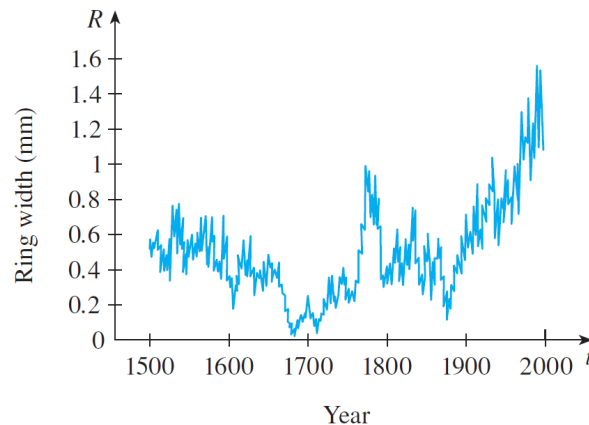


Exercise 12

Trees grow faster and form wider rings in warm years and grow more slowly and form narrower rings in cooler years. The figure shows ring widths of a Siberian pine from 1500 to 2000.

- What is the range of the ring width function?
- What does the graph tend to say about the temperature of the earth? Does the graph reflect the volcanic eruptions of the mid-19th century?



Source: Adapted from G. Jacoby et al., "Mongolian Tree Rings and 20th-Century Warming," *Science* 273 (1996): 771–73.

Solution

The range of the ring width function is roughly $\{R \mid 0 < R < 1.6\}$.

The graph indicates that the temperature is getting warmer, considering that the rings grow significantly wider from 1900–2000. There are some peaks from 1800–1900 that could be due to the volcanic eruptions.

