# Article information:

What Controls Effective Elastic Thickness of the Lithosphere in the Pacific Ocean? - Lu - 2021 - Journal of Geophysical Research: Solid Earth - Wiley Online Library  
<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020JB021074>

# Article summary:

1. The effective elastic thickness (T) of the lithosphere in the Pacific Ocean ranges from 0 to 80 km, with a mean of 13.5 km and a standard deviation of 12.3 km.

2. T is generally poorly correlated with plate loading age, crustal age, heat flow and Curie point depth, except for relatively young (<60 Ma) and warm lithospheres.

3. High T estimates (>30 km) are found along subduction zones and around the Hawaiian-Emperor Seamount Chain (HESC), suggesting that strain hardening mechanisms could explain these values.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article by Lu (2021) provides an analysis of the effective elastic thickness (T) of the lithosphere in the Pacific Ocean using admittance between free-air gravity anomaly and bathymetry data calculated using a continuous wavelet transform. The article presents its findings in a clear and concise manner, providing evidence to support its claims. However, there are some potential biases that should be noted when considering this article’s trustworthiness and reliability.

First, the article does not explore any counterarguments or alternative explanations for its findings regarding T in the Pacific Ocean. While it does note that strain hardening mechanisms could explain high T estimates associated with large amplitude and long-wavelength loads such as those found along subduction zones and around the Hawaiian-Emperor Seamount Chain (HESC), it does not consider any other possible explanations or explore any counterarguments to this claim. This lack of exploration into alternative explanations may lead to one-sided reporting or partiality in favor of certain conclusions drawn from the data presented in this article.

Second, while the article does provide evidence to support its claims regarding T in the Pacific Ocean, it does not provide any evidence for its claims regarding correlations between T and plate loading age, crustal age, heat flow and Curie point depth for relatively young (<60 Ma) and warm lithospheres. Without further evidence to support these claims, they cannot be considered reliable or trustworthy conclusions from this study’s data set.

Finally, while this article does present both sides of its argument equally by noting both positive correlations between T and certain factors as well as negative correlations between T and other factors such as plate loading age, it fails to note any potential risks associated with its findings or conclusions drawn from them. Without noting potential risks associated with these findings or their implications on geodynamic evolution processes or surface deformation related to deep Earth processes, readers may be unaware of any potential dangers associated with relying on these conclusions without further research into their implications on geodynamic processes or surface deformation related to deep Earth processes.

In conclusion, while this article provides an interesting analysis of effective elastic thickness (T) in the Pacific Ocean using admittance between free-air gravity anomaly and bathymetry data calculated using a continuous wavelet transform, there are some potential biases that should be noted when considering its trustworthiness and reliability including lack of exploration into alternative explanations for its findings regarding T in the Pacific Ocean; lack of evidence provided for certain claims made; failure to note potential risks associated with its findings; among others which may lead readers to draw unreliable conclusions from this study’s data set without further research into their implications on geodynamic processes or surface deformation related to deep Earth processes

# Topics for further research:

* Geodynamic evolution processes
* Surface deformation related to deep Earth processes
* Alternative explanations for effective elastic thickness
* Correlations between effective elastic thickness and plate loading age
* Correlations between effective elastic thickness and crustal age
* Correlations between effective elastic thickness and heat flow

# Report location:

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