Multiple Layers of Anisotropy in the Chile-Argentina Subduction Zone, South America

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Introduction

Anisotropy has been thoroughly explored as a common phenomenon, but not much detail on the anisotropy in subduction zones. While some studies have shown evidence of anisotropy, there is a lack of comprehensive modeling of subduction zones. The study of subduction zones is crucial as it helps us understand the processes that occur at the Earth's surface. The Chile-Argentina subduction zone is a perfect example of a region where anisotropy can be studied in detail.

Results for Local Slab Phases

Before conducting the full experimental analysis, we focused on understanding the subduction process using the digital waveform tomography (DWT) tool. This tool helped us understand the depth distribution of the subduction process. We observed that the subduction process is not uniform, and there are variations in the depth distribution. This variation is due to the complex interaction of the tectonic plates and the subduction process.

An Integrated Mantle Flow Model

Many studies have shown that mantle flow may be occurring in the subduction zone. However, the details of this flow are not well understood. Our study suggests that the mantle flow is not uniform and varies with depth. The flow is more pronounced at the subduction zone, which supports the idea of mantle upwelling.

Teleseismic Results

The teleseismic results indicate that the subduction zone is not a simple process. There are variations in the depth distribution, which suggests that the subduction process is complex. The variations in the depth distribution are due to the interaction of the tectonic plates and the subduction process.

Is Anisotropy in the Wedge?

While conducting the full experimental analysis, we focused on understanding the subduction process using the digital waveform tomography (DWT) tool. This tool helped us understand the depth distribution of the subduction process. We observed that the subduction process is not uniform, and there are variations in the depth distribution. This variation is due to the complex interaction of the tectonic plates and the subduction process.

Conclusions

Our study confirms the complex nature of subduction zones. The variations in the depth distribution are due to the interaction of the tectonic plates and the subduction process. The teleseismic results indicate that the subduction zone is not a simple process. Therefore, it is essential to study the subduction process in detail to understand the complex interactions that occur at the Earth's surface.

References


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