火山漫談

劉德慶
國立臺灣師範大學地球科學系

2021. 3. 19.

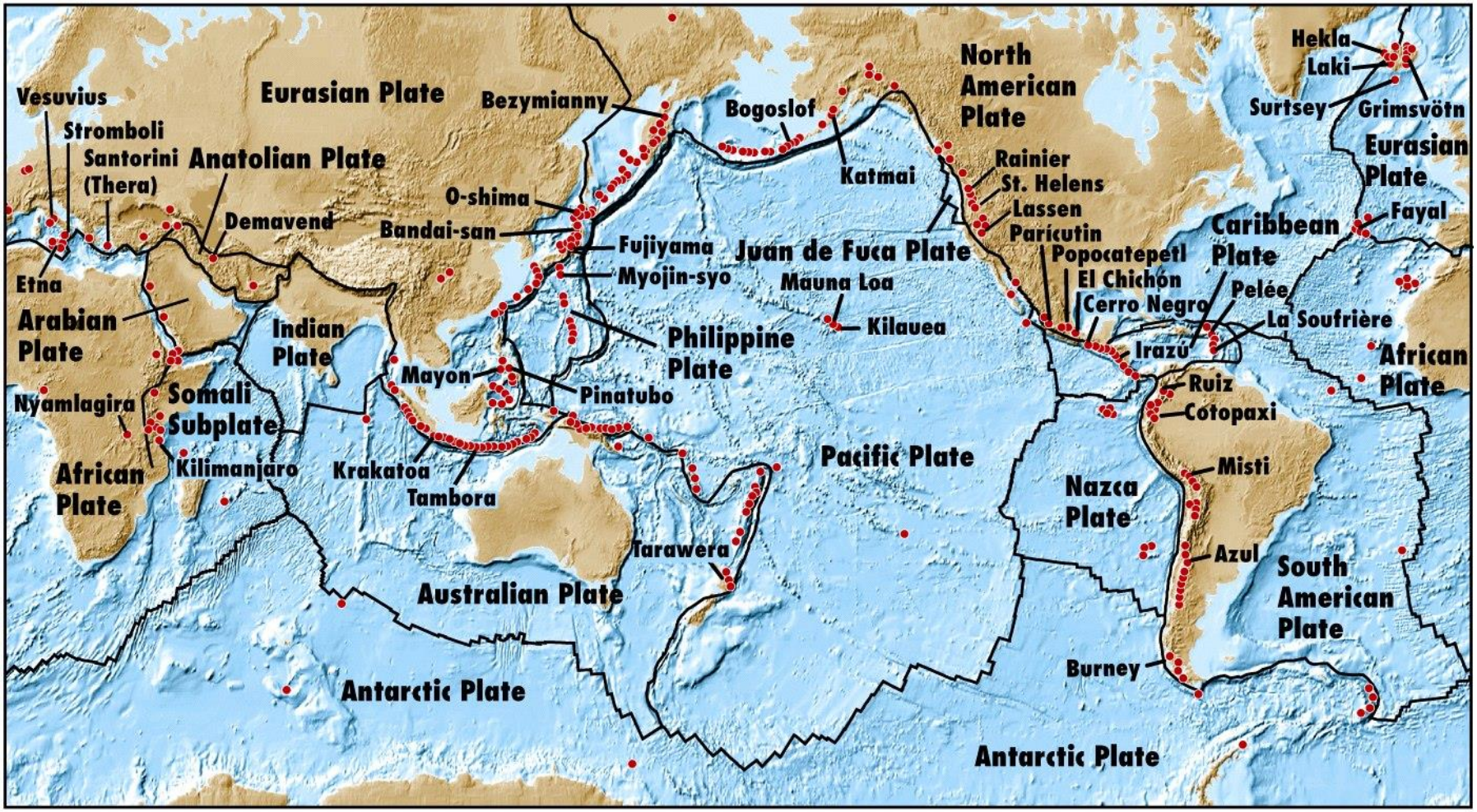

Figure 12-19
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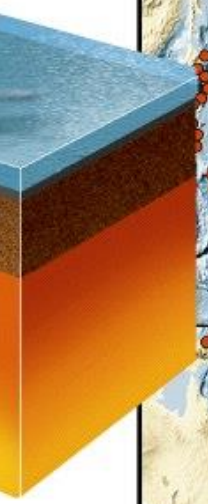
spot
ano



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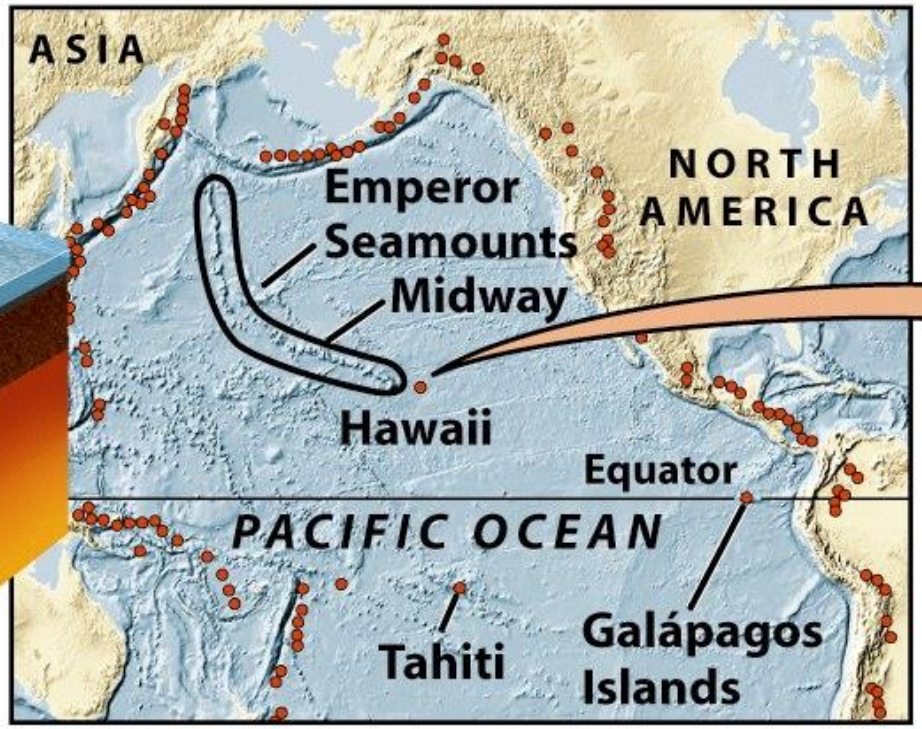

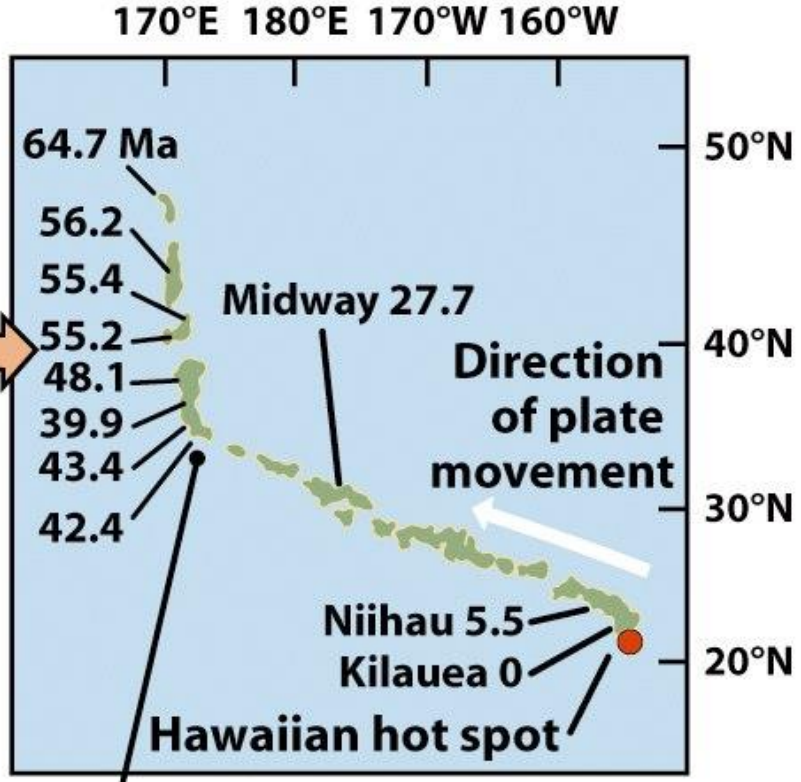

4 **…and a sharp change in direction has been dated at about 43 Ma.**

Figure 12-2
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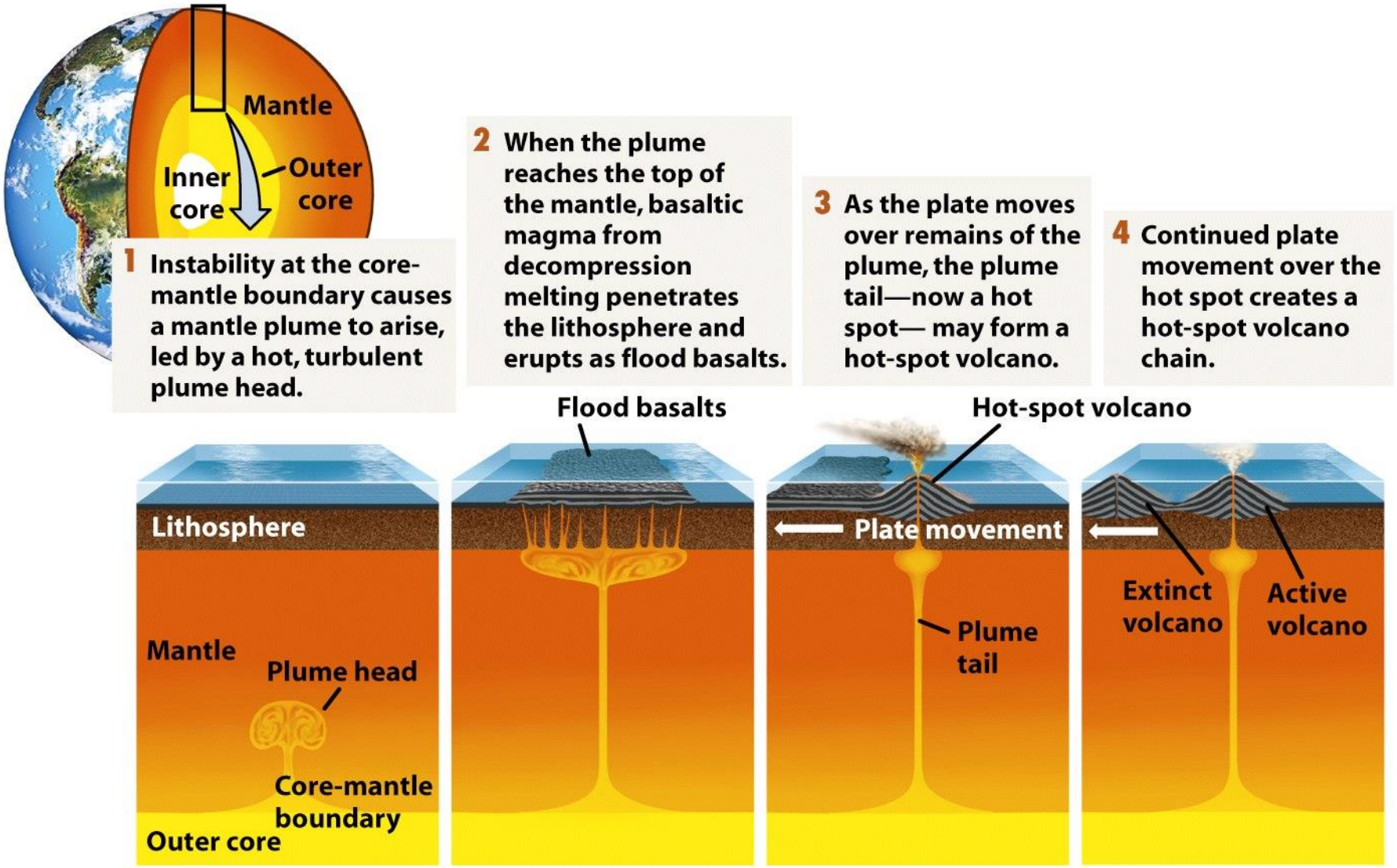

Figure 12-23
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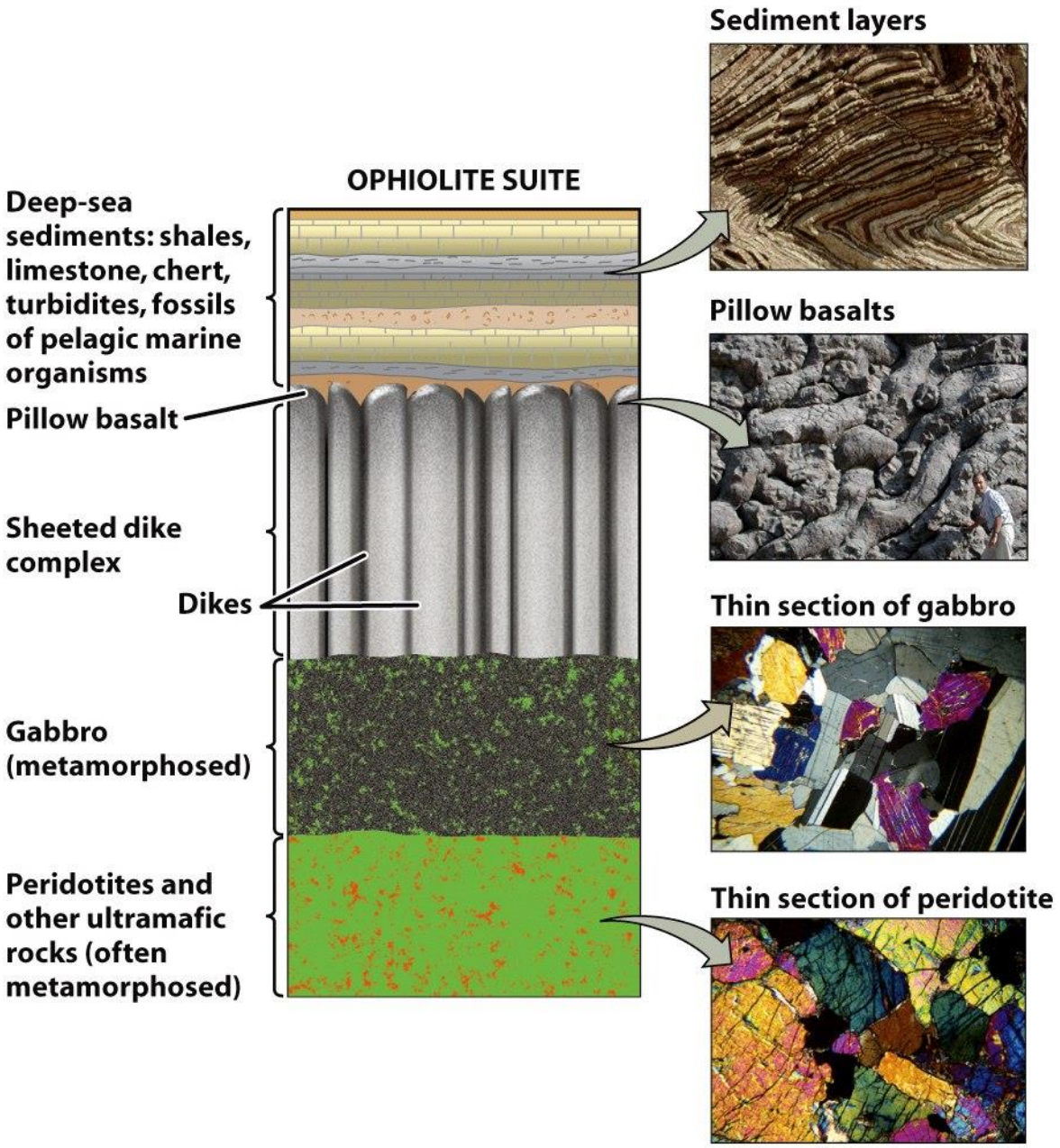

Figure 4-12
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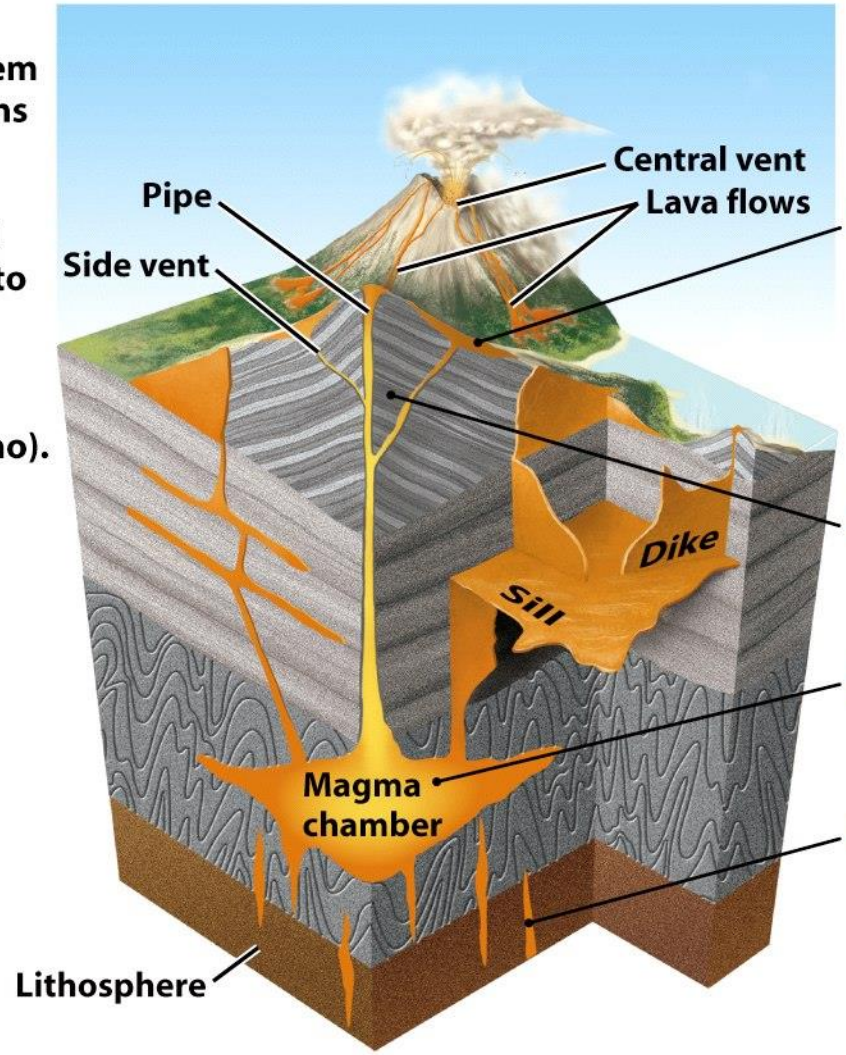
1 A volcanic geosystem includes interactions between the lithosphere and asthenosphere and the flux of gases into the atmosphere (land volcano) or hydrosphere (underwater volcano).



5 ...accumulating on the surface to form a volcano.

4 Lavas erupt from the magma chamber through a central vent and side vents,...

3 ...rises through a "plumbing system" in the lithosphere to form a crustal magma chamber.

2 Magma, which originates in the partially molten asthenosphere...

Figure 12-1
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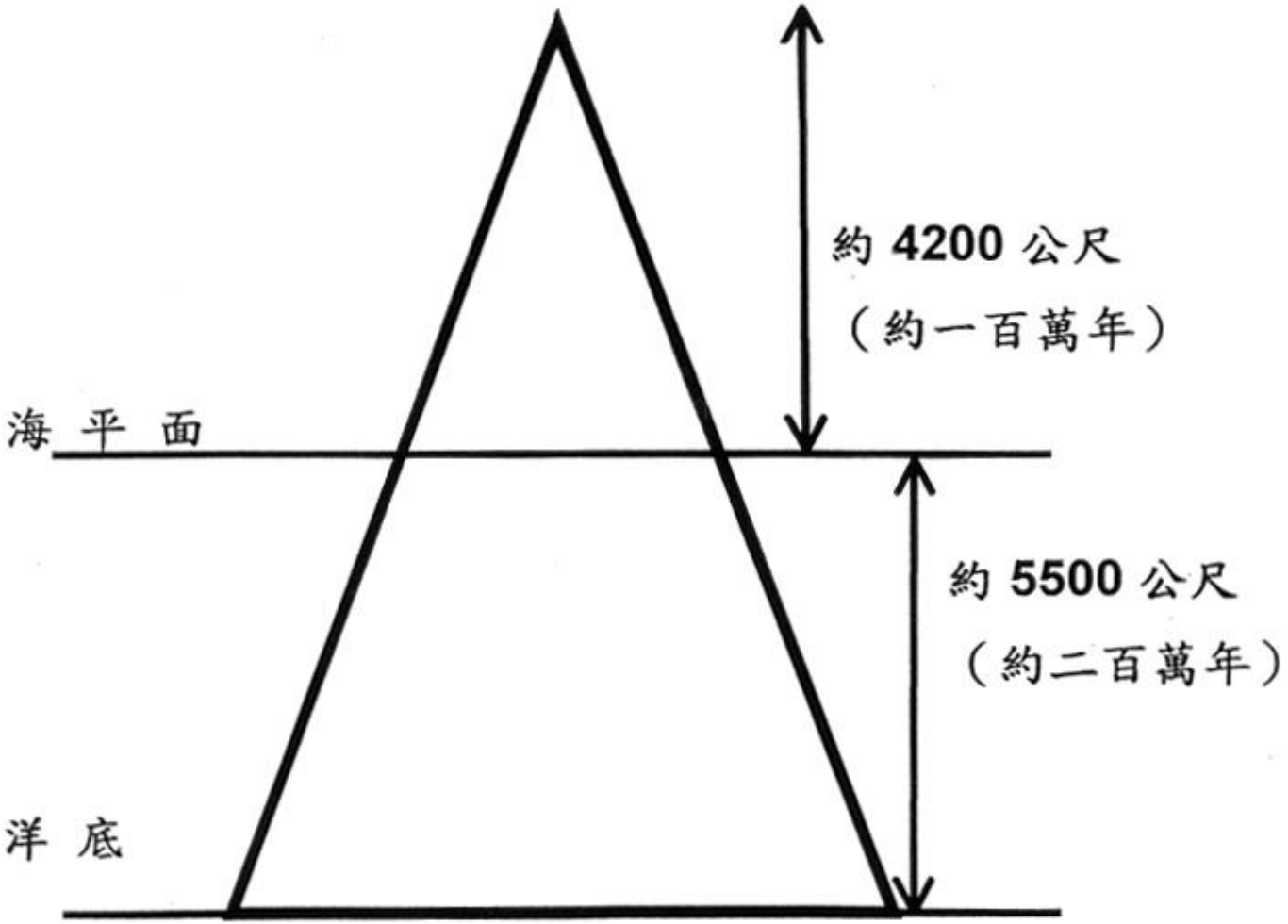
目前夏威夷之兩座活火山：

1. Mauna Loa （4159 公尺）

2. Kilauea （1200 公尺）



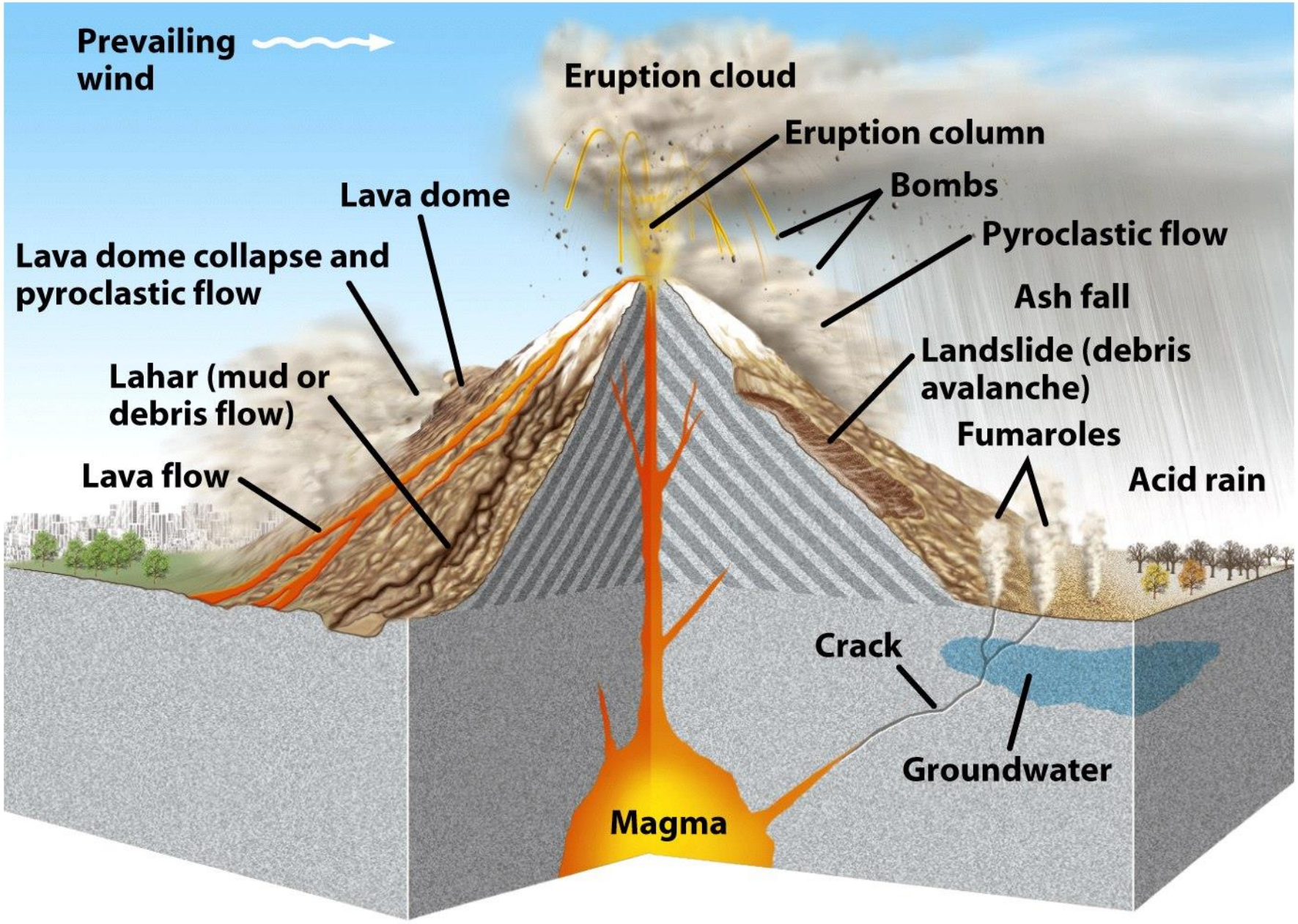


Figure 12-25
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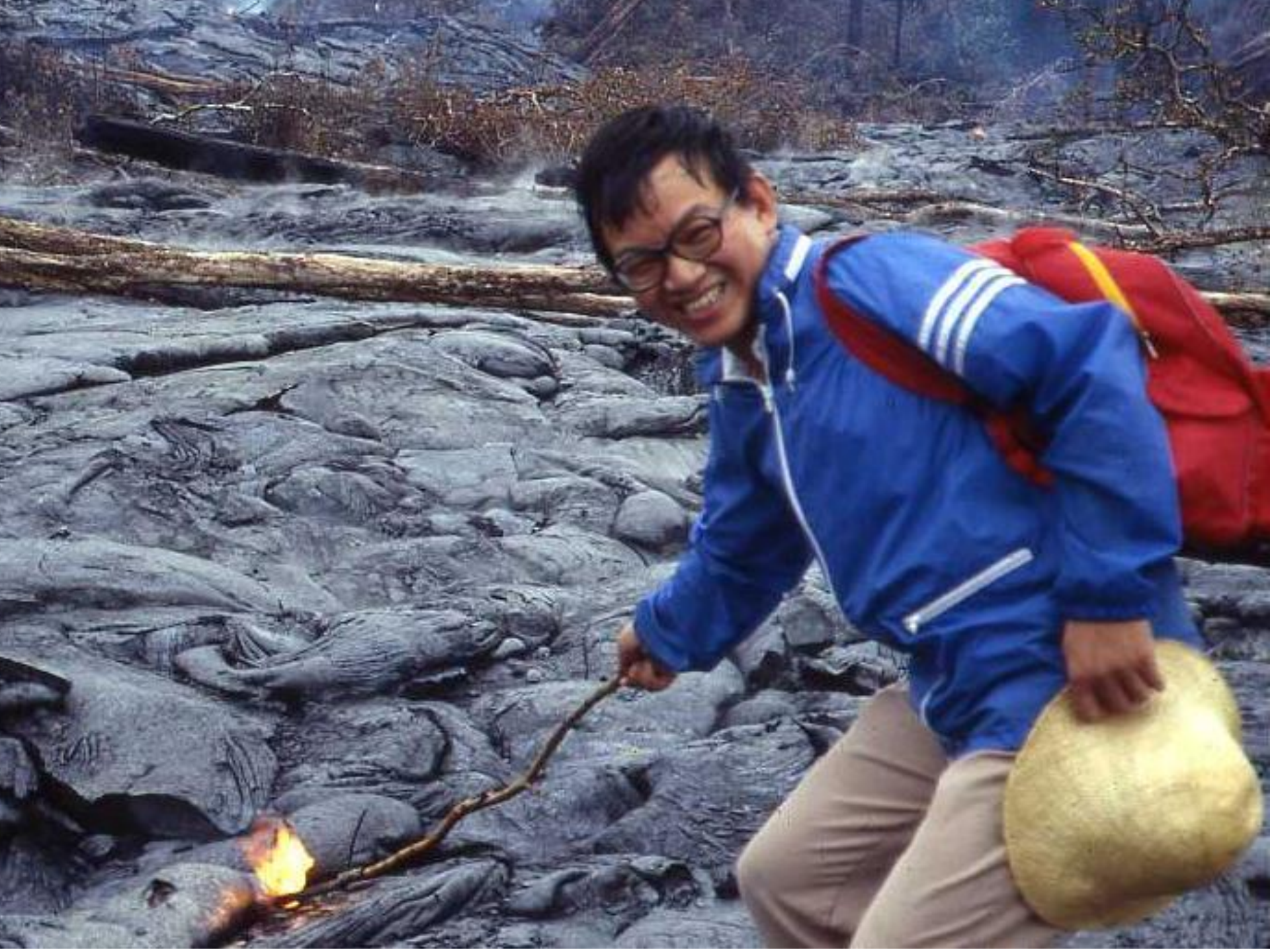


0 1 2 3 4 5 6 7 8 9 10 11 12

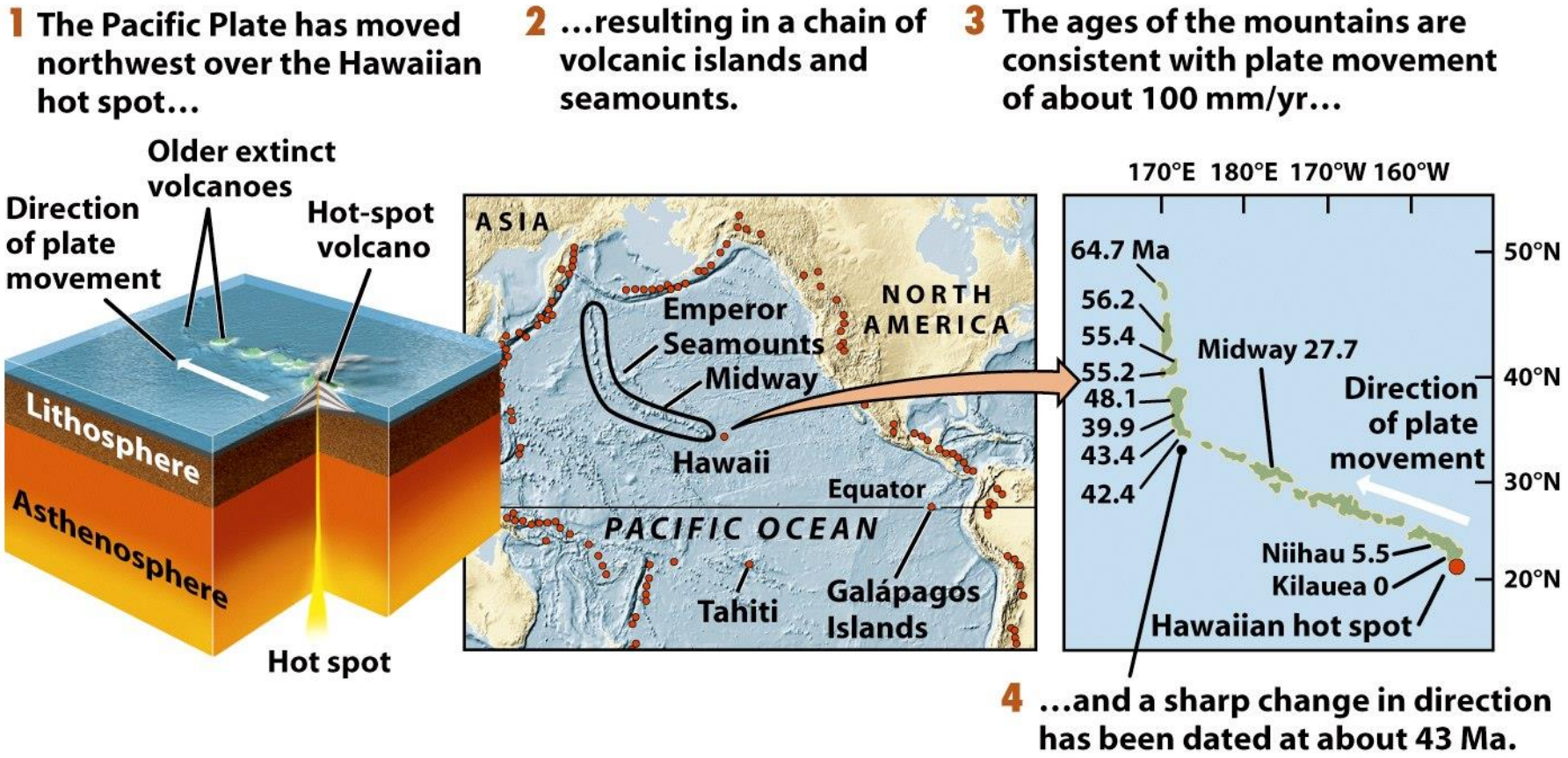

Figure 12-21a
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火山神：Pele

火山神的姐姐：

Na Maka O Kahai

火山2

Mt. St. Helens

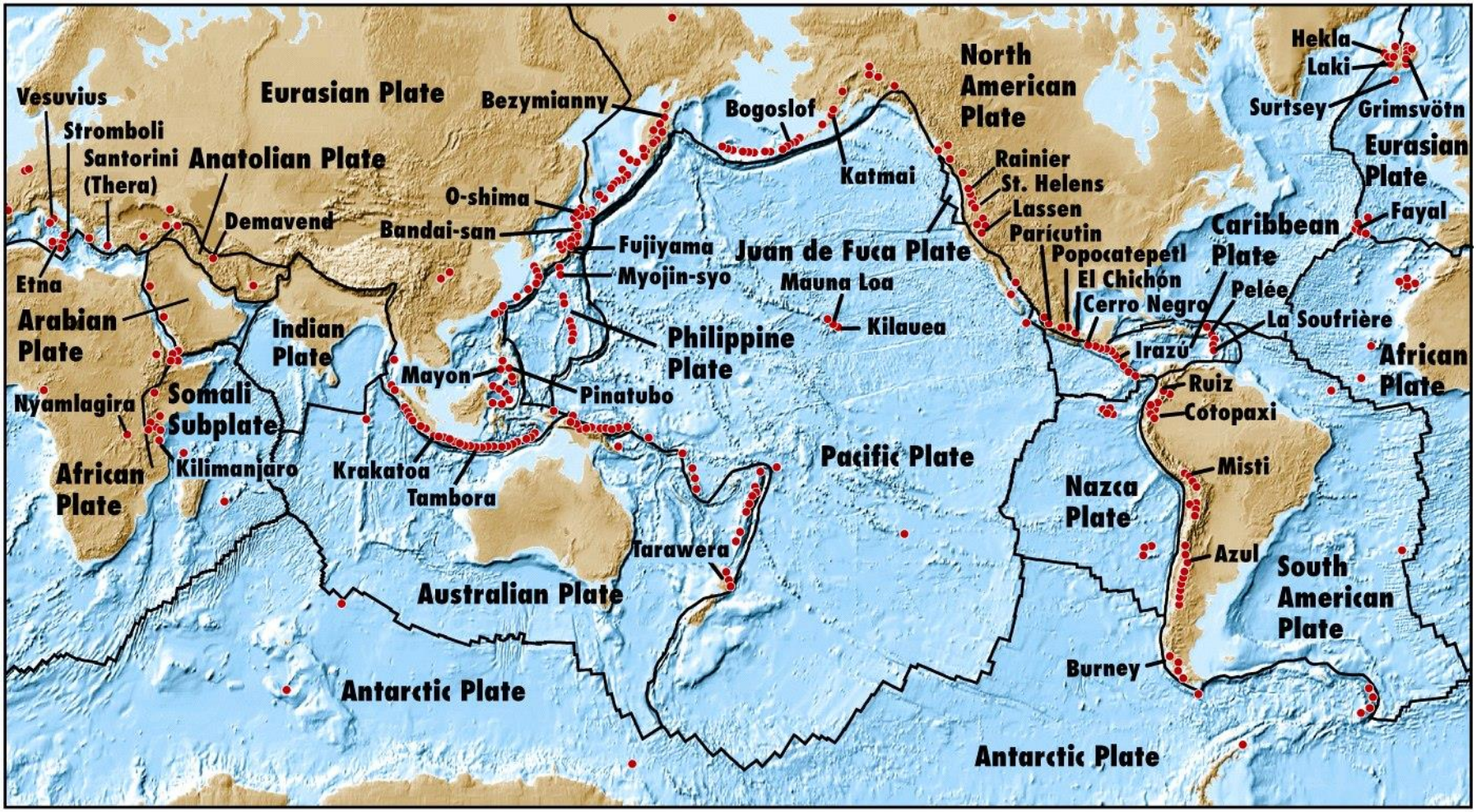

Figure 12-19
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Figure 12-4a
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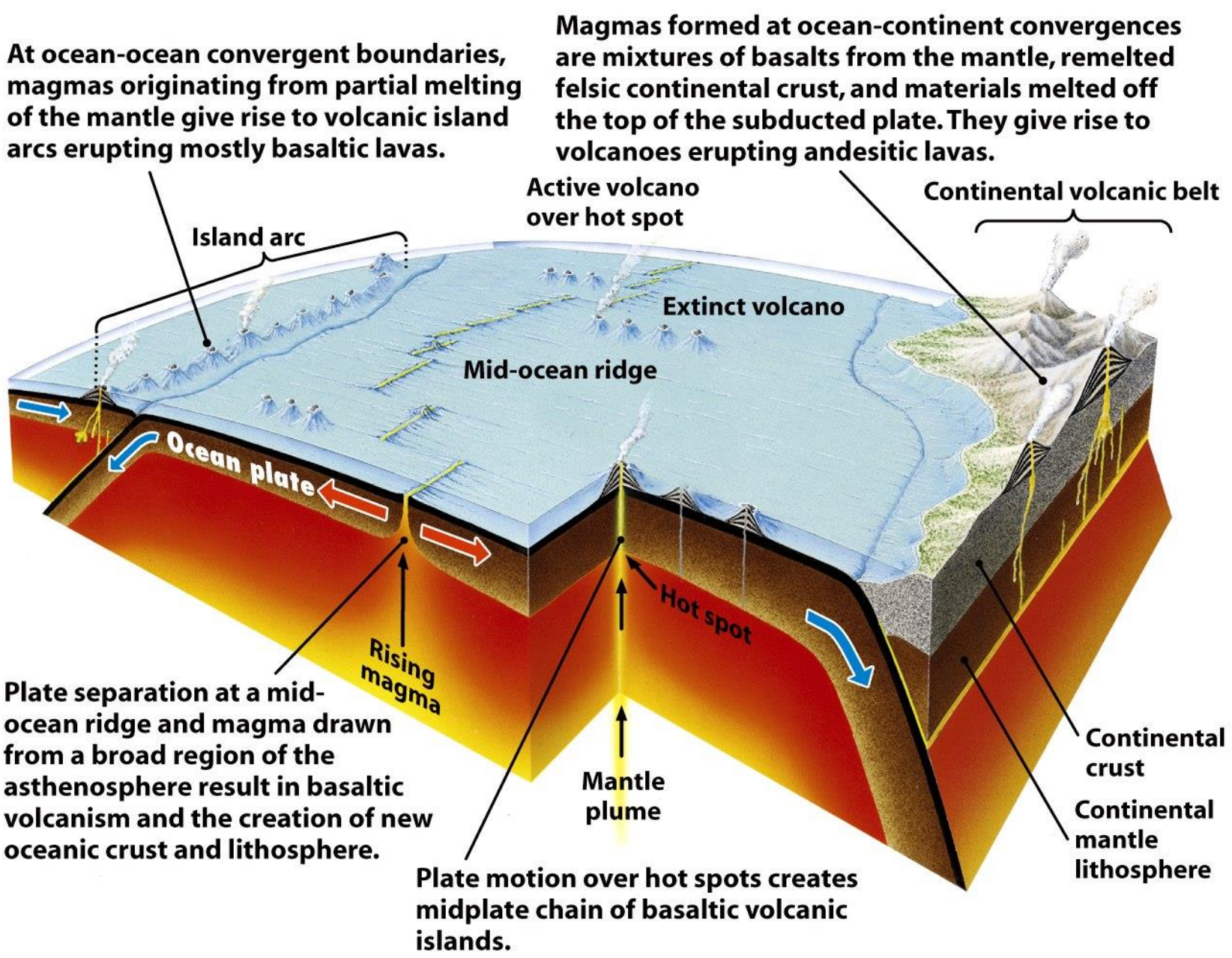

Figure 12-20
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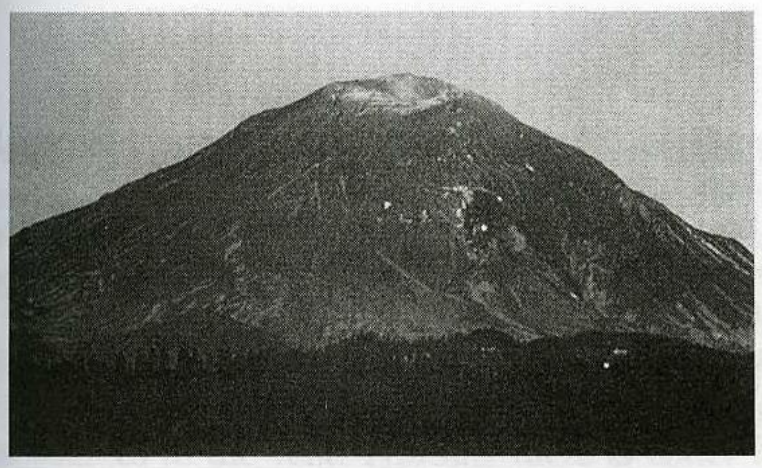
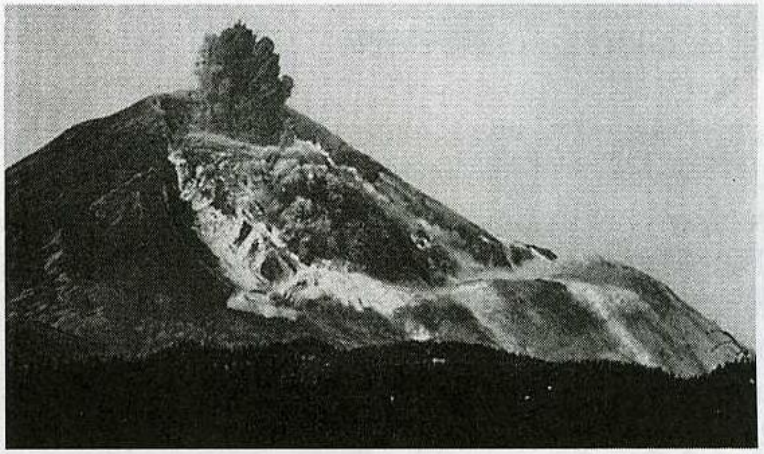
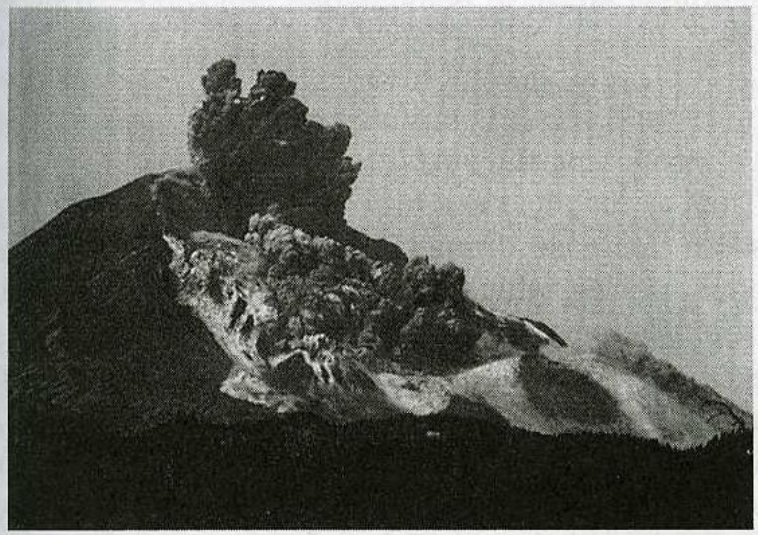


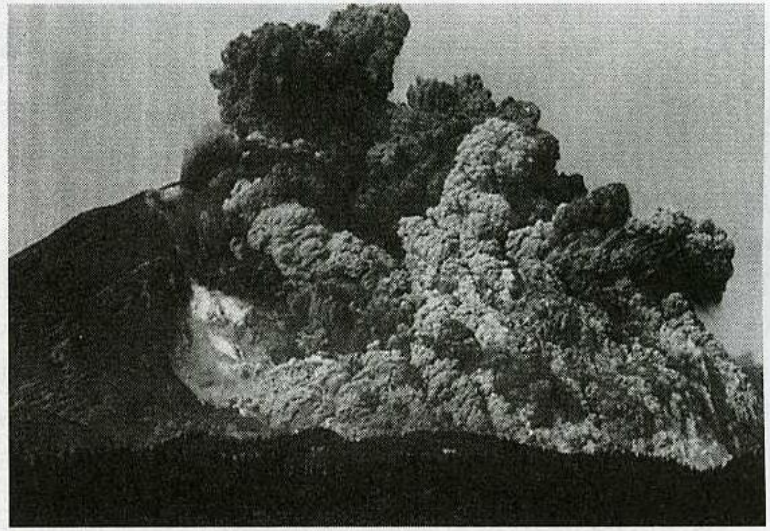
(A)



(B)



(C)



(D)

FIGURE 4-14 Final major eruption of Mount St. Helens on May 18, 1980. **(A)** 8:27:00 A.M., view looking southwest. **(B)** 8:32:37 A.M. The north slope of the volcano collapses as an earthquake triggers a massive landslide and debris flow. **(C)** 8:32:41 A.M. High-pressure gas and steam explode horizontally out of the north face of the breach with hurricane force. **(D)** 8:32:51 A.M. The gas-steam jet extends outward, leveling forests in its path. It was followed by a surge of pyroclastic flows and debris. [From F. Press and R. Siever, 1986, *Earth*, 4th ed. (New York: W. H. Freeman), Fig. 16-36. Photos copyrighted by G. L. Rosenquist, 1980.]

Figure 12-4b
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Figure 12-4c
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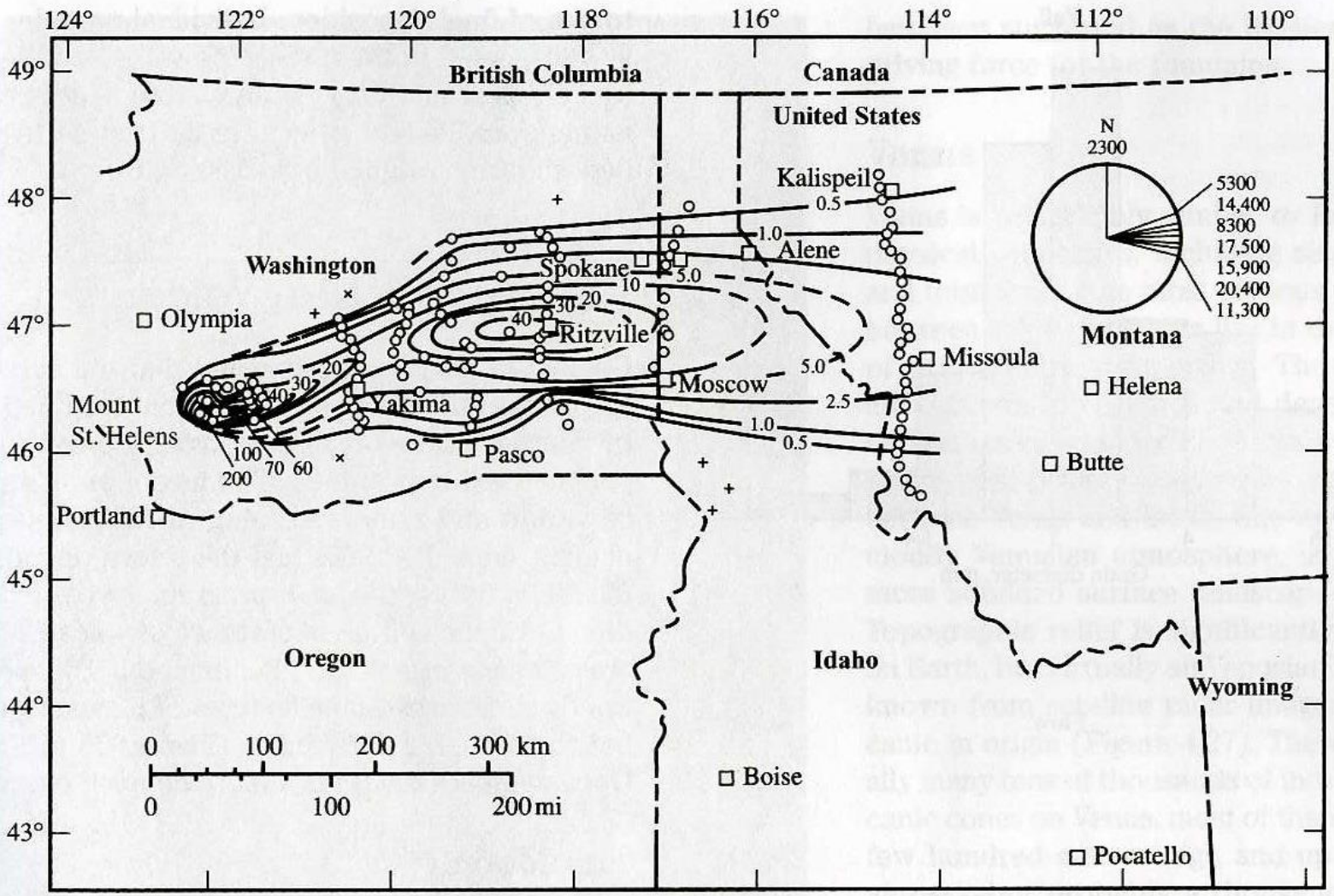

FIGURE 4-24 Map showing thickness (in millimeters) of air-fall ejecta from the Mount St. Helens eruption of May 18, 1980. Contours represent uncompacted thickness of ash (+ indicates light dusting of ash; ×, no ash observed). The prevailing wind was generally from the west during the morning of May 18. Similar thickness maps for other Mount St. Helens eruptions show very different ash plume directions, which depend on the wind direction. [From A. M. Sandra-Wojcicki, S. Shipley, R. B Waitt Jr., D. Dzurisin, and S. H. Wood, 1981, The 1980 eruptions of Mount St. Helens, Washington, *U.S. Geological Survey Professional Paper 1250*, ed. P. W. Lipman and D. R. Mullineaux, Fig. 336.]

Figure 12-8
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Figure 12-9b
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Figure 12-9a
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Figure 12-10
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火山模式	熱點式	島弧式
揮發物	少量	多量
岩漿溫度	較高溫	較低溫
噴發型式	溫和性	爆發性
岩漿成份	基性	中性
發生位置	板塊中	板塊邊緣

火山噴發的預測

- 傾斜（Tilt）
- 地震(Earthquakes)
- 氣體(Volcanic gases)
- 地表溫度(Geotherm)
- 動物感知

蒸汽和有毒氣體

- H_2O (steam) ,
- CO_2 (carbon dioxide),
- SO_2 (sulfur dioxide),
- Trace of N_2, H_2, CO, S, Cl_2

References

- Grotzinger, J. and others, 2007. Understanding Earth. W. H. Freeman and Co., 5th ed., 579pp.
- Blatt, H. and others, 2006. Petrology: Igneous, Sedimentary, and Metamorphic. W. H. Freeman and Co., 3rd ed., 530pp.

- The End