

Montagne Pelée, 1902

From Scarth (1999)

Lecture Objectives

- key precursory activity/warnings
- hazards
- mitigation efforts of the various groups (science, public, media, engineering, government)
- realistic solutions/improvements



Martinique, 1902

Capital: Fort-De-France

St. Pierre Population:

-22,000 Afro-Caribbean

-4,000 white-French

~7 km S of Mont Pelée

Precursory Activity

1792 - minor explosions, gas emissions, earthquakes

1851-1852 - phreatic eruption, gas and ash emissions, lahars



1851 Scientific Commission Report:

"To sum up, mount Pelée volcano appears to be no more than another curiosity to be added to the natural history of our Martinique. A curiosity that visitors would like to see, and through the industry of the local inhabitants could be a source of health and wealth. On quiet weather, ships coming from France and spotting from far the undulating long plume of white smoke rising straight in the sky, must consider it as a picturesque decoration for the island and a complement to the majesty of our old mount Pelée."

Precursory Activity

June 4, 1900 - April 23, 1902: gas emissions

April 22-23: earthquakes

April 24-25: steam and ash, ballistics

April 27: observers see a cinder cone, boiling crater lake

April 30: earthquakes

May 1 - May 4: ash and steam eruptions, ashfall, earthquakes

May 5: lahars down River Blanche, tsunami

May 6: first lava eruption



Mitigation Efforts - pre-event

May 3: governor provided refuge, transportation from St. Pierre following initial eruptions

May 5: governor promises rapid evacuation to Le Prêcheur if needed. Mayor and town priest maintain calm.

May 6: governor visits and provides food to Le Prêcheur, transportation for limited evacuation (to St. Pierre).

May 7: newspaper (Gaston Landes report) warns evacuation of valley bottoms; newspaper adds comment: "...Mount Pelée offers no danger..."

- governor creates Scientific Commission.
- mayor requests additional troops to maintain order.
- governor and commission issue report, and remain in St. Pierre.



The Commission Report: morning of May 8th, 1902

The commission, responsible for the study of the Mount Pelée's volcanic phenomena met yesterday evening, May 7th, under the chair of the Governor. After a careful analysis of the facts, the commission declares that:

- 1: All the phenomena which have occurred so far are normal, and are commonly observed on all volcanoes around the world;*
- 2: Since the craters of the volcano are wide open, the expansion of the vapors will continue with no earthquake or rock projection;*
- 3: According to the location of the craters and the position of the valleys leading to the sea, the City of St. Pierre is perfectly safe.*

(All the members of the "Volcano Commission" who participated in the meeting on May 7th, died in the eruption the next day, including the Governor and his wife.)

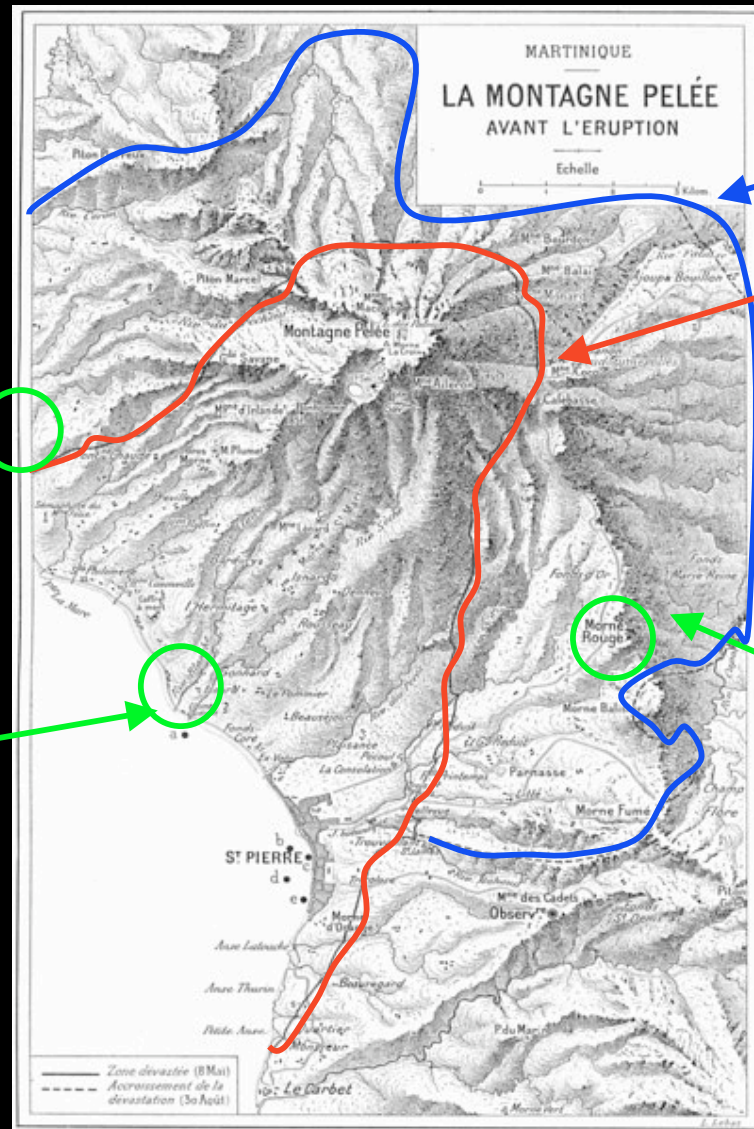
August 30 event

May 8 event

Le Prêcheur

R. Blanche,
Guérin Factory

Morne Rouge





Before

**After - note very little
deposition**





Before

**After - note the
orientation of the
standing walls**





Downtown St. Pierre Theatre. Note defoliation, very little ash deposited, reflecting the destructive, but mass-poor nature of these flows

Key Hazards - Primary

- ash falls
- gas emissions
- earthquakes;
- nuee ardentes (pyroclastic flow);
- tsunami;

Secondary

- famine
- displacement
- returned to hazardous regions
- misinformation/rumors



Mitigation - Relief

- afterwards, boats arrived to remove survivors
- evacuation of nearby towns after the initial disaster
- housing and rations, monetary support for the 25,000 displaced persons
- by August 15, refugees were no longer given support, and encouraged to return to their towns.
- those in Morne Rouge were struck by a nuée ardente August 30.
- government provided funding for new construction of settlements.
- world-wide donations (temporarily)

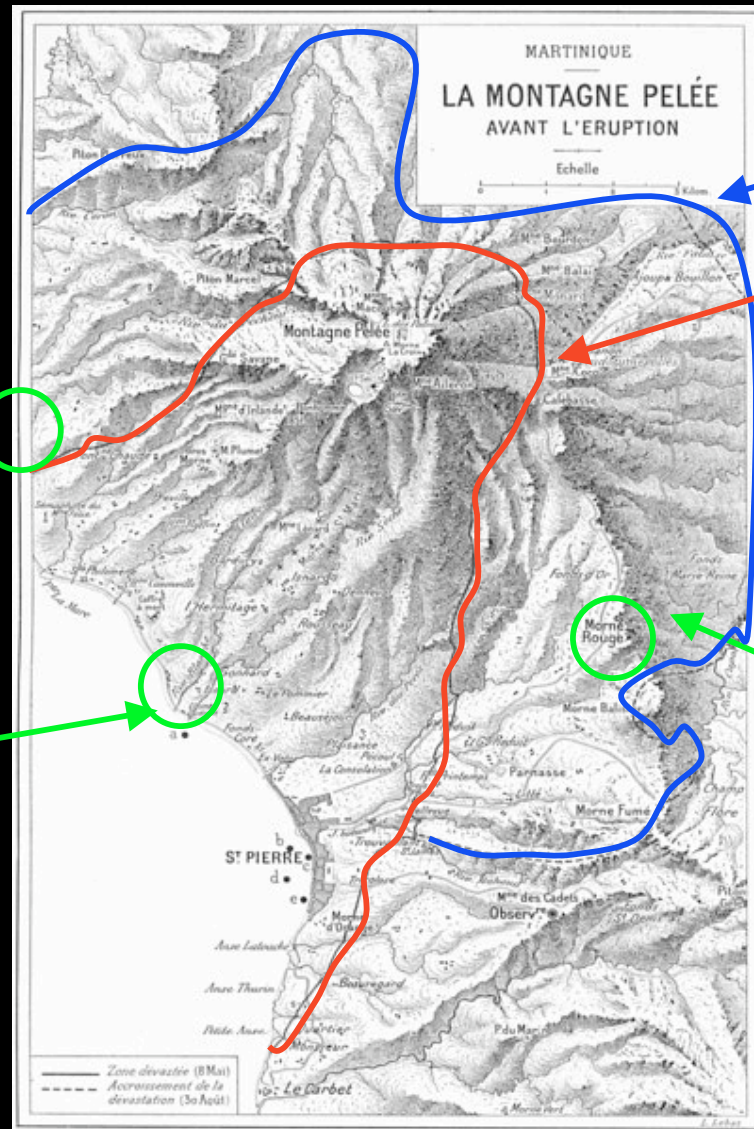
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Improvements?

- pyroclastic flows such as this were unknown scientifically
- threats to St. Pierre not recognized, so became a source of evacuations.
- several boats arrived to pick up survivors
- government reconstruction unorganized, inconsistent
- surviving governor intolerant of non-white survivors
- even after St. Pierre experience, (too) quickly sent refugees back to dangerous regions with disastrous results.
- relief program for refugees inconsistent, with no plan for long-term resettlement, compensation, reintegration.

In October of that year, a lava dome began to rise out of the crater floor. It grew for a solid year into a gigantic shaft in the form of an obelisk. It has been described by many as the most spectacular lava dome produced in historic times. It was 350 to 500 feet thick at its base and it soared to over 1000 feet above the base of the crater floor. It sometimes rose at a remarkable rate, up to 50 ft/day. The huge spine of lava became known as the "Tower of Pelée." At night the sides of this magnificent monolith was marked by traces of red incandescent cracks from the still hot lava in its interior. At its maximum size, the *Tower of Pelée* was twice the height of the Washington Monument and equal in volume to the Great Pyramid (Cheops) of Egypt. It finally became unstable and collapsed into a pile of rubble in March 1903, after 11 months of growth. No geologist had ever witnessed the emergence of such an object before.



1902 Volcanic Activity

May 7, 1902: Soufriere Volcano,
St. Vincent; 1600 killed ----->

October 24, 1902: Santa Maria
Volcano, Guatemala; >5,000 killed

