



## Structural Division

# Using Natural-Source Seismology to Investigate the Formation and Evolution of the North American Continent

Speaker: Fiona Darbyshire

*Location: online*

*Thursday, January 6, 2022, 12:00 pm to 1:00 pm*

### ABSTRACT

The North American continent preserves over 4 billion years of geological history and therefore represents an excellent natural laboratory for the study of continental formation and evolution, and the role of plate tectonic processes at different periods in Earth's history. In order to investigate the present-day structure of the crust and upper mantle of the continent, and to piece together this complex evolution, we use natural-source seismological techniques. Networks of broadband seismographs record seismic waves from global earthquakes, and the resulting data can be used in a wide variety of complementary studies. These include receiver-function analysis to map out variations in crustal thickness, body- and surface-wave tomography to image the crust and upper mantle in 3D, and seismic anisotropy measurements to investigate preserved lithospheric fabrics and present-day mantle flow beneath the continent.

In this talk I present an overview of recent regional-scale studies of North America, with particular focus on the eastern Canadian Shield, and discuss the implications of our findings for the evolution and dynamics of the continent.

### BIOGRAPHY



Fiona Darbyshire studied Natural Sciences and seismology at Cambridge University, UK. She moved to Canada in 2000 for a postdoctoral fellowship at the Geological Survey of Canada and subsequently worked for the POLARIS project through further postdoctoral contracts. In 2006 she was hired for a tenure-track position at the Université du Québec à Montréal, and has worked there ever since. She held a Tier 2 Canada Research Chair from 2011 to 2021.

Fiona Darbyshire's research uses a variety of techniques in natural-source seismology to investigate the structure and dynamics of the crust and upper mantle, with applications to the formation and evolution of continental lithosphere.