japan (URL: http://www.jma.go.jp/jma/indexe.html); *Volcano Research Center*, Earthquake Research Institute (ERI), University of Tokyo, Yayoi 1-1-1, Bunkyo-ku, Tokyo 113, Japan (URL: http://www.eri.u-tokyo.ac.jp/topics/ASAMA2004/index-e.html); *Yukio Hayakawa*, Gunma University, Faculty of Education, Aramaki 4-2, Maebashi 371-8510, Japan (Email: hayakawa@edu.gunma-u.ac.jp); *Associated Press* (URL: http://www.ap.org/).

Karymsky

Kamchatka Peninsula, Russia
54.03°N, 159.26°E; summit elev. 1536 m
All times are local (= UTC +12 hours)

This report summarizes activity at Karymsky from February 2007 to 23 January 2009, with the exclusion of June-September 2008 (figure 5), when activity was variable (*BGVN* 33:07). During the reporting interval the Level of Concern Color Code remained at Orange. Overall activity during 2007 was also variable, but increased during July-December 2007 (figure 6).

During February to April 2007, activity was characterized by constant ash explosions and steam-and-gas emissions. Thermal anomalies were detected, and plumes rose to altitudes of 2.5-5.0 km before drifting NW, N, NE, E, and SE (figure 7).

During May 2007 the volcano quieted; activity was characterized by low steam-and-gas emissions. There was increased seismicity in July-October 2007, with a daily high of 900 events in mid-July. During 21-27 September ash plumes extended over 450 km E, and on 5, 7, and 8 October ash plumes that rose to 30 km altitude drifted E and NE. Activity decreased after November, but steaming was evident (figure 8).

During March-April 2008 explosive activity again increased. On 15-16 March an ash plume drifted 40 km to the SE, and ash deposits were noted 15-20 km to the NE and ESE of the summit. On 3 April ash deposits were noted in areas about 20 km to the E, 70 km to the SW, and 45-50 km to the S. On 8 April an ash plume drifted 70-80 km ESE.

On 11 October 2008 an ash plume rose to an altitude of 3.4 km, and on 13 October a 5-km-wide ash plume drifted 32 km NNE. On 2 November an ash plume rose to an altitude of 4 km. On 10 November an ash plume drifted 38 km E, and 28 km ENE.

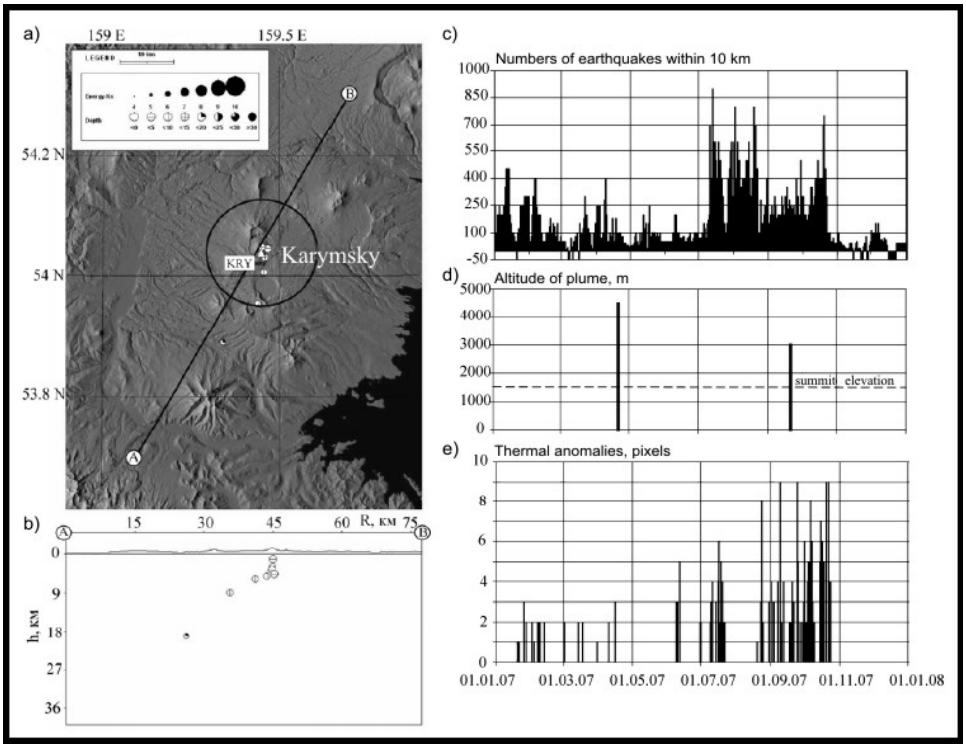

Figure 6. Activity of Karymsky during 2007: a) the map of epicenters; b) the projection of hypocenters in the elevation along the line AB. Radius of the circle around the volcano is 10 km; c) a quantity of weak local earthquakes ("-50" values indicate no data); d) ash plumes according to visual data, altitude in meters above sea level; e) the size of thermal anomaly in the pixels. (Senyukov and others, 2008).

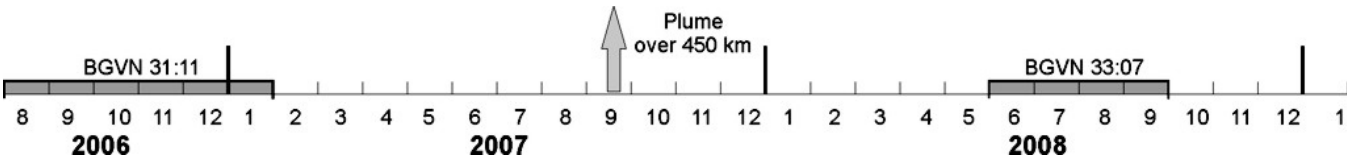

Figure 5. Recent Karymsky reporting in the *Bulletin* (shaded areas) and the gaps in coverage discussed in this report.

Figure 7. Explosive activity seen at Karymsky in April 2007. Ash covered the volcano, and to less extent the frozen surface of lake Akademia Nauk (the flat area in the foreground) and surroundings. Photo by Alexander Sokorenko.

Figure 8. Karymsky viewed from the SW, December 2007. The environment on the upper flanks includes diverse processes that constructed and exposed deposits of black ash inter-layered with snow and ice. For example, precipitation from the active plumes, can variably drop snow, sleet, and rain. Frequent ashfalls occur at Karymsky, in some cases dropping still-warm ash on the snow. Other processes include episodes of freezing and snowfall. Heating from sunlight and seasonal changes may cause local melting. These kinds of processes led to the apron of exposed ash on the S side of the upper cone. Photo by Alexander Sokorenko.

On 15 November an ash plume extended 28 km to the E. On 8 December ash plumes rose to altitudes of 2 km and ash deposits on the E flank were more than 5 km long. On 16 December an ash plume extended 240 km to the SE and ESE. During 21-23 December ash plumes extended about 80 km to the E. Ash deposits were noted on 21 December; the deposits extended 26 km SE and 9 km NE.

As late as 8 and 12 January 2009, gas-and-steam plumes extended about 25 km to the SE and NE. The Tokyo VAAC reported that on 16 January an ash plume rose to an altitude of 3.7 km and drifted SE. Analysis of satellite imagery revealed a thermal anomaly in the crater during 18-19 and 21 January 2009.

Reference. Senyukov, S.L., Droznina, S.Y., Nuzhdina, I.N., Garbuzova, V.T., Kozhevnikova, T.Y., Toloknova, S. L., and Sobolevskaya, O.V., 2008, Monitoring of active Kamchatkan volcanoes using remote methods in 2007: Conference proceedings, dedicated to the day of volcanologists, on 27-29 March, 2008, Petropavlovsk-Kamchatsky: IViS FED RAN, 329 p. (in Russian).

Information Contacts: *Kamchatka Volcanic Eruptions Response Team (KVERT)*, Institute of Volcanology and Seismology (IV&S) Far East Division, Russian Academy of Sciences (FED RAS), *Kamchatka Branch of the Geophysical Service of the Russian Academy of Sciences (KB GS RAS)*, Piip Ave. 9, Petropavlovsk-Kamchatsky, 683006, Russia (Email: kvert@kscnet.ru, URL: http://www.kscnet.ru/ivs; http://emsd.iks.ru/~ssl/monitoring/main.htm); *Alexander Sokorenko*, IV&S; *Tokyo Volcanic Ash Advisory Center (VAAC)*, Tokyo, Japan (URL: http://ds.data.jma.go.jp/svd/vaac/data/).

Anatahan

Mariana Islands, Central Pacific
16.35°N, 145.67°E; summit elev. 790 m

The eruption at Anatahan (figure 9) had continued through February 2008 with intermittent eruptions (*BGVN* 32:12). This report covers 6 February 2008 into early January 2009 but also draws on an older reference on the status of coral reefs (Starmer, 2005). No thermal alerts have been measured by MODVOLC at Anatahan since 5 June 2006.

Ash plumes, SO_2 emissions, and elevated seismicity continued between February and August 2008 (table 1). However, activity was consistently low after mid-August 2008. The last posted Volcanic Ash Advisories appeared on 1-3 August 2008. Throughout the reporting interval a key focus of reporting were episodes of sulfur-dioxide (SO_2) emissions that drifted S to inhabited islands.

A Volcanic Haze Advisory was issued during the week of 20-26 February 2008 for the islands of Tinian, Saipan, and Rota due to high SO_2 levels (see map, *BGVN* 28:04). According to an article on 26 February in the Saipan Tribune (Ferdie de la Torre, reporter), the Emergency Management Office of the Commonwealth of the Northern Mariana Islands (EMO-CNMI) advised people who had breathing problems to remain indoors during the volcanic haze advisory, and reminded mariners to take precautionary measures due to low visibility. The newspaper article indicated that EMO-CNMI's SO_2 analyzer (location not reported) measured 161 ppb (parts per billion). According to the article, Gov. Benigno Fitial declared that Anatahan island was still unsafe for human habitation and ordered all travel to the island restricted, with the exception of scientific expeditions.

Starmer (2005) stated that "Ash fallout from the 2003 eruption caused extensive damage to nearshore reef habitats, especially on the northern side. Although all surveyed locations during the 2003 National Oceanic and Atmospheric Administration (NOAA) Marianas Research and Monitoring Program (MARAMP) cruise contained a layer of ash covering the substrate (figure 10), portions of the south shore and southeastern corner had only a veneer layer."

Reference: Starmer, J. (ed.) 2005, The state of coral reef ecosystems of the Commonwealth of the Northern Mariana Islands (p. 399-441) *in* Waddell, J.E. (ed.), 2005, The state of coral reef ecosystems of the United States and

Pacific Freely Associated States 2005: NOAA Technical Memorandum NOS NCCOS 11, NOAA/NCCOS Center for Coastal Monitoring and Assessment's Biogeography Team, Silver Spring, MD, USA, 522 p.

Geologic Summary. The elongate, 9-km-long island of Anatahan in the central Mariana Islands consists of a large stratovolcano with a 2.3 x 5 km, E-trending, compound summit caldera. The larger western portion of the caldera is 2.3 x 3 km wide, and its western rim forms the island's 790-m high point. Ponded lava flows overlain by pyroclastic deposits fill the floor of the western caldera, whose SW side is cut by a fresh-looking smaller crater. The 2-km-wide eastern portion of the caldera contained a steep-walled inner crater whose floor prior to the 2003 eruption was only 68 m above sea level. A submarine volcano, named NE Anatahan, rises to within 460 m of the sea surface on the NE flank of the volcano, and numerous other submarine vents are found on the NE-to-SE flanks. Sparseness of vegetation on the most recent lava flows on Anatahan had indicated that they were of Holocene age, but the first historical eruption of Anatahan did not occur until

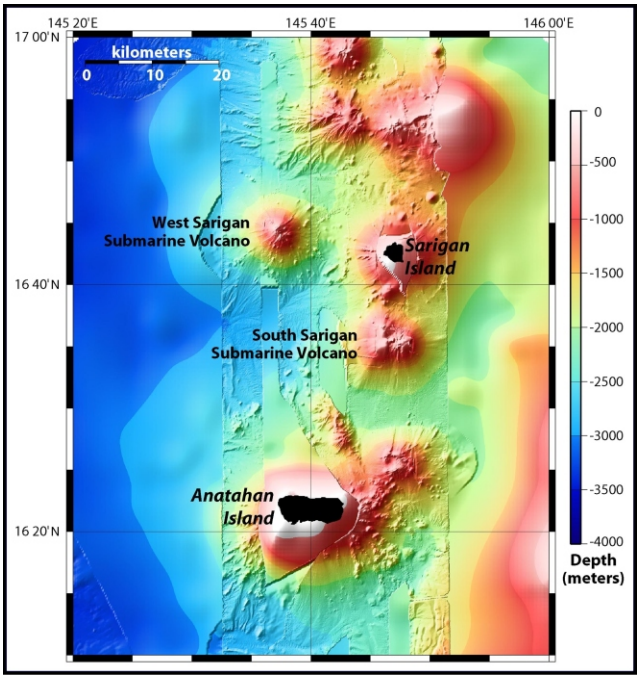

Figure 9. Location map showing Anatahan and Sarigan. The bathymetry data are a combination of satellite bathymetry overlaid with EM300 multibeam bathymetry, which was collected on the NOAA Submarine Ring of Fire 2003 cruise aboard the *R/V Thompson*. Courtesy of NOAA Ocean Explorer (modified from original).

Figure 10. Part of an ash-covered coral reef on a submarine flank of Anatahan island. The reef organisms appear greenish gray in color owing to fine-grained ash. Taken from Starmer (2005).

Date (2008)	Plumes and SO_2 emissions	Seismic activity and other events
06 Feb-12 Feb	Steam plumes, possibly with ash; SO_2 emissions.	Relatively low seismicity, with short-lived increases. Volcanic fog near Saipan.
13 Feb-19 Feb	Two SO_2-bearing plumes; two steam plumes, possibly with ash.	Increased seismicity.
20 Feb-26 Feb	Persistent SO_2 emissions; steam plumes possibly with ash.	Elevated seismicity, with great variation. VHA issued for Tinian, Saipan, and Rota due to high SO_2 levels.
27 Feb-04 Mar	Persistent SO_2 emissions; two ash plumes.	Elevated seismicity, some decline. VHA cancelled on 29 Feb.
05 Mar-11 Mar	Ash and SO_2-bearing plume, continuous ash emissions on 5-7 March.	Elevated seismicity, lower than previous week.
12 Mar-18 Mar	Ash plume(s).	Variable seismicity, mostly somewhat elevated.
19 Mar-25 Mar	Ash-and-gas plumes.	Elevated seismicity.
26 Mar-01 Apr	None observed.	Low seismicity. VAL lowered to Advisory, ACC lowered to Yellow.
02 Apr-11 Apr	None observed.	Low seismicity.
12 Apr-15 Jul	Reporting absent or sparse (apparently due to low activity; VAL lowered to Normal; ACC lowered to Green).	
16 Jul-22 Jul	SO_2-bearing plume.	Slow increase in seismicity.
23 Jul-29 Jul	SO_2 -bearing plumes, ash plume to 1.5 km altitude; plume possibly with ash.	Continued slow increase in seismicity. VAL at Advisory, then Watch; ACC at Yellow then Orange.
30 Jul-05 Aug	Gas-and-steam plumes, possibly with ash at 1.5 km altitude.	Fluctuating seismicity.
06 Aug-12 Aug	Small SO_2-bearing plumes; steam plumes with ash to 1.8 km altitude.	Significant decrease in seismicity. VAL lowered to Advisory, ACC lowered to Yellow.
13 Aug-31 Jan 2009	No reports except in early October (no significant plumes).	Low seismicity. VAL lowered to Normal, ACC lowered to Green on 1 Oct.

Table 1. Activity reported at Anatahan by week during 6 February 2008 to 31 January 2009. VAL is Volcanic Alert Level, ACC is Aviation Color Code. The VAL and ACC on 5 February 2008 had been raised to Watch and Orange, respectively, as a result of ash emissions. VHA is volcanic haze advisory. Data from the Emergency Management Office of the Commonwealth of the Mariana Islands, Hawaiian Volcano Observatory, and the Washington Volcanic Ash Advisory Center (VAAC).

May 2003, when a large explosive eruption took place forming a new crater inside the eastern caldera.

Information Contacts: *Emergency Management Office of the Commonwealth of the Northern Mariana Islands (EMO-CNMI)*, PO Box 100007, Saipan, MP 96950, USA (URL: http://www.cnmiemo.gov.mp/ and http://volcano.wr.usgs.gov/cnmistatus.php); *Hawaiian Volcano Observatory (HVO)*, U.S. Geological Survey, PO Box 51, Hawai'i National Park, HI 96718, USA (URL: http://hvo.wr.usgs.gov/; Email:hvo-info@hvomail.wr.usgs.gov); *Washington Volcanic Ash Advisory Center*, Satellite Analysis Branch (SAB), NOAA/NESDIS E/SP23, NOAA Science Center Room 401, 5200 Auth Rd, Camp Springs, MD 20746, USA (URL: http://www.ssd.noaa.gov/VAAC/); Saipan Tribune (URL: http://www.saipantribune.com); *Hawai'i Institute of Geophysics and Planetology (HIGP) Thermal Alerts System (MODVOLC)*, School of Ocean and Earth Science and Technology (SOEST), Univ. of Hawai'i, 2525 Correa Road, Honolulu, HI 96822, USA (URL: http://hotspot.higp.hawaii.edu/); *NOAA Ocean Explorer*, Submarine Ring of Fire 2003 - Mariana Arc (Bob Embley, Principal Scientist) (URL: http://oceanexplorer.noaa.gov/).

Home Reef

Tonga Islands, SW Pacific
18.992°S, 174.775°W; summit elev. -10 m

Until November 2008 no observations of the Home Reef island had been reported since a visit by Scott Bryan and colleagues in mid-February 2007 (*BGVN* 32:04), when a small pumice mound less than 5 m above sea level was present at low tide. The island had been constructed during an explosive eruption in August 2006 (*BGVN* 31:09, 31:10, and 31:12). When Bryan returned on 20 November 2008 the island was no longer present.

The summit of the volcano on 20 November was 9-10 m below sea level, forming a relatively smooth-topped summit region approximately 500 x 500 m in area. The top of the summit was located at 18°59.421' S, 174°46.138' W (18.990°S, 17.769°W). The position of the summit are could be detected by a slight "lipping" of the oceanic swell across the top of the seamount, but the area was also obvious due to continued hydrothermal plume activity producing turbid turquoise water. The hydrothermal plume was displaced to the west of the summit area by ocean currents, and the surface area of discolored water was ~ 1-2 km^2. A discharge of H_2S associated with the hydrothermal activity was more subdued than in February 2007.

Geologic Summary. Home Reef, a submarine volcano midway between Metis Shoal and Late Island in the central Tonga islands, was first reported active in the mid-19th century, when an ephemeral island formed. An eruption in 1984 produced a 12-km-high eruption plume, copious amounts of floating pumice, and an ephemeral island 500 x 1500 m wide, with cliffs 30-50 m high that enclosed a water-filled crater. Another island-forming eruption in 2006 produced widespread dacitic pumice rafts.

Information Contacts: *Scott Bryan*, Centre for Earth and Environmental Science Research, Kingston University London, Kingston Upon Thames, Surrey KT1 2EL, London, United Kingdom (Email: s.bryan@kingston.ac.uk); *Allan Bowe*, Mounu Island Resort, PO Box 7, Neiafu, Vava'u, Tonga (Email: mounu@tonfon.to).

White Island

New Zealand
37.52°S, 177.18°E; summit elev. 321 m
All times are local (= UTC +12 hours)

The water level in the White Island crater lake had decreased significantly, especially during April 2007, and the water temperature had fallen from 74° to 64°C (*BGVN* 32:06). However, this activity was not accompanied by any eruptions, and monitoring had not detected any increase in volcanic activity. This report discusses activity from May 2007 through January 2009.

By late October 2007, the lake had almost completely evaporated. Then, in December 2007, the lake began to rise. By mid-February 2008, the level had risen about 6 m. Accompanying the rise in lake level was a further drop in lake temperature, from 63° to 53°C, due to the greater volume of water. The lake color changed from a turbid gray to a light green, reflecting less suspended sediment.

On 21 November 2007, an earthquake swarm (the largest, M 4.2) occurred 10 km NW of White Island. On 13 June 2008 a tectonic earthquake (M 5.4) 10 km SW was widely felt in the Bay of Plenty. However, neither earthquake event was associated with increased volcanic seismicity. From 2 December 2008 through 31 January 2009 there were a few small earthquakes 5-10 km NW of the volcano. However, dozens of epicenters occurred just offshore N of the New Zealand mainland (near Whakatane and Matata), many to the SW of White Island.

By 23 October 2008 the lake had risen 15 m (within about 9 m of overflow), and was beginning to affect the geothermal features on the Main Crater floor. New springs formed on the floor and old springs flowed again. The lake temperature was 57°C, and the water color had changed to light green, reflecting a decrease in suspended sediment.

High-temperature fumaroles (101-103°C) were located on the S floor of the Main Crater. Steam, gas, and mud emissions had increased from the largest vent during the previous few weeks. The Alert Level remained at Level 1

Figure 11. Photo of White Island crater taken 6 February 2009. Dinosaur toy in left foreground for scale. Courtesy of Geonet.

(low on a scale of 0-5), indicating signs of unrest. Steaming continued into February 2009 (figure 11).

Geologic Summary. Uninhabited 2 x 2.4 km White Island, one of New Zealand's most active volcanoes, is the emergent summit of a 16 x 18 km submarine volcano in the Bay of Plenty about 50 km offshore of North Island. The 321-m-high island consists of two overlapping andesitic-to-dacitic stratovolcanoes; the summit crater appears to be breached to the SE because the shoreline corresponds to the level of several notches in the SE crater wall. Volckner Rocks, four sea stacks that are remnants of a lava dome, lie 5 km NNE of White Island. Intermittent moderate phreatomagmatic and strombolian eruptions have occurred at White Island throughout the short historical period beginning in 1826, but its activity also forms a prominent part of Maori legends. Formation of many new vents during the 19th and 20th centuries has produced rapid changes in crater floor topography. Collapse of the crater wall in 1914 produced a debris avalanche that buried buildings and workers at a sulfur-mining project.

Information Contacts: *GeoNet*, a collaboration between the Earthquake Commission and GNS Science (URL: http://www.geonet.org.nz/); *GNS Science*, Wairakei Research Center, Private Bag 2000, Taupo 3352, New Zealand (URL: http://www.gns.cri.nz/); *Earthquake Commission (EQC)*, PO Box 790, Wellington, New Zealand (URL: http://www.eqc.govt.nz/).

Dalaffilla

Ethiopia
13.792°N, 40.55°E; summit elev. 613 m
All times are local (= UTC + 3 hours)

The eruption that began on 3 November 2008 (*BGVN* 33:10) significantly slowed or ceased prior to January 2009. The region is the scene of sporadic fighting, thwarting direct reports from people in the field, and forcing greater reliance on remote-sensing imagery.

Looking at Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) satellite system images for 19 December 2008 and 4 January 2009 (figure 12), Matt Patrick found little significant change in the shape or area of the lava flow field since 8 November 2008 (see image in *BGVN* 33:10).

Thermal alerts over the eruption site reported by the MODVOLC system were absent after 28 December 2008 (figure 13) through at least early February 2009. At the start of the eruption (identified on 3 November at 1920 UTC) there were 148 alerts in a circular pattern well extending outboard but engulfing the densest area of alerts over the main lava field. Following the initial eruption, the alert pixels concentrated primarily on the lava flow. No thermal anomalies were detected for at least several years before the November eruption.

NASA's Earth Observatory (EO) released a true-color image captured by Taiwan's Formosat-2 satellite (figure 14). The image caption, by Ralph Harrington, noted that fresh flows from the recent eruption appear darker than the older weathered flows. Lava spread from the fissure several kilometers to the NE, as well as S and SW. The image also appears to show spatter cones associated with the fissures.

Geologic Summary. Dalaffilla, also referred to as Gabuli, is a small, but steep-sided conical stratovolcano that rises 300 m above surrounding lava fields SE of Alu vol-

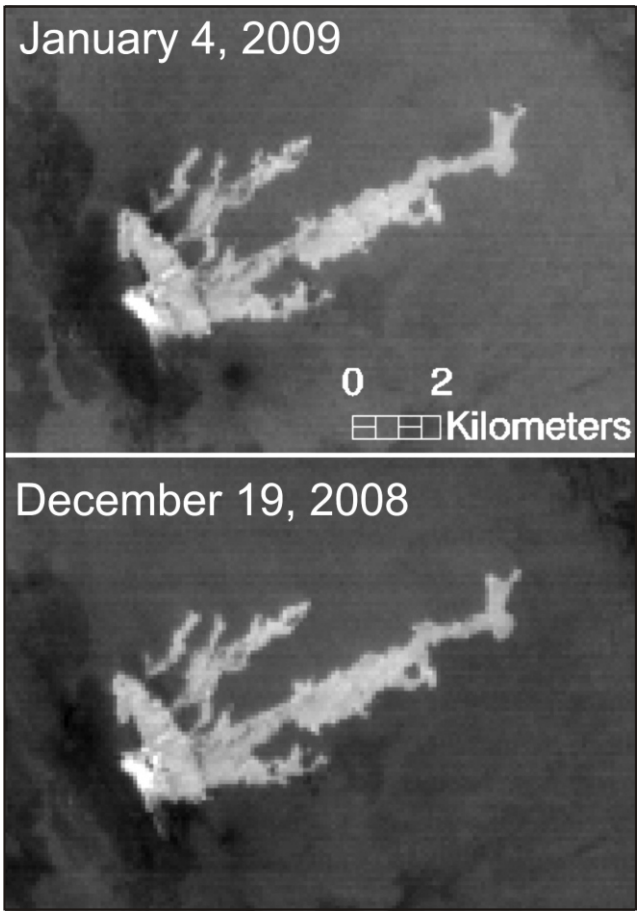

Figure 12. Satellite ASTER images over Dalaffilla and Alu volcanoes on 19 December 2008 and 4 January 2009. Shown are nighttime thermal images (band 14, 11-micron wavelength) showing flow to the NE from a fissure or fissure system between the volcanoes. Courtesy of Matt Patrick.

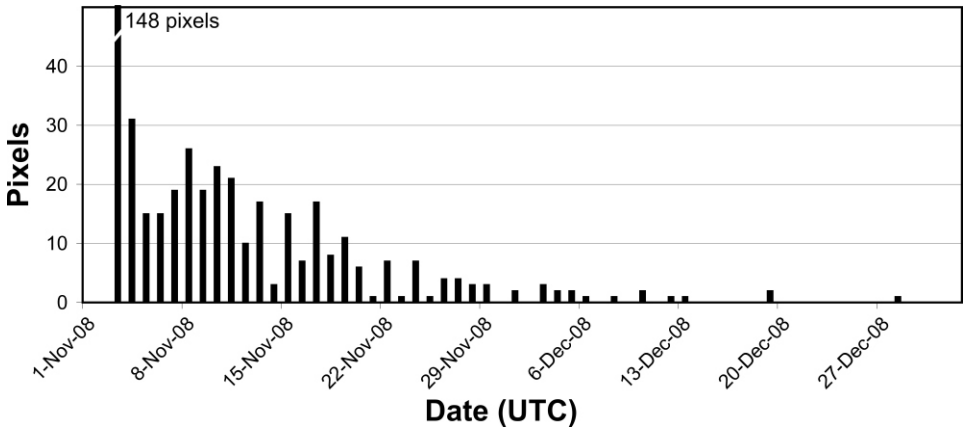

Figure 13. A plot of the maximum number of daily MODVOLC thermal alerts at Dalaffilla during November-December 2008. Courtesy of the Hawai'i Institute of Geophysics and Planetology (HIGP) Thermal Alerts System.

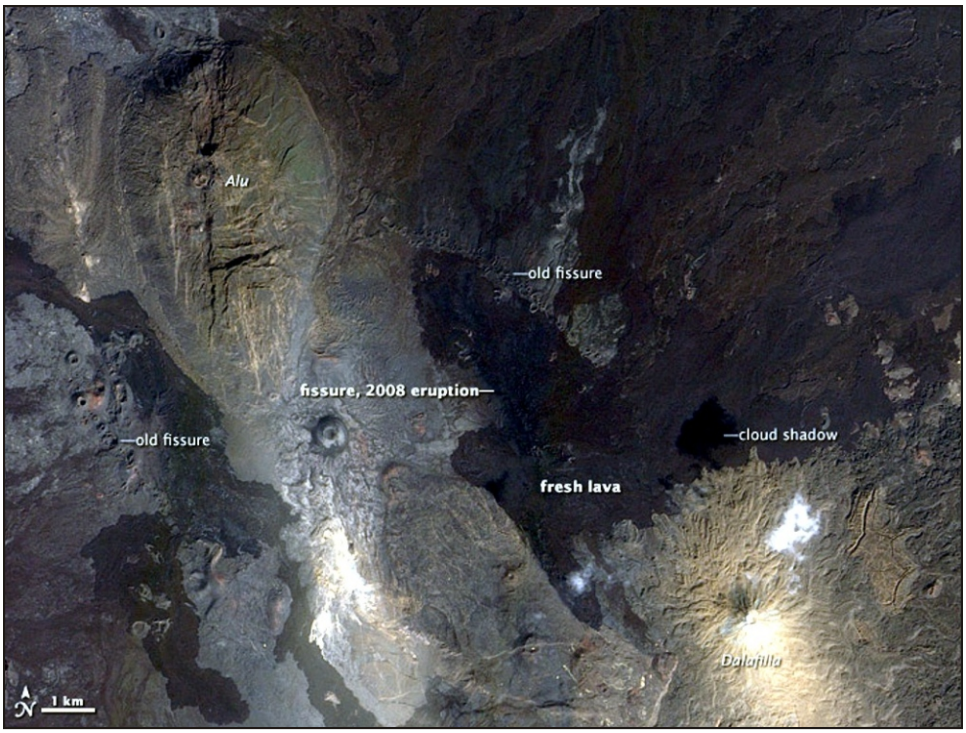

Figure 14. A Formosat-2 satellite true-color image (enhanced here) acquired 25 December 2008 of the Alu and Dalaffilla portion of the Erta Ale range of the Afar region. FORMOSAT-2, developed by the National Space Organization (NSPO), launched in 2004 with 2-m panchromatic resolution and 8-m multi-spectral resolution. Courtesy of NASA Earth Observatory, with image provided by Cheng-Chien Liu, National Cheng-Kung University, and An-Ming Wu, NSPO, Taiwan.

cano. This morphology, unusual for the Erta Ale Range volcanoes, results from the extrusion of viscous, silicic lava flows with primary slopes up to about 35 degrees. These silicic flows extend primarily to the E; on the W they are blocked by walls of a horst structure along the crest of the Erta Ale range. Other basaltic lava flows from regional fissures surround the 613-m-high volcano. Fumarolic activity occurs in the 100-m-wide summit crater and has weathered surrounding lava flows.

Information Contacts: *NASA Earth Observatory* (URL: http://earthobservatory.nasa.gov/); *Ralph Harrington*, The Volcanism Blog (URL: http://volcanism.worldpress.com); *Matthew R. Patrick*, Hawaiian Volcano Observatory (HVO), U.S. Geological Survey, PO Box 51, Hawai'i National Park, HI 96718, USA; *Simon Carn*, Department of Geological and Mining Engineering and Sciences, Michigan Technological University, 1400 Townsend Dr., Houghton, MI 49931, USA (URL: http://www.volcarno.com/, Email: scarn@mtu.edu); *Hawai'i Institute of Geophysics and Planetology (HIGP) Thermal Alerts System*, School of Ocean and Earth Science and Technology (SOEST), Univ. of Hawai'i, 2525 Correa Road, Honolulu, HI 96822, USA (URL: http://hotspot.higp.hawaii.edu/).