

Volcanoes exercise 2.

Assessing Volcanic Hazards

Background: Montserrat is a volcanic island in the Caribbean. It has three volcanic centres: an extinct volcano in the northern part of the island (Silver Hills), an extinct volcano in the middle part of the island (Centre Hills) and an active volcano in the southern part of the island.

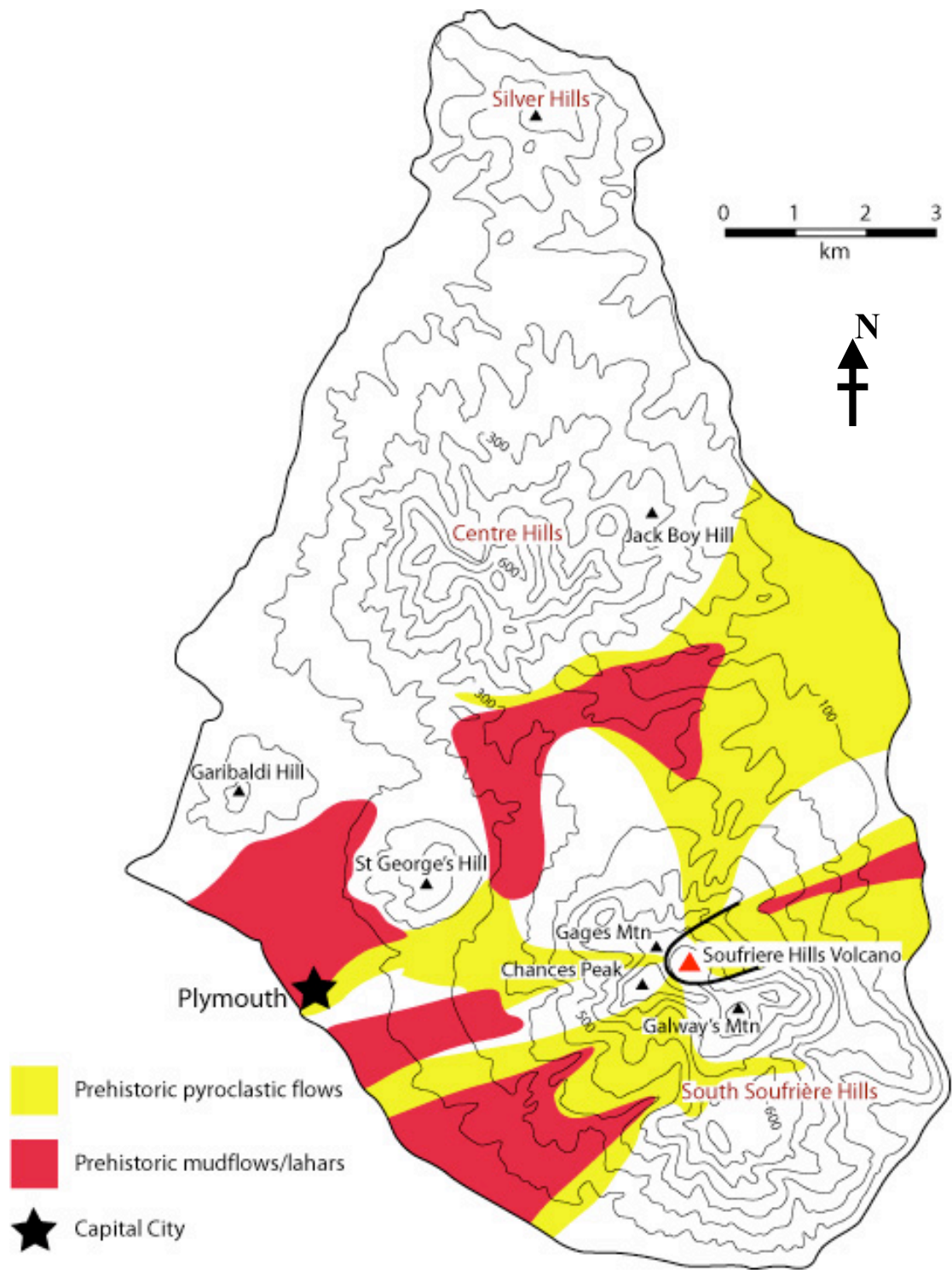
You are a geologist working on Montserrat and the volcano has started to erupt lava and produce small volume rock falls. All the signs from monitoring the volcano point to a future large explosive eruption forming pyroclastic flows. This could be extremely hazardous to the 12,000 people living on the island.

You decide to map out where past volcanic pyroclastic flow and mudflow deposits have been emplaced. You produce the following map (see over the page).

Based on the signs pointing to an impending eruption, the closeness of the capital city to the volcano and the distribution of the prehistoric deposits, what do you propose to do?

Exercise:

- Draw on the map overleaf where you think the safe areas to live would be (if any).
- In a letter to the Governor of the island, explain where you think the safe areas will be, and why.
- Include advice on whether or not the capital city of Plymouth should be evacuated, explaining your reasons.
- If you do recommend evacuation of Plymouth, where would you relocate the residents?



Solution:

This exercise is based on a real-life scenario. The staff of the Montserrat Volcano Observatory had to make the same decisions when the Soufrière Hills volcano began to erupt in 1995.

The decision they made was to relocate the people from the capital city to the north of the island, to other islands in the Caribbean or to the UK. After this relocation only 3,500 people were left living on the island. This however, was a good decision because in 1997 the capital city of Plymouth was destroyed by pyroclastic flows. The good news was that no one was injured in this eruption as the city was empty.

The Soufrière hills volcano is still active today with large volume pyroclastic flows travelling down the sides of the volcano approximately every 6-12 months. The people left on Montserrat (4,500 residents) have to live every day with the volcano. The map below shows where the staff at the volcano observatory currently have their exclusion Zone (the area that no one except scientists may enter). How did your answers match up?

