

Tsunamis in the News, 2019-2026: Event Peaks, Geography and Tone of Global Tsunami Coverage, and How It Compares with Research and Invention

Fliar BI · Prism Research Layer · Working paper, October 2026 · Dataset and code: github.com/fliarbi/prism-news-api · Licence CC BY-NC 4.0

Abstract

We measure how tsunamis were covered in a global news index from January 2019 to July 2026, using 24,934 de-duplicated tsunami articles, and set that coverage beside 25,263 research papers and 388 patent families on tsunamis. Six results stand out:

1. **Event peaks.** Tsunami attention comes in bursts. The largest share was in January 2022, the month of the Hunga Tonga-Hunga Ha'apai eruption, at 9.47 articles per 10,000 news articles, 5.49 times the 2019-2025 average of 1.73. July 2025, the month of the Kamchatka earthquake, had the most articles (1,897).
2. **Anniversaries.** March 2021 (the tenth anniversary of the 2011 Tōhoku disaster) and December 2024 (the twentieth anniversary of the 2004 Indian Ocean tsunami) were the third and fourth highest months.
3. **Geography.** Between January 2023 and July 2026, Japan held 26.76% of located tsunami news, 25.18 times its share of all news, and Indonesia is over-represented 30.53 times. The United States (0.56) and India (0.34) are under-represented. Oceania (2.73) and Asia (2.08) lead by continent. Within the United States, Hawaii (50.99) and Alaska (46.59) lead; within India, Tamil Nadu (4.59). Russia's tsunami attention rose 15.11-fold from 2023 to 2025.
4. **Tone and urgency.** Of tsunami articles with a tone label in the same window, 75.3% were negative (all news: 33.6%), and 78.1% were rated critical priority (all news: 42.6%).
5. **Measurement.** 22.37% of raw matches for tsunami vocabulary were figurative uses, name senses or earthquake reports that only noted the absence of a tsunami threat.
6. **Research and invention.** Tsunami papers jumped 5.85-fold as a share of all papers from 2004 to 2005, then fell 39% between 2015 and 2025. Patent families peaked at 83 in 2013; the Japanese (41%) and Chinese (29.8%) offices hold most office filings.

Findings stated for citation

- **F1.** January 2022 was the peak month for tsunami news, at 9.47 articles per 10,000, 5.49 times the 2019-2025 average.
- **F2.** July 2025 had the most tsunami articles of any month (1,897) and the second-largest share (8.08 per 10,000).
- **F3.** March 2021, the month of the tenth Tōhoku anniversary, had the third-largest share (5.84 per 10,000).
- **F4.** December 2024, the month of the twentieth anniversary of the 2004 tsunami, had the fourth-largest share (4.47).

- **F5.** Annual tsunami shares ranged from 1.3 (2020) to 2.04 (2025) per 10,000 news articles.
- **F6.** 15.6% of a typical year's tsunami news fell in January, mainly because of events in two years.
- **F7.** Japan's share of located tsunami news (26.76%) was 25.18 times its share of all news; Indonesia's lift was 30.53.
- **F8.** Oceania (2.73), Asia (2.08) and South America (1.9) were over-represented; Africa (0.23) least.
- **F9.** Within the United States, Hawaii (50.99), Alaska (46.59) and Oregon (5.11) had the most over-represented coverage.
- **F10.** India's lift was 0.34; within India, Tamil Nadu held 22.98% of located tsunami articles (lift 4.59).
- **F11.** Tsunami coverage as a share of Russia's news rose 15.11-fold from 2023 to 2025.
- **F12.** Tsunami coverage as a share of Indonesia's news fell from 60.66 to 33.84 per 10,000 from 2023 to 2025.
- **F13.** 75.3% of tsunami articles were negative in tone (2.24 times all news) and 78.1% critical priority (1.83 times).
- **F14.** 22.37% of raw tsunami-vocabulary matches were figurative, name senses or "no tsunami" earthquake reports.
- **F15.** Tsunami papers' share of all papers rose 5.85-fold in 2005 and fell 39% from 2015 to 2025.
- **F16.** Of the office filings of 388 tsunami patent families (2015–2024), 41% were in Japan and 29.8% in China.

1. Introduction

A tsunami is a series of waves caused by a sudden displacement of water, most often by an undersea earthquake, and less often by an eruption, a landslide or an impact. Large tsunamis are rare, but warnings are frequent: every strong earthquake near a coast prompts an assessment, and many prompt an alert. News is one of the main ways people learn of both. It also shapes how warnings are received and how disasters are remembered.

Coverage is rarely measured as data in its own right. Event catalogues record tsunamis, and bibliometric studies record research. Few sources record attention: how much of the news tsunamis take, when, where and in what tone. This paper and its dataset do that. They combine three records for one topic: a global news index, research papers and patents. Each comparison uses a denominator, so that growth in the index or in publishing is not mistaken for growth in interest. The companion dataset publishes an article-level sample (6,341 rows) and full coverage tables, so every figure here can be re-derived. The [Prism News API](#) serves the full history.

2. Data and methods

News. The Prism news index holds articles from outlets worldwide; non-English articles are indexed in English translation. Each article carries its opening text (the first few sentences), a primary location, a graded tone label, an editorial priority rating (1–9), themes, keywords and named organisations. We count unique article identifiers; repeated rows for the same

article are removed. When this release was built, 92.88% of the index was readable, so all counts are lower bounds.

Matching. An article is about tsunamis when its opening text contains *tsunami*, *tsunamis* or *meteotsunami* as whole words. Three families of matches are excluded:

- figurative uses, such as "a tsunami of cases", "silver tsunami", "a political tsunami" or "hit like a tsunami";
- name senses, such as a Catalan political movement and its court case, a tree-planting programme, a video game, and resettlement colonies in India named after the 2004 tsunami;
- earthquake reports that mention tsunamis only to say there was no threat ("no tsunami warning was issued").

Together these removed 7,184 of 32,118 raw matches (22.37%). One reviewer read 40 randomly drawn matched openings. 36 used tsunami in its physical sense, a wave caused by an earthquake, eruption, landslide or impact, including warnings, history and hazard planning (precision 90%). In 13 (32.5%) a tsunami or a tsunami warning was the main subject. In most of the other relevant openings the main subject was an earthquake or the 2011 Fukushima nuclear disaster, with the tsunami as cause or context. The four false positives were a figurative use, a product listing, an unrelated article and a page of tags and headline links with no article text.

Measures. Coverage over time is expressed per 10,000 articles in the index that month or year, because the index grew from 11,807,177 articles in 2019 to 26,990,006 in 2025. Month shares use each year's within-year shares, averaged over the complete years 2019–2025. Geography, tone, priority and themes use January 2023 – July 2026. Geography is expressed as lift: a country's share of tsunami articles divided by its share of all located articles. State lift uses the same ratio within a country. States with fewer than 50 tsunami articles are not discussed. Place tags derived from ordinary words ("Congress", "Earth", "Winter", "Cloud", "Mobile", "Hurricane" and 714 such words in all) were treated as unlocated in every location field, which removed 15.3% of city-tagged articles.

Research and patents. Research papers are de-duplicated articles and reviews (2000–2025) with a tsunami term in the title. Repository deposits and figurative senses ("data tsunami", "silver tsunami", "cytokine tsunami") are excluded. Patent families (2006–2024) use the same title rule, are counted once per filing office, and exclude toys, games and wave pools.

3. Results

3.1 How much and when

The index holds 24,934 tsunami articles from January 2019 to July 2026. Raw counts rose from 2,063 in 2019 to 5,501 in 2025, but the share of all news rose much less: 1.75 per 10,000 in 2019 and 2.04 in 2025 (Table 1). The low point was 2020, at 1.3 per 10,000. The 2019–2025 average was 1.73.

Year	Tsunami articles	All articles in index	Per 10,000
2019	2,063	11,807,177	1.75
2020	2,108	16,230,014	1.3
2021	2,827	17,281,220	1.64
2022	3,839	19,115,515	2.01
2023	3,226	20,484,506	1.57
2024	3,769	23,311,896	1.62
2025	5,501	26,990,006	2.04

Table 1. Tsunami articles per year and as a share of the index. 2026 (January–July) is partial and omitted.

Tsunami coverage has no clear season. It is a series of spikes (Figure 1). The highest monthly share was January 2022, the month of the Hunga Tonga–Hunga Ha’apai eruption, at 9.47 per 10,000 (1,576 articles). The second was July 2025, the month of the Kamchatka earthquake, at 8.08 per 10,000; with 1,897 articles it was also the largest month by count. Two anniversaries follow: March 2021, the month of the tenth anniversary of the 2011 Tōhoku earthquake and tsunami (5.84), and December 2024, the month of the twentieth anniversary of the 2004 Indian Ocean tsunami (4.47). January 2024, the month of the Noto earthquake in Japan, comes next (3.39).

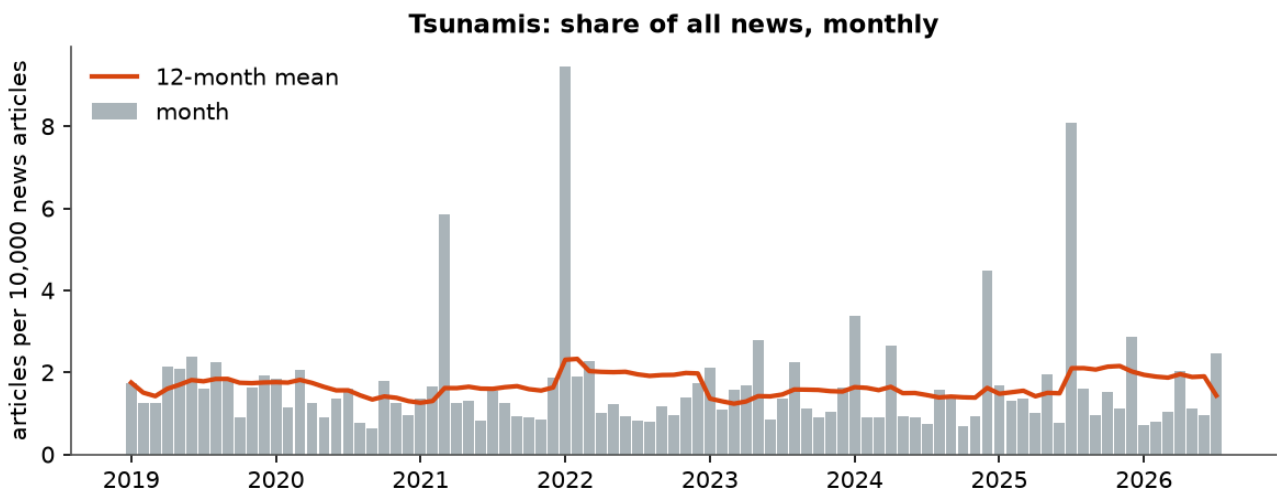


Figure 1. Tsunami coverage as articles per 10,000 news articles, monthly, January 2019 – July 2026. Bars are months; the line is the 12-month mean.

Month shares reflect these events (Figure 2). January holds 15.6% of a typical year's tsunami articles, 1.87 times an even spread, because two of the largest events of the period fell in January. March (11.22%), July (10.6%) and December (10.31%) follow, each lifted by one event or anniversary. June (5.53%) is the quietest month. These shares should not be read as a seasonal cycle.

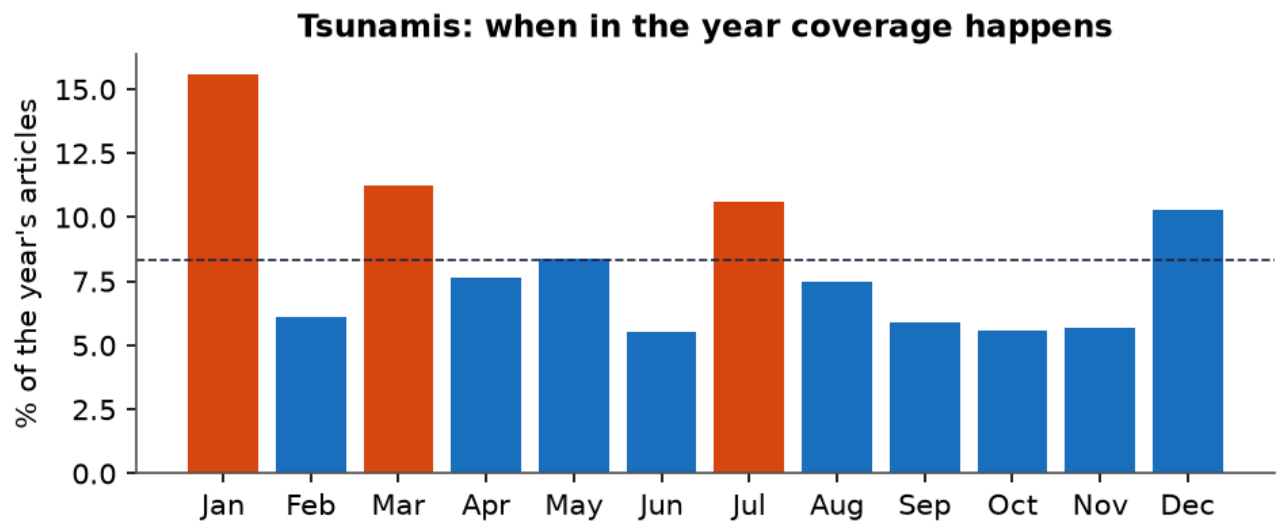


Figure 2. Share of each year's tsunami articles published in each month, averaged over 2019–2025. Dashed line = an even spread.

3.2 Where

Between January 2023 and July 2026, 7,516 tsunami articles carried a primary location. The United States holds the largest raw share (26.96%), but its lift is 0.56. Japan holds almost as much, 26.76%, with a lift of 25.18. Indonesia has the highest lift of the leading countries (30.53). Taiwan (11.02), Chile (10.86) and the Philippines (8.14) are also strongly over-represented, followed by New Zealand (4.63) and Russia (3.87) (Table 2, Figure 3).

Country	Located tsunami articles	Share %	Lift vs all news
United States	2,026	26.96	0.56
Japan	2,011	26.76	25.18
Indonesia	638	8.49	30.53
India	335	4.46	0.34
New Zealand	225	2.99	4.63
Russia	219	2.91	3.87
Philippines	193	2.57	8.14
Chile	153	2.04	10.86
China	134	1.78	0.68
United Kingdom	130	1.73	0.3
Taiwan	110	1.46	11.02

Table 2. Countries with at least 100 located tsunami articles, January 2023 – July 2026, with lift against all located news.

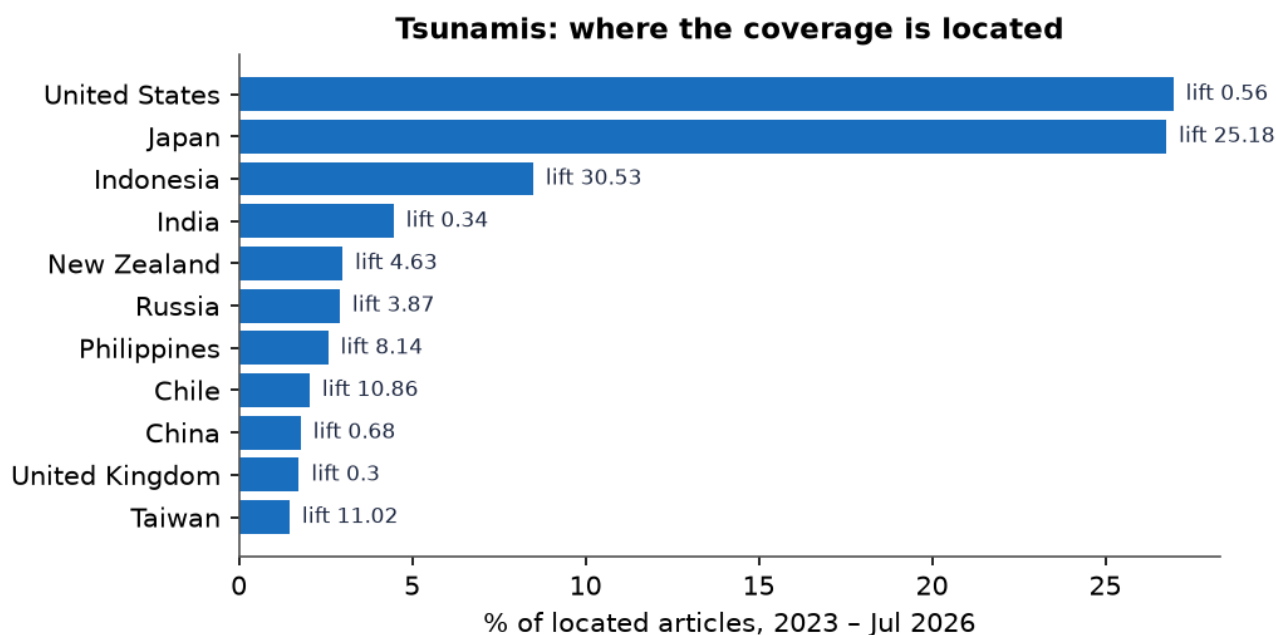


Figure 3. Leading countries by share of located tsunami articles, 2023 – Jul 2026, labelled with lift against all located news.

3.3 Geo intelligence: continents, states and shifting attention

Only 11 countries had at least 100 located tsunami articles in the window, so most of the world map (Figure 4) is grey. Among those 11, the pattern follows the Pacific Ring of Fire. Tsunamis are over-represented in the news of Indonesia, Japan, Taiwan, Chile, the Philippines, New Zealand and Russia, and under-represented in the United States as a whole, China, India and the United Kingdom. Continents fill the gaps. Oceania (2.73), Asia (2.08) and South America (1.9) are over-represented, while North America (0.58), Europe (0.49) and Africa (0.23) are not (Figure 6, left).

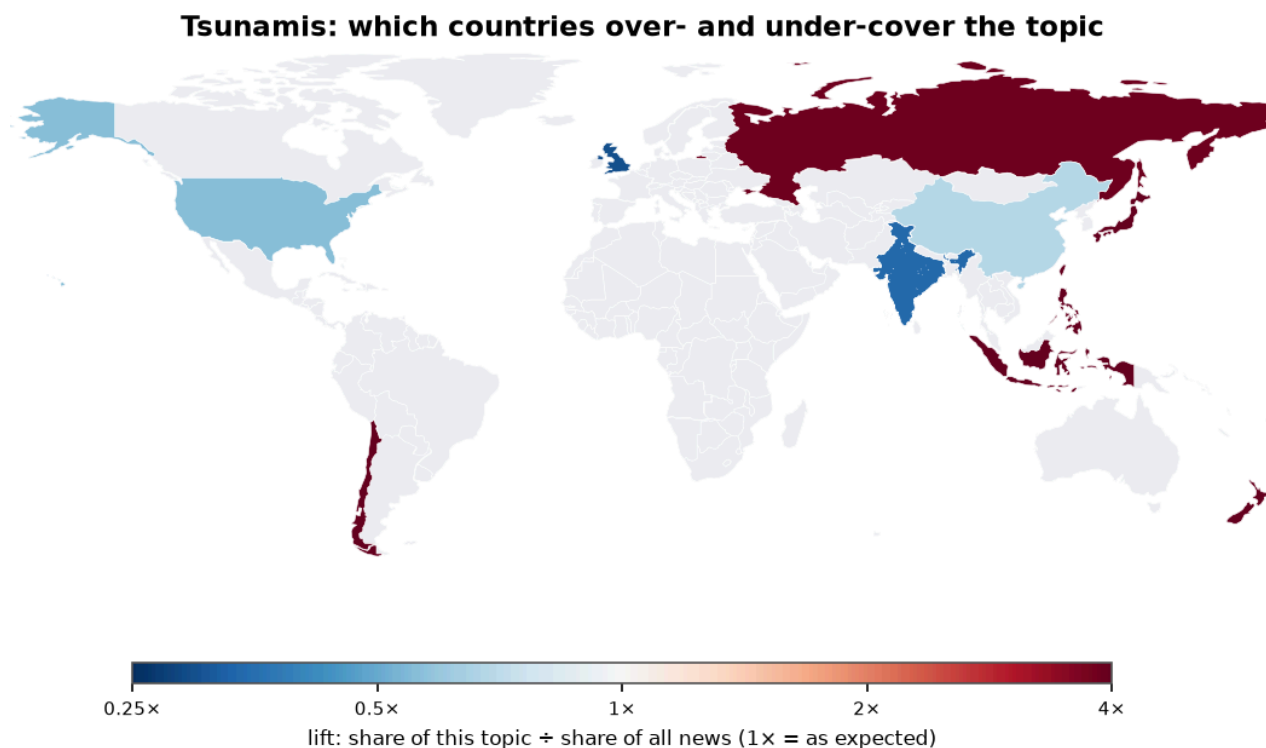


Figure 4. Lift of each country's share of located tsunami articles, January 2023 – July 2026 (red = over-represented, blue = under-represented, grey = fewer than 100 articles). India is drawn with its official outline.

Within the United States, coverage follows the Pacific coast (Table 3, Figure 5). Of 1,607 located US tsunami articles, Hawaii (50.99) and Alaska (46.59) are over-represented by a factor of more than forty against their share of American news, and together hold 24.83% of them. Oregon (5.11), California (3.08) and Washington (1.69) follow. California also holds the largest raw share, 30.74%. Only six states have at least 50 tsunami articles. Of these, New York (0.52) is the only one under-represented. India had too few located tsunami articles (248 with a state) for a state map. Only Tamil Nadu, which holds 22.98% of them, passes the 50-article threshold. Its lift is 4.59.

State	Articles	Share %	Lift	Position
Hawaii	247	15.37	50.99	over-represented
Alaska	152	9.46	46.59	over-represented
Oregon	82	5.1	5.11	over-represented
California	494	30.74	3.08	over-represented
Washington	71	4.42	1.69	over-represented
New York	98	6.1	0.52	under-represented
India: Tamil Nadu	57	22.98	4.59	only state ≥ 50

Table 3. All US states with at least 50 tsunami articles, January 2023 – July 2026, ranked by lift, with India's only such state. Lift = the state's share of the country's located tsunami articles $\div$ its share of all located news from that country.

Tsunamis: states of United States by lift

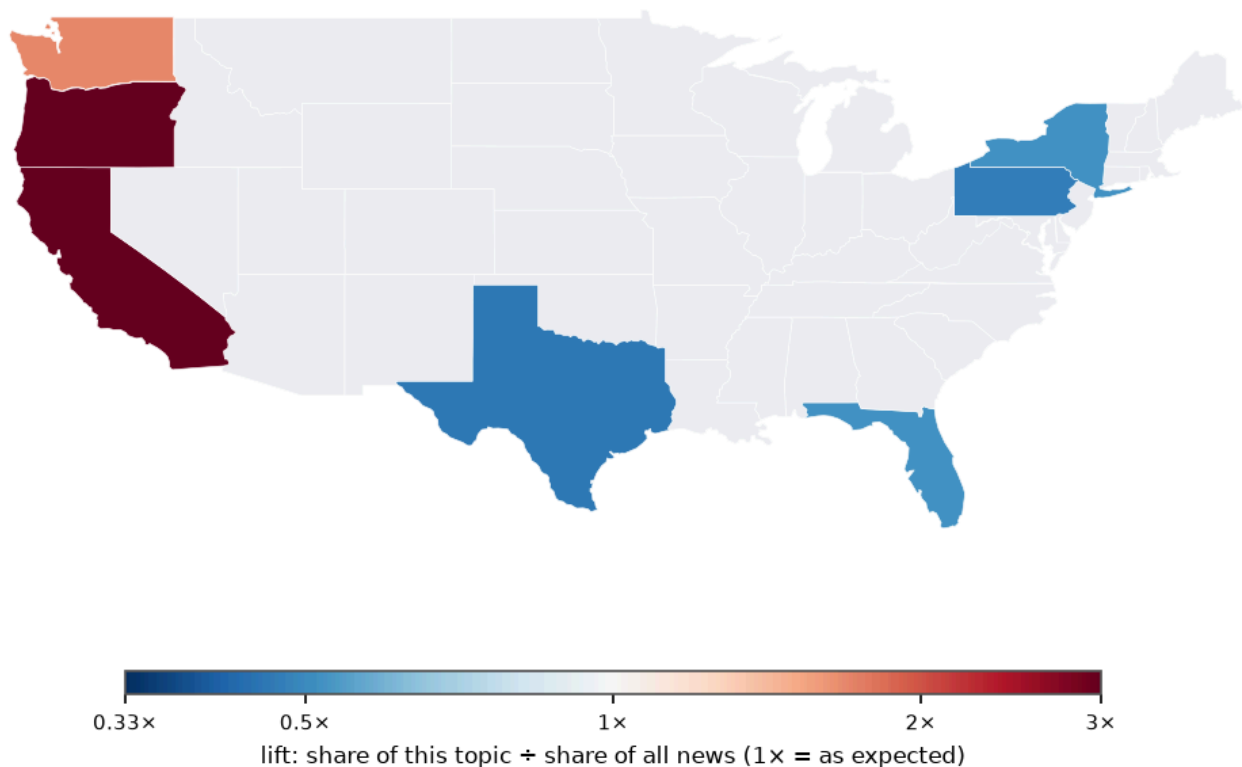


Figure 5. Lift of each US state's share of located tsunami articles against its share of all located US news, January 2023 – July 2026.

Attention also moves between countries from year to year (Figure 6, right). Measured as tsunami articles per 10,000 of each country's located news, Russia rose from 1.49 in 2023 to 22.51 in 2025 (15.11 times), in the year of the Kamchatka earthquake. The United States rose 2.79 times (0.62 to 1.73) and Chile 1.21 times (23.36 to 28.18). Japan stayed level (49.5 to 50.01). Indonesia fell from 60.66 to 33.84 (0.56 times), after a high of 91.2 in 2024. Tone

relative to each country's own news shows where tsunami stories stand out most. Tsunami coverage located in Japan was 87.6% negative against 23.3% for Japanese news overall (3.76 times). Indonesia (90.4% against 32.8%, 2.76 times) and the United States (79.0% against 33.1%, 2.39 times) follow. The gaps are smallest in Russia (83.0% against 72.1%, 1.15 times) and India (49.7% against 41.2%, 1.21 times) (Table 4).

Country	Per 10,000 of country's news, 2023	2025	Change	Negative % (tsunami)	Negative % (all news)
Russia	1.49	22.51	15.11×	83.0	72.1
United States	0.62	1.73	2.79×	79.0	33.1
Chile	23.36	28.18	1.21×	—	—
Japan	49.5	50.01	1.01×	87.6	23.3
Indonesia	60.66	33.84	0.56×	90.4	32.8
New Zealand	12.2	10.05	—	77.8	45.7
India	0.45	0.62	—	49.7	41.2

Table 4. Change in tsunami attention by country, 2023 to 2025, and tone against each country's own news, January 2023 – July 2026. Change is given for countries with at least 100 located tsunami articles in 2025.

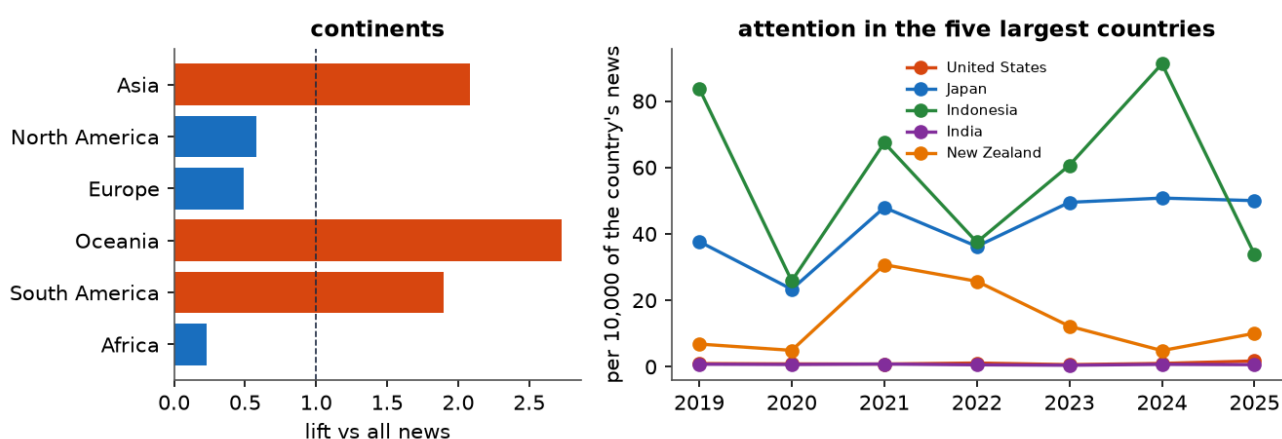


Figure 6. Left: lift by continent, January 2023 – July 2026. Right: tsunami articles per 10,000 of each country's located news, 2019–2025, for the five countries with the most articles.

3.4 Tone, urgency and themes

Tsunami coverage is far more negative and more urgent than news in general (Figure 7). Among articles with a tone label, 75.3% are negative, against 33.6% across the index (2.24 times). Editorial priority puts 78.1% of tsunami articles at critical level (7 or higher), against 42.6% of all news (1.83 times).

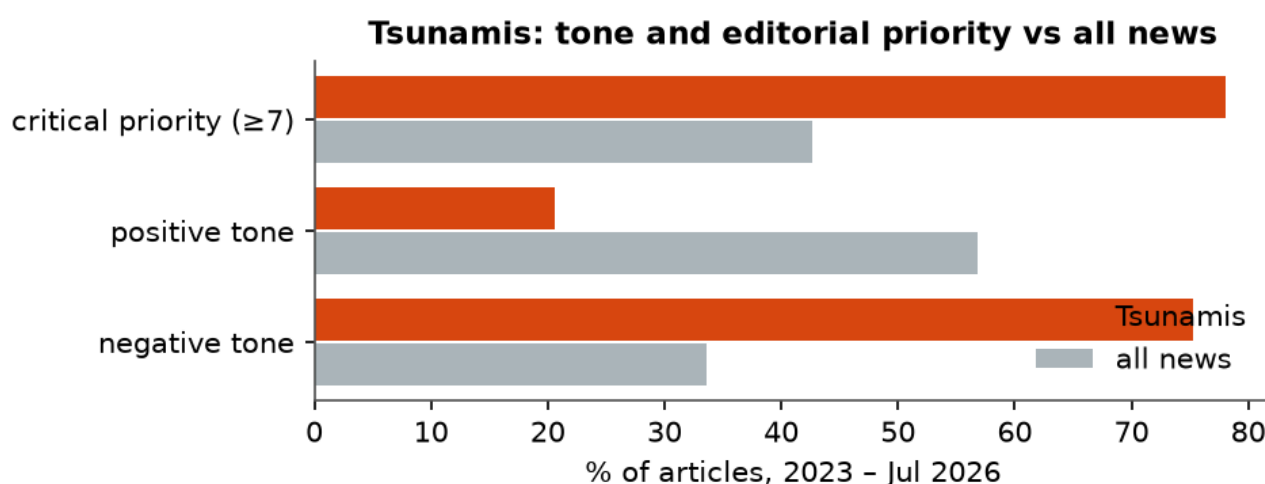


Figure 7. Tone and the share rated critical priority, tsunami articles vs all news, 2023 – Jul 2026.

Themes show what tsunami stories are about (Table 5). Warning systems dominate: 60.67% of themed tsunami articles carry the theme of early-warning effectiveness, 1034.48 times its rate in all news. Earthquake damage and relief (51.9%) and comparisons with past disasters (28.31%) follow. Nuclear plant meltdowns appear in 6.98%; the precision check found many openings about the 2011 Fukushima disaster with the tsunami as its cause.

Theme	Articles	Share %	Lift
tsunami early warning system effectiveness	6,141	60.67	1034.48
earthquake damage assessment and relief operations	5,253	51.9	412.64
historical disaster case study comparisons	2,866	28.31	302.53
seismology and earthquake dynamics	1,972	19.48	593.37
coastal geology and marine sediment transport	1,303	12.87	2806.88
tectonic uplift and erosion interactions	1,037	10.25	1562.74
volcanic eruption evacuation strategies	843	8.33	234.9
nuclear plant meltdowns and radiation leaks	707	6.98	204.61

Table 5. Leading themes in tsunami coverage, with lift against all themed news, January 2023 – July 2026.

The organisations named most often are scientific and warning agencies: the United States Geological Survey (1,097 articles), Japan's meteorological agency (239), the National Oceanic and Atmospheric Administration (227), the International Atomic Energy Agency (222) and the Philippine Institute of Volcanology and Seismology (181). Wire services also rank high, which reflects how tsunami news is sourced.

3.5 Research attention and invention

Research on tsunamis follows its own events. Papers with a tsunami term in the title rose from 0.52 per 10,000 papers in 2004 to 3.04 in 2005 (1,162 papers), a 5.85-fold jump after the 2004 Indian Ocean tsunami. The share rose again in 2012–2014, after the 2011 Tōhoku tsunami. Since then the topic's share has fallen, from 2.23 per 10,000 in 2015 to 1.36 in 2025, a 39% decline. Between 2015 and 2025, 13,046 such papers were published. The most-cited since 2010 are field surveys and source studies of the 2011 Tōhoku tsunami [1, 2], an observation network for earthquakes, tsunamis and volcanoes [3], and work on the fast-travelling waves of the 2022 Tonga eruption [4].

News attention and research attention move differently (Figure 8). Research share has drifted down since 2019, while news share has risen and fallen with single events.

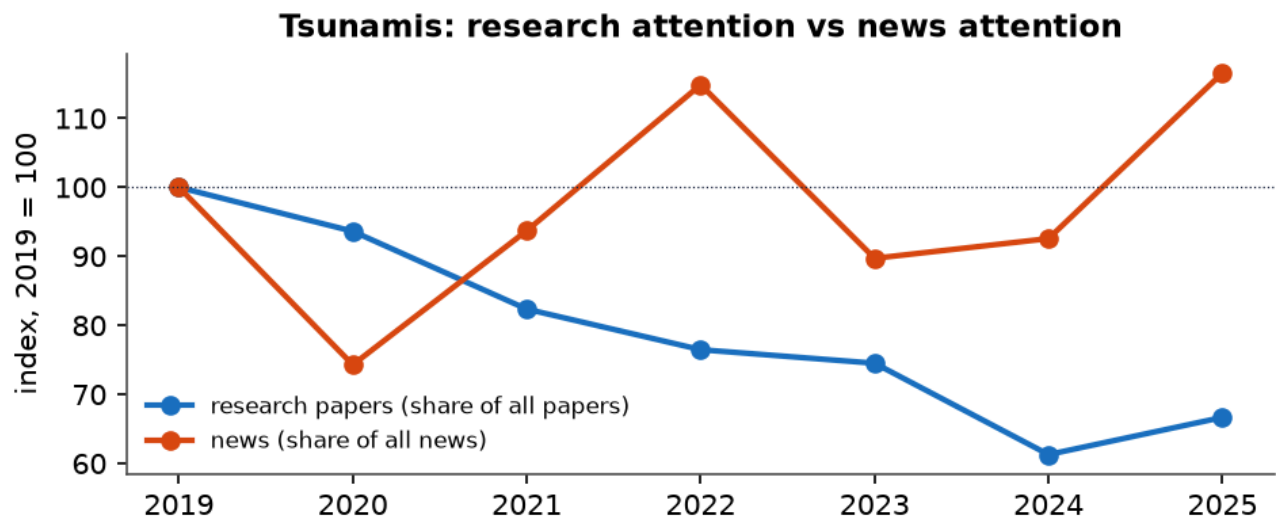


Figure 8. Research papers with tsunami in the title (share of all papers) and tsunami news (share of all news), each indexed to 2019 = 100.

Patenting is small. 388 tsunami-related patent families were published between 2015 and 2024. Annual publications rose from 22 in 2010 to a peak of 83 in 2013 (3.77 times), after the 2011 disaster, and fell to 27 in 2024, while all patent families published per year roughly doubled. Counting each family once per filing office, Japan's office holds 41% of filings from 2015 to 2024 and China's 29.8%, together 70.8%, followed by international filings and South Korea (7.2% each) (Figure 9). The leading technology classes are climate-change adaptation technologies (Y02A, 69 families), hydraulic engineering such as sea walls (E02B, 30) and geophysical detection (G01V, 28).

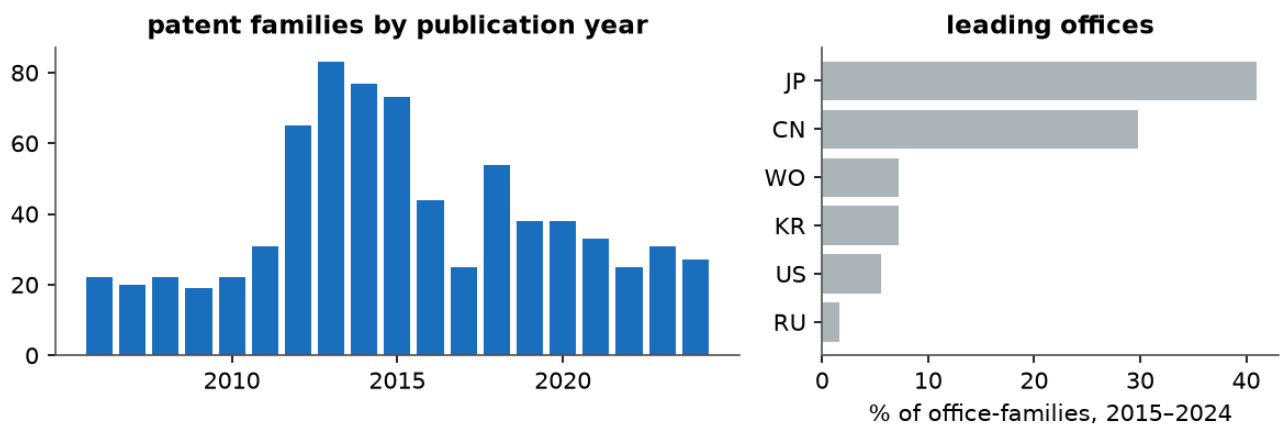


Figure 9. Tsunami-related patent families by publication year (left) and the leading filing offices, 2015-2024 (right).

4. Discussion

Three points matter for anyone who uses news as a record of tsunamis. First, coverage measures attention, and attention arrives in bursts. A few events, and the anniversaries of two past disasters, account for the highest months of the period. The yearly share mostly reflects whether a large event happened that year. Second, raw shares mislead. The United States leads tsunami news in raw terms, just ahead of Japan, but is under-represented relative to its weight in the index. Among the countries with the most tsunami coverage, Japan and Indonesia, both on subduction zones, are the most over-represented. Inside the United States the Pacific states dominate. Third, a large share of what keyword searches

return as "tsunami news" is not about tsunamis at all. Figurative uses, name senses and "no tsunami threat" reports made up more than a fifth of raw matches.

Much tsunami news is about warnings. Warning-system effectiveness is the leading theme, carried by 60.67% of themed tsunami articles. Research, invention and news run on different clocks. Research share jumped after 2004 and has declined slowly since 2015. Patenting peaked after 2011 and is concentrated in Japan and China. News follows events. The dataset lets researchers link the three, for example to test whether heavily covered events are followed by research in the affected country.

5. Limitations

- **Index availability.** 92.88% of the index was readable at build time, so counts are lower bounds. Shares and lifts are less affected, because the missing part is spread across topics.
- **Coverage after May 2026.** The index thins after May 2026, so 2026 (January–July) is partial and is excluded from year comparisons.
- **Matching.** Matching uses the article opening. Articles that mention tsunamis only later are missed, and about 10% of matches are not about tsunamis. In about two-thirds of relevant matches the tsunami is not the main subject.
- **Small counts.** Located tsunami news is a few thousand articles a year. Country and state lifts for small places (Hawaii, Alaska, Taiwan) are large and sensitive to which local outlets the index collects. India's state-level counts are too small for more than one state.
- **Machine labels.** Location, tone, priority and themes are machine-labelled. The city field is noisy and is not analysed.
- **Ordinary-word place tags.** Place tags derived from ordinary words ("Congress", "Earth", "Winter") were treated as unlocated, which removed 15.3% of city-tagged articles. Located counts are therefore smaller, and some places named after common words may be undercounted.
- **Outlet mix.** The index over-represents English-language outlets. This shapes geography.
- **Research and patent counts.** These match titles only. Patent counts are small, and office shares reflect filing practice.

Data availability

The dataset (article sample, monthly and country tables, research and patent tables, all metrics) is released under CC BY-NC 4.0 with this paper. The sample holds 6,341 of 24,926 matched articles to 31 July 2026. Full article text, headlines, publishers, later articles and other topics are served by the Prism News API: <https://github.com/fliarbi/prism-news-api> (base URL <https://radar-api.fliarbi.com/news>). A worked query: `prism-news trends "tsunami" --since 2019-01-01 --until 2026-07-31 --granularity monthly`.

References

1. Nobuhito Mori et al. (2011). Survey of 2011 Tohoku earthquake tsunami inundation and run-up. *Geophysical Research Letters*. <https://doi.org/10.1029/2011gl049210>
2. Yushiro Fujii et al. (2011). Tsunami source of the 2011 off the Pacific coast of Tohoku Earthquake. *Earth Planets and Space*. <https://doi.org/10.5047/eps.2011.06.010>

3. Shin Aoi et al. (2020). MOWLAS: NIED observation network for earthquake, tsunami and volcano. *Earth Planets and Space*. <https://doi.org/10.1186/s40623-020-01250-x>
4. Tatsuya Kubota et al. (2022). Global fast-traveling tsunamis driven by atmospheric Lamb waves on the 2022 Tonga eruption. *Science*. <https://doi.org/10.1126/science.abo4364>
5. Anawat Suppasri et al. (2012). Lessons Learned from the 2011 Great East Japan Tsunami: Performance of Tsunami Countermeasures, Coastal Buildings, and Tsunami Evacuation in Japan. *Pure and Applied Geophysics*. <https://doi.org/10.1007/s00024-012-0511-7>
6. Shinji SASSA et al. (2018). Liquefied gravity flow-induced tsunami: first evidence and comparison from the 2018 Indonesia Sulawesi earthquake and tsunami disasters. *Landslides*. <https://doi.org/10.1007/s10346-018-1114-x>
7. Fliar BI (2026). *Tsunamis in the News 2019-2026: article-level dataset and coverage tables*. Prism News API. <https://github.com/fliarbi/prism-news-api>