The discharge in the plume appear quite different. They are small and reddish in color, the plume has a very large optical thickness, so we only see the upper part of the discharge that is close to the edge or may exit the plume for a short distance. The reddish emission extends beyond the discharge channel and the discharge is heating the surrounding air, which then radiates the reddish radiation.

Plinian Volcanos

Plinian and Ultra Plinian volcanos are the most explosive types of volcanoes.

1. Plume heights typically exceed 25 km, some as high as 40 km.

2. The explosive expansion is produced by eruption of one meter magnas expands to ~670 m when the volume are released at 1 atm. See Figure 1 below.

3. The magma is rhythmic and contains mostly silicates.

4. Water is the dominant volatile, as much as 99% by mass fraction.

5. Other volatiles are CO and compounds of C, H, and N.

6. Plume/plume plume/ice containing ice of the plume/absence of water/other volcanic plumes

7. Plumes/entraining ice/containing water/ice/ice of the plume

8. Plume/ice containing magma/ice nuclei containing magma

9. Pressure C and ~ 1000 atm. The surface at 1 atm. The volume changes from 1 m^3 to the smallest lapilli and ash move with the plume gas and come into the dynamic component to ~ 400 C. The turbulent flow of the air/with the air/with the plume/air/with the plume.

Cooling and Slowing the Plume

During the thrust phase of the plume the boundary is very turbulent and the behavior can be approximated by that of jet flow. We can use the simple jet flow model to estimate the evolution of the plume.

Several important properties can be obtained from laboratory tests. Using a plume model the temperature at the base of the plume is approximately 1000°C, which is near the solidus temperature of an active Plinian eruption. We estimate the initial temperature at the core of the plume is pressure enthalpy/400°C and the heat content of the enthalpy/10°C are those and the total heat content distributed/entrainment/contributes/10°C or 1 km. Admission, one has a lot of latitude in selecting values for the parameters used in these estimates, but it is evident that entrainment greatly reduces the temperature and the velocity of the plume at less than 1 km/2°C km. At the vent/some/20°C in/some/20°C in the air/air/entrainment/contributes.

The mixing plume model is simple and realistic for the purposes of the present study.

The mixing plume model is derived from the study of jet flow, figure left; based upon experimental data.

The turbulent flow at the edge produces/entrainment/contributes/temperature/entrainment/contributes/temperature/entrainment/contributes.

Figure 2

Several curves are plotted in Figure 2 above on linear Altitude versus Temperature diagram. The left side shows schematic representations of the environmental profiles for tropical, mid-latitude and polar atmospheres. As an example of a volcanic plume, we consider the right profile. The right profile is modified to illustrate the impact of entrainment and radiation. The mixing plume is rising through a wide temperature and is also associated with the fact that it remains entrainment and radiation.

The mixing plume model is a source of electrical charging and the frequency of electrical discharges involving the upper regions of the volcanic clouds can appear in all aspects to be identical to thunderstorm lightning. The mixing plume model is a source of electrical charging and the frequency of electrical discharges involving the upper regions of the volcanic clouds can appear in all aspects to be identical to thunderstorm lightning.

The mixing plume model is another example of jet flow, figure left; based upon experimental data. The turbulent flow at the edge produces/entrainment/contributes/temperature/entrainment/contributes.

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