Title: GREAT v1.0: Global Real-time Early Assessment of Tsunamis
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General Summary:
This study presents GREAT v1.0, a new tsunami early warning system that utilizes the analysis of acoustic signals generated by earthquakes under the ocean. The approach considers the fact that acoustic waves travel much faster than tsunami waves, allowing instantaneous assessment of tsunami hazard. The system integrates several state-of-the-art models, spanning wave path modeling to machine learning, direct tsunami amplitude inference, and inverse problem solution, to make rapid and reliable forecasts.
The study is very interesting, well structured and provides concise insight into the building blocks of the model, validation procedures, and potential applications. Certain areas may need **minor** clarification to further advance the paper and ease the transition to operational utilization.

Minor Comments
Machine Learning Dataset Expansion
The authors acknowledge the current limitations of the dataset. It would be helpful to learn more about their plans to expand it, e.g., if they anticipate adding data from GPS buoys or regional seismic-acoustic networks. Mentioning such details could reflect both the feasibility and timeline for expanding the dataset.
Far-Field and Land-Separated Prediction Differences
The model seems to be most accurate near the earthquake epicenter but less so at distant locations or at locations separated by land masses. Would the refinement of bathymetric data or the inclusion of more sophisticated coastal models enhance these discrepancies?
Minimum Hydrophone Density for Effective Detection
An order-of-magnitude estimate of the minimum hydrophone station density that would be needed to reliably detect and characterize near-field tsunamis in high-risk areas would be beneficial. This would guide sensor deployment planning in the future.
CTBTO Hydrophone Network Configuration
As the system relies heavily on the CTBTO network (initially designed for nuclear monitoring), have the authors addressed whether its current density and position are ideally suited for tsunami detection? Would the supplementation of sensors in high-risk regions enhance performance, especially for smaller or maybe more remote events?
Operational Reliability and Everyday Use
Whereas computational efficiency is commendable, greater insight into actual-world performance beneath operating conditions will be helpful. This might include discussion of potential hardware limitations, data transmission time delays, or even sensor failure, and the way these are addressed.
Model Integration and Error Propagation
GREAT v1.0 is made up of a number of sub-models (fault geometry estimation, wave speed calculation, etc.). How do the authors think that the tiny errors in one component may or may not be magnified and lead to erroneous tsunami predictions in another? Have they performed an uncertainty analysis to quantify and minimize these risks? The addition of surrogates of some components might be useful in carrying out a sensitivity or uncertainty analysis economically. This would allow the investigation of situations of error propagation without excessive computational cost.

GREAT v1.0 is an organized, valuable and promising tsunami warning system. Dataset increase, spacing of the sensors, accuracy of far-field forecasts, and reliability of operation—and uncertainty analysis—are minor issues that will further establish its practical usefulness. Transparency on these aspects will allow easier transition to operational use.