

# and Temporal Variations in Coda Q Attenuation of Seismic Waves in the Lower St. Lawrence Region, Southeastern Canada

*Tuesday, June 20, 2023 11:00 AM (1 minute)*

We investigated seismic attenuation characteristics of the Lower St. Lawrence seismic zone. This zone is located ~400 km downstream from Quebec City and is between the Quebec North Shore and the Lower St. Lawrence. Coda Q was determined using 847 earthquakes ( $2.0 \leq M \leq 5.1$ ) recorded on ten stations of the Canadian National Seismic Network (CNSN) in Quebec from 1985 to 2022. We find that the lowest overall average of  $Q_0$  ( $Q$  at 1 Hz) values are at the three stations (GSQ, ICQ and SMQ) within 100 km of a moderate earthquake of  $mN$  5.1 in 1999 (e.g.,  $Q_0$  of 81, 88 and 80, respectively). We determined temporal variations in attenuation following the 1999 earthquake. The overall average of  $Q_0$  decreased from 87 (before the mainshock) to 77 (GSQ), from 92 to 85 (ICQ) and from 88 to 82 (SMQ). These results are in agreement with global studies that show a decrease in  $Q_0$  following a major earthquake, likely the result of increased fracturing and fluids in the epicentral region. An average for all the data results in a  $Q$  relationship of  $QC = 86f^{1.07}$  for the frequency band of 2 to 16 Hz for the entire region.

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## Promotional text

Our presentation provides an overall knowledge about coda  $Q$  in a region in southeastern Canada which is one of the most useful parameters for the study of earth structure and seismic hazard assessments.

## Oral preference format

in-person

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**Track Classification:** Theme 1. The Earth as a Complex System: T1.2 The Solid Earth and its Structure