# Article information:

“Double Door” Opening of the Japan Sea Inferred by Pn Attenuation Tomography - Yang - 2022 - Geophysical Research Letters - Wiley Online Library  
<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2022GL099886>

# Article summary:

1. The Japan Sea is an example of a continent-ocean back-arc system, but the opening mechanism is still unclear.

2. The Japanese Islands were part of the northeastern edge of the Asian continent before the Late Cretaceous and may have experienced complex evolution driven by multiple mechanisms.

3. Seismic Pn attenuation tomography is used to detect thermal structure in the uppermost mantle and investigate the opening mechanism of the Japan Sea.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Double Door” Opening of the Japan Sea Inferred by Pn Attenuation Tomography by Yang (2022) provides an overview of the opening mechanism of the Japan Sea, which has been under debate for some time. The article presents two possible driving mechanisms for marginal sea opening, small-scale convection in mantle wedge induced by descending lithosphere and ascending convection generated by both foundering of descending lithosphere and seaward migration of trench, as well as evidence from paleomagnetic data that suggests a fan-shaped rotation (“double door”) opening model for the Japan Sea. The article then goes on to explain how seismic Pn attenuation tomography can be used to detect thermal structure in the uppermost mantle and investigate this opening mechanism further.

The article is generally reliable and trustworthy, providing evidence from previous studies to support its claims and presenting both sides equally without bias or partiality. However, there are some points that could be improved upon. For example, while it does mention other models suggested for the formation of the Japan Sea such as a dextral strike-slip fault along its margins during late Oligocene-early Miocene, it does not provide any evidence or counterarguments against these models or explore them further. Additionally, while it mentions potential risks associated with seismic Pn attenuation tomography such as interference from multiple diving waves refracted from Moho discontinuity, it does not provide any details on how these risks can be mitigated or avoided when conducting such experiments.

# Topics for further research:

* Japan Sea formation models
* Dextral strike-slip fault
* Oligocene-early Miocene tectonics
* Seismic Pn attenuation tomography interference
* Mitigation of seismic Pn attenuation tomography risks
* Paleomagnetic data fan-shaped rotation

# Report location:

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