



Seismic Energy Forecast for Japan

2025 October 09, 2025 November 06, 2025 December 04
- potential earthquake or eruption in Japan

Version: 0

First Revision: 2025-11-18 01:40:03

Last Revision: Rev. 0 - 2025-11-18 01:40

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(focus: cycle1)
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1. Revision History

Version	Date	Author	Description
0	2025-11-18 01:40:03	MF	Seismic Energy Forecast for Potential Earthquake or Eruption in Japan
first emission			

2. Explanation of Terms and Concepts

About Features used to produce this forecast

We produced this forecast using the following specific source:

1. astronomical solar system data (same day - 0 shift)
2. seismic sensor GPS data (60 days shift)
3. tropospheric data (60 days shift)

The Purpose it to demonstrate the validity of using GPS + TROPO data several week before a seismic event.

Time series sharpness achievable by astronomical data only can be up to 7 days.

This study demonstrate that using augmented data in past geophysical observations can rise the time line sharpness up to 24 hrs and more.

About Graph system

Note: **trend graph**

Forecast graph and tables refer to a base value, against it.

For instance if a value of 37 per latitude is the base line and graph value is 0% it means that the location estimated for that period of time is UNDER 37.

Another example is for magnitude graph, with baseline Mw 7.0, 0% means no risk detected, and 100% means high risk detected

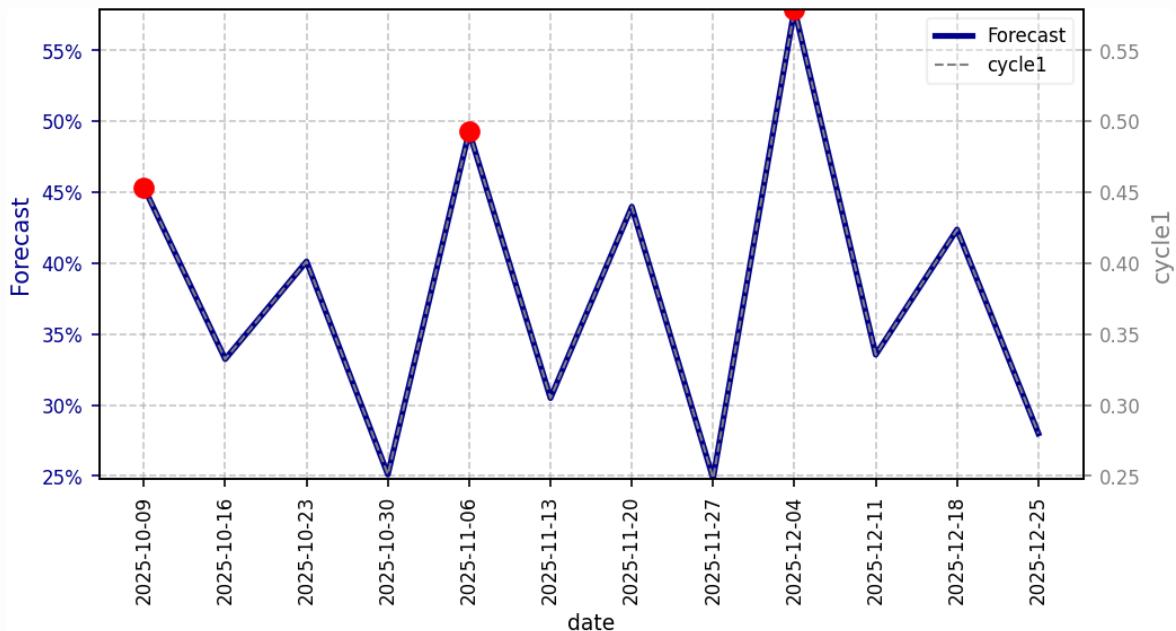
About Time Slot

Note: each date point represent **the beginning of the time slot**

For instance if a forecast time point is on 2025-01-01 and the graph resolution is 7 days, it's a forecast for 2025-01-01 until 2025-01-06 (UTC)

3. Forecasts

3.1 Seismic Energy Forecast (possible earthquake or eruption), res:1 week, UTC (focus: cycle1)



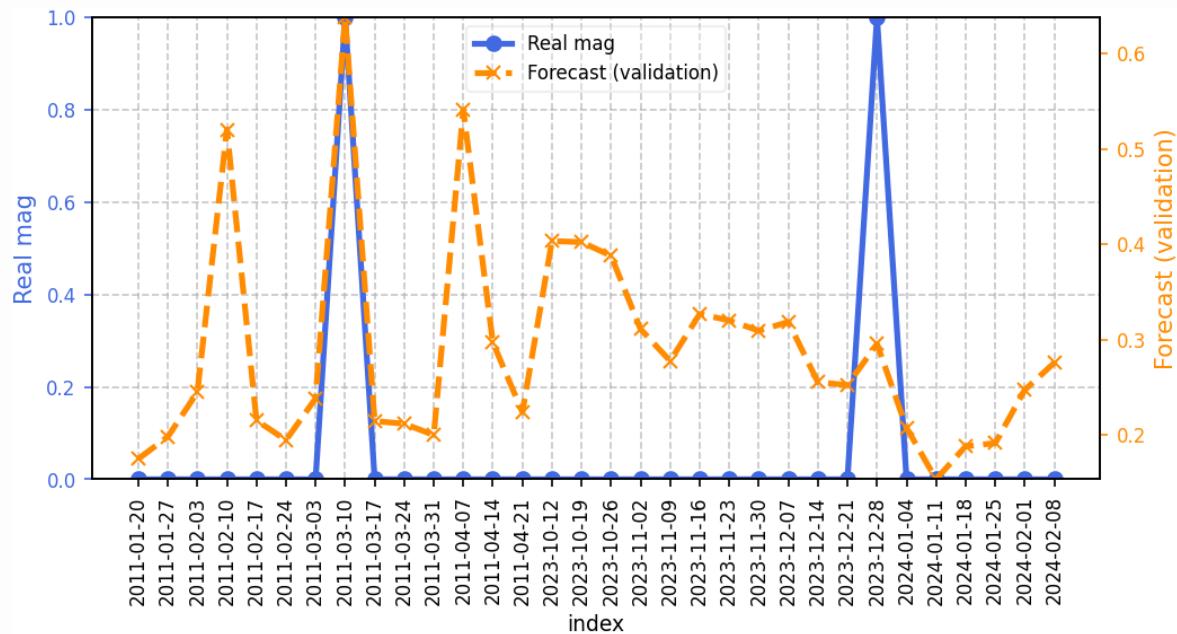
⚠ Higher Risk Detected for Following Dates:

- 1. from 2025-12-04 to 2025-12-11 (UTC) - Risk Value: 0.579
- 2. from 2025-11-06 to 2025-11-13 (UTC) - Risk Value: 0.493
- 3. from 2025-10-09 to 2025-10-16 (UTC) - Risk Value: 0.453

Each date represent the BEGINNING of time slot

This seismic energy forecast highlights potential earthquakes or eruptions in Japan.

3.2 Validation Quality Check



Real values versus aggregated top-3 forecast on the validation dataset.

4. Features Used For Magnitude

Combined Features Analysis Report -
trialsetJAPAN-M75-COMBINED-
SEQUENTIAL_20251118-002758

Generated: 2025-11-18T21:59:16.473084 **Cycles Analyzed:** cycle1

CYCLE1 Analysis

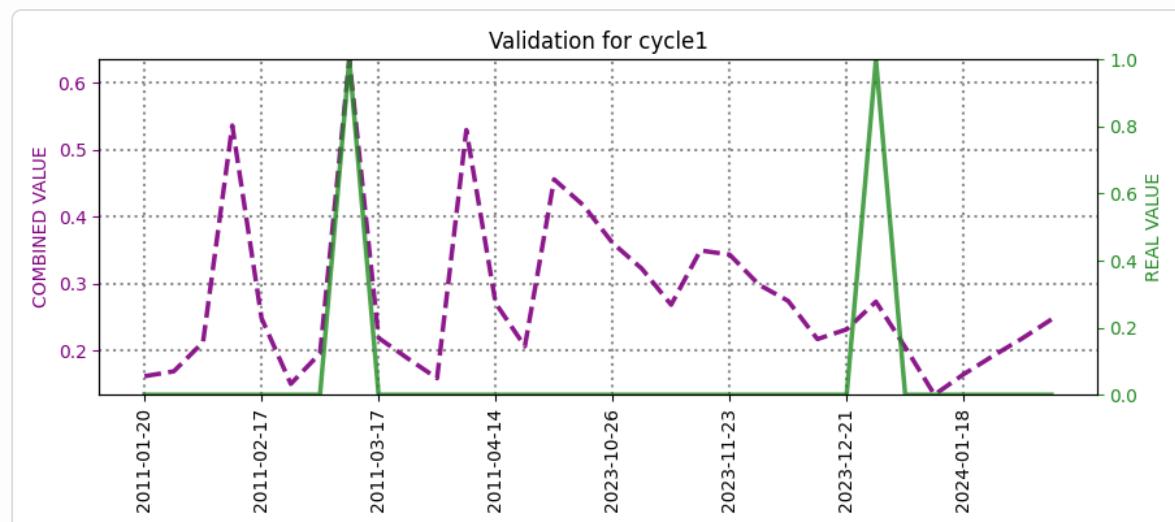
Trial Statistics

Metric	Min	Max	Average
Hyperopt Loss (lower is better)	0.50	0.50	0.50
Metric Score (cost_sensitive+precision) (lower is better)	0.41	0.53	0.49

Contribution Type	Trials
Direct	3
Inverted	0

Validation Analysis

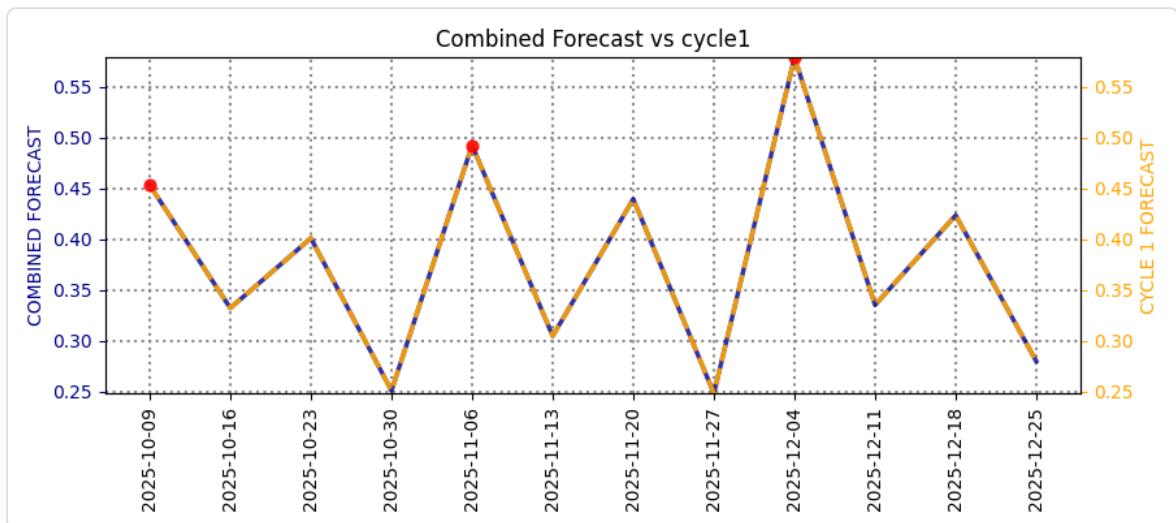
Best trial validation for this cycle contrasted with real values.



Forecast Analysis

Best trial forecast for this cycle versus the combined forecast.

Features Analysis • CYCLE1 Analysis



Complete Dataset Overview

Analysis of ALL features present in the source files

	Astro	Tropo	Pos
Count	9	0	0
Percentage	75.0%	0.0%	0.0%

Summary Insights

Complete Dataset:

- **Astronomical data** represents 75.0% of all features (9 features)
- **Target variables** represent 16.7% of all features (2 features)
- **Dominant category in complete dataset:** Astro features

Cross-Cycle Summary

Cycle	Best Trial	GPS Features	Tropo Features	Astro Features	Hyperopt Loss	Metric Score (cost_sensitive+precision)	Hybrid Score
cycle1	48	N/A	N/A	9	0.50	0.41	0.45

5. Astronomical Features Used

Astronomical Features Used per Cycle - trialsetJAPAN-M75-COMBINED- SEQUENTIAL_20251118-002758

Focus cycle: cycle1

Cycle	Loss	Hybrid	Bodies	Observers	Ephemerides	Operations
cycle1	0.50	0.45	10, 301, 599	geo_35.6895;139.6917;0	az, ra_rate, suntargetpa	min

Bodies are represented by their NAIF ID (unique identifiers for celestial bodies from NASA/JPL); observers use geo_lat;lon;height schema. Ephemerides are Horizons fields; operations are aggregations like min/max.

6. Summary and Conclusion

Summary of Findings

Elevated seismic energy suggests potential earthquakes or eruptions in Japan.
Peak dates: 2025-10-09, 2025-11-06, 2025-12-04 (UTC).

Conclusions

Increased seismic energy indicates potential earthquakes or eruptions for
2025-10-09, 2025-11-06, 2025-12-04 in Japan.

Even if the risk appears slight or moderate, preparation is necessary because the epicenter could be near your location. A separate report is required to estimate its position. AI-generated reports may create false alarms or underestimate the risks. Do not use this report to make important decisions. This work is for research purposes only.

7. Attribution and Disclaimers

Data Sources

- Seismic data utilized in this report is sourced from the **USGS Earthquake Catalog** and the **Japan Meteorological Agency (JMA)**.
- Planetary ephemeris data provided by **NASA/JPL Horizons System**.
- All tropo + gps positional data provided by **NASA/JPL**

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Responsibility Statement

The analysis and conclusions represent the best judgment of our research team based on the available data. This is not an official warning or alert. For official information, please consult your local government and geological survey authorities.