

Year/ Duration	Site	Eruption Character	Affected Areas/Remarks
1966 July 5	Mt. Tabaro	Phreatomagmatic, moderate, tephra fall & projectiles	Taal Volcano Island
1967 Aug. 16	Mt. Tabaro	Phreatomagmatic, mild, tephra fall & projectiles	
1968 Jan. 31	Mt. Tabaro	Strombolian, moderate, tephra fall, lava flow/fountaining	
1969 Oct. 29	Mt. Tabaro	Strombolian, moderate, tephra fall, lava flow/fountaining	
1970 Sept. 3	Mt. Tabaro	Phreatic, mild, tephra fall	
1976 Sept. 3	Mt. Tabaro	Phreatic, mild, tephra fall	
1977 Oct. 3	Mt. Tabaro	Phreatic, mild, tephra fall	

and claimed more than 1,000 lives. Ashes spewed out by the volcano even reached as far as Manila.

Other than the Main Crater, the major historical eruption centers in the Volcano Island are: Binintiang Malaki, Binintiang Munti, Pira-Piraso, Calautit and Mt. Tabaro Eruption site.

In the most famous 1965 eruption, base surges that originated from the west southwest flank of the island (now known as Mt. Tabaro eruption site) killed 200 people when the surges traveled across the lake onto the southwest Taal Lakeshore. Strombolian activity (characterized by lava fountaining) occurred in 1968 and 1969 and each of this eruptive activity culminated with quiet effusion of basalt lava flows from the 1965 eruption site (Figure 3). The last major activity at Taal which is characterized as mild phreatic explosion occurred in 1977.

Recent signs of unrest at Taal include three seismic swarms on the island in early 1991, February 1992 and March 1994. The February 1992 activity culminated with the uplift of the island by 10-20 cm, formation of fissures and increased fumarolic activity around the Main Crater Lake. In February 1999, geysering (a geyser is a type of hot spring that intermittently erupts jets of hot water and steam, which is a result of ground water coming into contact with rock or steam hot enough to create steam under conditions preventing free circulation) activity was observed at the reactivated vent located at the northeast shore of the Main Crater Lake. The last observed geysering activity was in February 2000.

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Taal Eruption 1966



Taal geysering February 1991

The Philippine Institute of Volcanology and Seismology (PHIVOLCS) monitoring records indicate that there are certain precursory signs observed before an eruption which include:

1. increase in frequency of volcanic tremors and earthquakes, some of which are accompanied by audible subterranean rumblings;
2. increase in the temperature and rise in the lake level of the Main Crater Lake;

3. intensified thermal activity, i.e., steaming, sublimations, bubbling, etc, from known thermal points on the island;
4. development of new thermal areas in places where eruption is likely to break out; and
5. tumescence of some specific areas on the island.

Trails for Trekking Taal

There are two short but interesting treks with established trails that visitors can take at the Volcano Island. The first going to the Main Crater and the second, to the 1965 Mt. Tabaro eruption site.

The Main Crater can be approached from any point. There is, however a well-trodden path to the Main Crater popularly known as Daang Kastila. The trail starts at the PHIVOLCS Pira-Piraso Station and winds along a gently sloping terrain, which is 1700 meters long. At average trekking pace, it takes about 45 minutes to reach the rim of the Main Crater.

For a visit to the 1965 Mt. Tabaro eruption site, the trek starts at Kaygabok shoreline near the edge of the 1969 lava flow. It takes about 30 minutes of trekking over rocky and barren terrain to reach the rim of the Mt. Tabaro Eruption Site (Figure 3).



Mt. Tabaro 1965 Eruption



Mt. Tabaro 1976 phreatic eruption

TAAL VOLCANO PROFILE



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Taal Caldera

Taal Caldera¹ is located 60 km south of Manila, in the Province of Batangas, southwestern Luzon Island. The caldera is approximately 25 x 30 kilometers wide. Inside the caldera is **Taal Lake**, a 100-150 meter deep body of water. At the center of Taal Lake is **Taal Volcano Island**, one of the world's lowest and deadliest volcanoes. Taal Volcano island is a 23 sq km post-caldera feature which is made up of numerous eruption centers. On the island is the 2-km wide and 80 m deep **Main Crater Lake**.

Location and Accessibility

Taal Volcano Island can be approached from either Talisay on the northern shore of Taal Lake or San Nicolas on the southwest. Both towns are serviced by commercial buses from Manila, or from Tanauan and Lemery. In Talisay or San Nicolas, motorized bancas may be hired to ferry visitors to the Volcano Island.

From Manila, the fastest route takes one and a half hours to two hours. Those who prefer to pass through the historic places of Cavite and then have a panoramic view of the Volcano Island could take a side trip via Tagaytay City. The city is situated on a 650 m high ridge overlooking Taal Lake and offers a wide array of resorts, hotels and picnic groves. From Tagaytay, there is a zigzag road to Talisay (Fig. 1).



Fig. 1. Location Map of Taal Volcano

Evolution of Taal Caldera

Several theories regarding the formation of Taal Caldera have been proposed, the most popular of which is the destruction of a greater Taal Cone after either several eruptions or one major catastrophic event. After the catastrophic collapse, a smaller cone (as represented by the present Taal Volcano Island) developed within it.

Based on studies on Taal, it is believed that an ancient Taal Cone was formed by build up of large volume dacitic pyroclastic materials more than 140,000 years

¹ A caldera is a large and roughly circular depression of volcanic origin. A caldera may be formed during a single eruption or series of very violent eruptions.¹

ago. Several major catastrophic eruptions probably between 27,000 to 5,000 years ago destroyed this greater Taal Cone and ultimately formed the 25 x 30 km wide depression now known as Taal Caldera. This depression was filled by water, thus forming a lake. The younger Taal Cone as represented by the Taal Volcano Island formed in the middle of the lake after the collapse. This young volcano island was formed from numerous explosive hydrovolcanic eruptions.

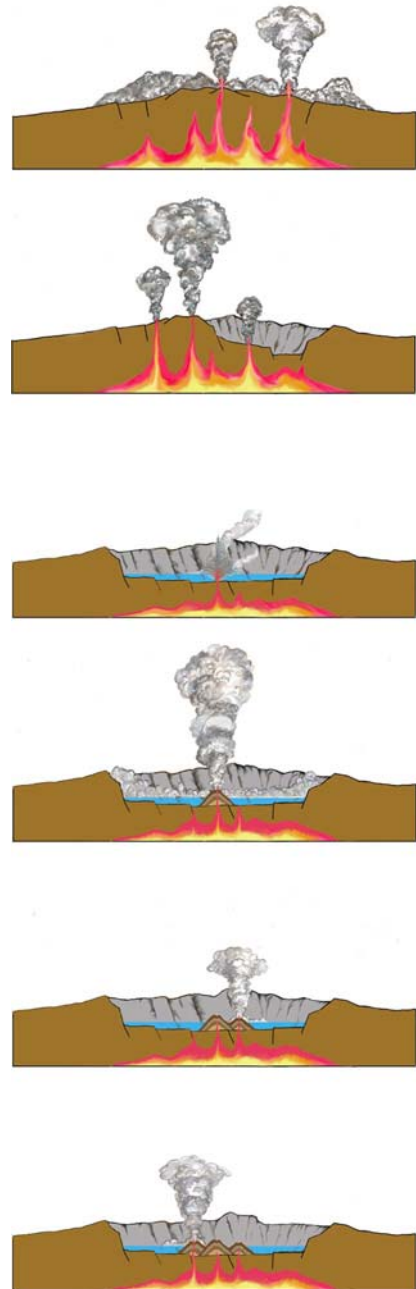


Fig. 2. Series of sketches showing evolution of Taal Caldera

Taal Volcano Island General Geology

The forty seven (47) identified cones and craters which constitute the Volcano Island (Fig. 3) were formed by different types of volcanic processes: base surges (rapidly moving mixtures of volcanic debris and steam), ashfalls and effusions of lava. Twenty six (26) of these cones are tuff cones, five are cinder cones and four are maars (shallow to deep circular depressions of volcanic origin).

The most significant deposits in Volcano Island are the products of base surges, which are most extensive in the southwest portion. Other deposits in the island are mostly layered pyroclastic materials: volcanic blocks, cinders, lapilli and ashes. Pre-historic lava flows are found in Calauit, Binintiang Malaki, Pira-Piraso, Tuoran, Looc, and along the inner walls of the Main Crater. Historic lava flows were emplaced during the 1968 and 1969 eruptions.

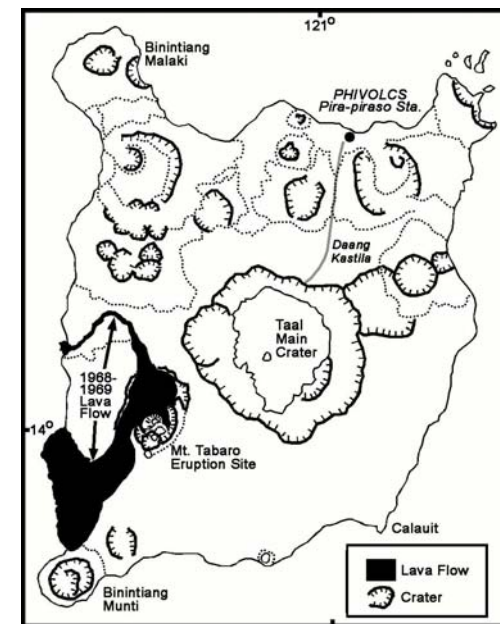


Fig. 3. Map of eruption centers of Taal Volcano

Eruptions of Taal Volcano Island

The thirty three (33) (Table 1) recorded eruptions of Taal from 1572-1977 include phreatic to phreatomagmatic eruptions. The vents of these eruptions are confined to the Volcano Island. Tuff and scoria cones, and explosion craters are usually found at the eruption sites. Base surges and ashfall as well as lava flows from these eruptions are distributed all over the island and extend out to the Taal Lakeshore.

At the central portion of the island is the 2-km wide Taal Main Crater Lake which had been the site of several devastating historical eruptions such as the 1754 and 1911 events. The 1754 eruption destroyed the old towns of Sala, Lipa, Tanauan and Talisay. The last violent eruption from the Main Crater was in 1911. This event devastated almost the whole area of the Volcano Island

Table 1. Chronology of Historical Eruptions of Taal Volcano

Year/Duration	Site	Eruption Character	Affected Areas/Remarks
1572	Main Crater	Phreatomagmatic	
1591	Main Crater	Phreatic	
1605 - 1611	Main Crater		
1634	Main Crater		
1635	Main Crater		
1641	Main Crater	Phreatic, tephra fall	Taal Volcano Island
1645	Main Crater		
1707	Binintiang Malaki	Phreatic, with shock waves	
1709	Binintiang Munti	Phreatomagmatic	
1715	Binintiang Malaki		
1716 Sept. 21	Off Calauit (underwater)	Phreatomagmatic, violent, tephra fall, base surge, seiches, toxic gases	Taal Volcano Island CASUALTIES: undetermined
1729	Binintiang Munti		
1731	Pira-piraso (underwater)	Phreatomagmatic, base surge, tephra fall, bombs, seiches	Taal Volcano Island
1749 Aug. 11	Main Crater	Phreatomagmatic, very violent, tephra fall, base surges, projectiles, seiches, acid rain, shock waves, subsidence	Taal Volcano Island and lakeshore towns of Taal, Sala and Tanauan (fatalities and destruction of houses and vegetation) CASUALTIES: undetermined
1754 May 15	Main Crater	Phreatomagmatic/Plinian, very violent, tephra fall and projectiles, ashfall (100-110 cm deposits), base surge, seiches, fissuring, solfatara, shock waves, acid rain	Taal Volcano Island and lakeshore towns of Taal, Lipa, Sala and Tanauan CASUALTIES: 12 (?)
1790	Main Crater		
1808	Main Crater	Phreatomagmatic, moderate	
1825	Main Crater		
1842	Main Crater		
1873	Main Crater		
1874	Main Crater	Phreatomagmatic, moderate, tephra fall, toxic gases	Taal Volcano Island
1878	Main Crater	Phreatic, moderate, tephra fall	Taal Volcano Island (ashfall)
1903	Main Crater		
1904	Main Crater	Phreatic, mild, tephra fall and projectiles	
1911 Jan. 27 - Feb. 7	Main Crater	Phreatic, very violent, tephra fall & projectiles, ashfall (25-80 cm thick deposit) base surges, seiches, acid rain, shock waves, fissuring and subsidence	DUE TO BASE SURGES: Entire Taal Volcano Island, Talisay and other lakeshore barrios W of Volcano Island; DUE TO ASHFALL: Entire Volcano Island and towns N-NW-W-SW of the island (Talisay, Laurel, Tagaytay, Agoncillo) CASUALTIES: 1,335
1965 Sept. 28 - 30	Mt. Tabaro	Phreatomagmatic, violent, tephra fall & projectiles, ashfall (25 cm thick deposit) base surge, acid rain, seiches, shock waves	DUE TO BASE SURGES: Southern part of Taal Volcano Island (from Balantoc (W) to Calauit (E), Lakeshore barrios W of the island (from Gulod to Bilibinwang); DUE TO TEPHRA FALL: Entire Volcano Island and towns S-SW of Taal CASUALTIES: 200