

Referee Comment on “A revision of the Catalogue of tsunamis on the Spanish coast”

Recommendation: Minor Revisions

Evaluation

- Scientific significance: Good (2)
- Scientific quality: Good (2)
- Presentation quality: Good (2)

General comments

This manuscript presents a comprehensive revision of the Catalogue of tsunamis on the Spanish coast based on a critical reassessment of historical sources, existing catalogues, geological studies, newspaper archives and available tide-gauge records. The revised catalogue incorporates additional events identified through the reassessment of historical and instrumental evidence, while excluding others that are not sufficiently supported by the available information, resulting in a final catalogue comprising 16 tsunami events.

The manuscript clearly falls within the scope of NHESS. Historical tsunami catalogues constitute a fundamental component of tsunami hazard and risk assessments, particularly given that, for tsunami, long instrumental records are scarce, and historical information may play a significant role in understanding existing risk.

The work represents a valuable contribution to the tsunami scientific community. In particular, the extensive review of primary documentary sources and original marigrams is highly commendable and constitutes the principal strength of the study. The authors move beyond a simple compilation exercise and critically reassess the historical evidence supporting each event, which improves the traceability and transparency of the resulting catalogue. This effort will likely make the catalogue a reference for future tsunami risk studies in Spain.

The manuscript is generally well written, thoroughly documented and supported by a significant number of references spanning historical seismology, tsunami catalogues, geological evidence and instrumental observations. The figures and tables are overall appropriate, and the structure of the paper facilitates consultation of individual events.

I find the scientific basis of the manuscript to be generally sound and the conclusions to be consistent with the available evidence. The new catalogue represents an improvement over previous versions and the exclusion of some historically doubtful events appears justified.

My comments below are primarily intended to improve the clarity, reproducibility and scientific impact of the paper. In my opinion, most of the issues identified can be addressed through clarification, expansion of some sections and improvement of the discussion, without requiring substantial modifications to the catalogue itself.

Specific comments

1. Motivation of the study

The rationale presented in the Introduction could be strengthened. For example, the statement that the low probability but potentially high impact of tsunamis emphasizes the need for a comprehensive and reliable catalogue appears somewhat generic. The authors may wish to more explicitly link the revised catalogue to specific applications, for example, in probabilistic tsunami hazard assessment, tsunami risk assessment and risk management.

2. Reliability index and reproducibility

The reliability assessment constitutes the main methodological component of the paper. Although it is clearly stated that the adopted scheme follows Tinti et al. (2004), some of the criteria used to assign partial scores (e.g., distinguishing between “scarce or uncertain information” and “good information” or between sources that are “posterior to the event date” and those that are “significantly posterior”) inevitably involve a degree of interpretation.

Furthermore, relatively small changes in the assignment of partial scores may lead to substantial differences in the final reliability index and, consequently, in the classification of an event within the catalogue. It may therefore be useful to briefly describe how cases with limited or ambiguous evidence were assessed in practice, particularly when the available information did not clearly support a single reliability class. Such additional information would help readers better appreciate the robustness and reproducibility of the catalogue.

3. Inclusion threshold of the reliability index

In Section 2, events with $RI \geq 2$ are retained in the catalogue, whereas those with $RI = 0$ or 1 are excluded. While this criterion is clearly stated, the rationale for selecting $RI = 2$ as the threshold for inclusion in the Catalogue of tsunamis on the Spanish coast is not entirely apparent. A brief explanation of this choice could help readers better understand the philosophy underlying the catalogue construction.

4. Consistency of reliability classifications

The description of the catalogue inclusion criteria appears to be inconsistent between the Abstract, the Methods section and Table 2.

The Abstract indicates that the catalogue includes events with a reliability index of “probable and definite”, whereas the methodology states that events with $RI \geq 2$ are included. In addition, Table 2 contains events classified as $RI = 2$ (questionable tsunami) and $RI = 4$ (definite tsunami), but no events classified as $RI = 3$ (probable tsunami).

I encourage the authors to clarify this apparent inconsistency and verify whether the wording in the Abstract or the assigned reliability classifications require revision.

5. Comparison with previous catalogue versions

One of the main outcomes of the study is the incorporation of new events into the catalogue and the exclusion of others previously considered reliable. While this information is partially summarized in the Conclusions and Figure 8, the authors may consider adding a concise summary table comparing the previous and revised status of the events in the Catalogue of tsunamis on the Spanish coast. This could include newly incorporated events, excluded events and, where relevant, changes in their assigned reliability index. Such a synthesis would facilitate rapid identification of the principal revisions introduced by this work.

6. Event of 17 July 1969

The unidentified source of the 17 July 1969 tsunami deserves a slightly expanded discussion. Addressing possible source regions and the remaining open questions could further enhance the manuscript and provide useful guidance for future research.

7. Paleotsunami section

The authors may consider clarifying more explicitly at the beginning of the paleotsunami section that geological evidence is presented primarily for contextual purposes and is not used in the reliability assessment applied to the catalogue. The authors may consider streamlining this section unless a clearer connection with the objectives of the manuscript can be established.

8. General discussion and conclusions

The Discussion already acknowledges several important limitations of the catalogue throughout the text (e.g. documentary incompleteness, scarcity of contemporary sources, uncertainty in historical wave-height estimates, and reduced detectability of small historical tsunamis). However, these points are presented in a rather dispersed manner. The Discussion would benefit from a more explicit synthesis of these limitations, including the progressive decrease in catalogue completeness with increasing age of the historical record and, where appropriate, potential geographical biases in the available documentary evidence.

In addition, the authors may wish to discuss more explicitly the implications of the revised catalogue for tsunami hazard and risk assessments, including supporting probabilistic tsunami hazard assessment.

Technical Corrections

1. In the Introduction, the statement that the 1755 tsunami reached wave heights exceeding 10 m in the Gulf of Cádiz would benefit from a supporting reference.
2. In the introduction, the statement indicating that historical records document “at least one deadly and damaging tsunami” may be reconsidered, as it could appear somewhat inconsistent with the manuscript presenting a catalogue of 16 tsunami events. A wording that better reflects the broader historical record may improve consistency.
3. The final two paragraphs of the Introduction could be streamlined to reduce some repetition and improve the transition between the description of the study objectives and the outline of the manuscript structure.
4. The manuscript refers to an interactive map viewer associated with the catalogue (Section 4 and Figure 6). The authors may wish to provide the direct link to the viewer, in addition to the general catalogue URL, to facilitate access for readers.
5. Figure 6 appears to show 15 tsunamigenic source locations, whereas Table 2 contains 16 catalogue events. The authors may wish to verify that all catalogue entries are represented in Figure 6 or clarify the caption if there is another reason.
In addition, the source location of the 17 July 1969 event is listed as unknown in Table 2, although the event appears to be represented in Figure 6. Clarification on this point would be appreciated.
6. The manuscript states that the revised catalogue contains 16 tsunami events, consistent with Table 2. However, the interactive catalogue viewer appears to display fewer events. The authors may wish to verify the consistency between the published catalogue, the interactive viewer, and Figure 6, and clarify any differences if intentional.
7. The manuscript is generally written in clear and fluent English. The authors may nevertheless wish to perform a final proofreading of the revised version to further improve readability and language flow prior to publication.

Final Recommendation

The manuscript presents a valuable and timely contribution to tsunami hazard research in Spain. The archival work is extensive, the catalogue is carefully documented, and the resulting dataset will likely become a valuable reference for future studies. The manuscript also illustrates the importance of critically revisiting long-established historical catalogues as new documentary sources and instrumental evidence become available.

The scientific basis of the work is sound, and the conclusions are generally well supported by the available evidence. The issues identified in this review mainly concern clarification of methodology, enhancement of reproducibility, and strengthening of selected aspects of the discussion.

I therefore recommend: Minor Revisions.