Fact-Checked Science

PAPER CHECK · EARTHQUAKE PRECURSORS

An earthquake-precursor paper without data: its authors call every number illustrative

Five authors at Uzbekistan's Institute of Seismology set out how electromagnetic recordings could be screened for signals before earthquakes, and give results for "a representative dataset" of 12 months and 48 earthquakes [1 p. 5]. They then say the numbers are "preliminary illustrative estimates" that "should not be interpreted as measurements obtained from a specific monitoring network" [1 pp. 8–9]. S0 News presented the paper as "a banger" on how the Earth "snitches on itself before big quakes" [4 00:01:57–00:02:06]. We checked the paper against its own text, the episode against the paper, and both against the literature on electromagnetic precursors.

By Fact-Checked Science · Published October 22, 2026

OUR ANALYSIS marks our own reasoning and arithmetic, and the verdicts are our assessment. Everything else comes from the numbered sources; for the paper [1], p. gives a page of its PDF (1–13) and Table or Fig. one of its tables or figures.

A method sketch with illustrative numbers, presented as evidence of pre-quake signals

OUR ASSESSMENT

0

stations, regions, instruments, catalogues or dates named in the paper's methods and results [1 pp. 3–9]

M 2.5–5.8

the magnitude range of the paper's illustrative dataset, which the episode presents as being about "big quakes" [1 p. 5][4 00:02:04]

1,440

Our analysis: window-days from 48 earthquakes with 30-day pre-earthquake windows, against 365 days in the year the paper describes [1 p. 5][1 Table 2]

THE CLAIMS

OVERSTATED

The Earth "snitches on itself" before big quakes

The episode, on this paper and its companion [4 00:02:00–00:02:06]

The paper reports no observed signal. Its authors call the numbers "preliminary illustrative estimates" that "should not be interpreted as measurements" [1 pp. 8–9], its illustrative events are M 2.5–5.8 [1 p. 5], and the field's review of record found that the search for diagnostic precursors "has not yet produced a successful short-term prediction scheme" [7 p. 319]. See section 2 and section 5.

OVERSTATED

Atmospheric electricity signals are "much more well documented"

The episode [4 00:02:11–00:02:17]

Much studied, not established. A test over 1,279 earthquakes of M 6 or more found no significant change in the ionosphere before them [25], a two-year test across 265 GPS stations found no correlation with earthquakes [23], and two reanalyses find the best-known "40-minute" signal to be an artefact of how the baseline was drawn [24][26]. Some statistical studies report small effects [21][16]. See section 6.

MISREAD

"This team" has put together a working earthquake forecasting model

The episode [4 00:02:15–00:02:26]

Having introduced the two E3S papers as "one and two of a triple", the presenter credits "this team" with a working forecasting model [4 00:01:51–00:02:26]. Not this paper: it uses no ionospheric data, treats solar and geomagnetic activity as a disturbance to filter out [1 p. 4], builds no model, and concludes that "no single electromagnetic parameter can be considered a universal earthquake precursor" [1 p. 12]. The sentence describes the third paper of the episode's "triple", a model built on ionospheric electron content and solar activity [6], checked at tec-solar-earthquake-forecasting. See section 4.

TRUE

Geomagnetic anomalies "continue to receive attention"

The episode [4 00:02:06–00:02:12]

True as far as it goes: the paper is about geomagnetic and electromagnetic variations [1 pp. 3, 6]. The attention has also produced reanalyses finding that the best-known cases were not precursors [11][13][14], and the companion E3S paper, by an overlapping team, reports "no correlation" between its local geomagnetic anomalies and seismic energy [5]; see geomagnetic-anomalies-earthquakes. See section 5.

UNSUPPORTED

41 of 67 anomalies, 61.2%, fell inside pre-earthquake windows

The paper's results [1 p. 5][1 Table 1]

The authors say these numbers are "preliminary illustrative estimates" and "should not be interpreted as measurements obtained from a specific monitoring network" [1 pp. 8–9]. No station, region, catalogue or date is named [1 pp. 3–5], and the paper gives no control calculation for its windows [1 p. 11]. See section 2 and section 3.

UNCONFIRMED

A multi-parameter approach gives a more reliable basis for finding precursors

The paper's conclusions [1 p. 12]

A programme, not a result. The paper proposes combining electromagnetic, seismic, geomagnetic and geological data and says validation "using real monitoring data" is still required [1 p. 12]. The tests it would need, baselines, false-alarm rates and prospective trials, are the ones the ICEF asked for in 2011 [7 p. 361]. See section 7.

1 · THE PAPER

A proceedings paper from a school for young seismologists

The paper is 13 pages in E3S Web of Conferences volume 745, the proceedings of the School of Young Seismologists held in Tashkent, Uzbekistan, on August 24–28, 2026 [1][3]. Its five authors are all at the Institute of Seismology of the Academy of Sciences of Uzbekistan [1 p. 1]. It appeared online on October 8, 2026, under a CC BY 4.0 licence [1][3].

In the authors' words The aim, the state of the field as they see it, and their conclusion.

> *"This study examines the spatiotemporal characteristics of electromagnetic phenomena observed in the Earth's crust and evaluates their possible relationship with the development of earthquake precursors."*
>
> Mirsaidov et al. (2026), abstract [1 p. 1]

> *"Existing studies have produced both positive and inconclusive results, while the reproducibility and physical interpretation of some reported anomalies remain debated [1-5]."*
>
> Mirsaidov et al. (2026) [1 p. 2]

> *"The findings suggest that no single electromagnetic parameter can be considered a universal earthquake precursor."*
>
> Mirsaidov et al. (2026), conclusions [1 p. 12]

How the volume was reviewed

The volume's Statement of Peer review, signed on September 25, 2026, certifies that "All articles have been subjected to peer review administered by the proceedings editors", that "Reviews have been conducted by expert referees, who have been requested to provide unbiased and constructive comments aimed, whenever possible, at improving the work", and that the editors' decisions were "based only on the merits of the work and the relevance to the journal" [2]. It names Farkhodjon Boltaev as guest editor [2][3]. The paper's third author, Farkhodjon Boltayev, appears to be the guest editor under the volume's other spelling of the name: two other papers in the volume list "Farkhodjon Boltaev" of the same institute with this paper's co-authors, Khakimov and Mirsaidov in one, Yusupov, Khakimov and Jabborov in the other [1 p. 1][3]. The statement gives no reviewer numbers, dates or further details, and the paper carries no received or accepted dates [1][2].

Where it sits

The volume holds 50 papers in eight sections, nearly all from Uzbek institutions, with a few from Azerbaijan, Kazakhstan, Kyrgyzstan and Russia [3]. This one is in the section "Electromagnetic Precursors of Earthquakes", beside two papers on the Yangibozor observatory [3]. Its reference list has ten entries: a 2025 review of ULF anomalies that we did not read, case reports and reviews by proponents of electromagnetic precursors, and a 1993 review in *Reviews of Geophysics* [1 pp. 12–13][8]. The school ran on August 24–28; the papers appeared on October 8 [3].

The paper has no funding, acknowledgement or competing-interest statement [1]. Quotations from it keep its wording; where the PDF's text extraction lost a dash we restored it from the rendered page.

2 · WHAT IT CONTAINS

Every number is illustrative, by the authors' own account

The methods describe how recordings could be screened; the results give counts, percentages and correlations for "a representative dataset" [1 p. 5]. Then the authors say, three times, that the values are illustrative and not measurements [1 p. 7][1 pp. 8–9][1 p. 11].

The method, as described

STEP 1

Collect and clean

Observations described as "continuous geomagnetic and electromagnetic observations obtained from monitoring stations located within or near the investigated seismically active region", with earthquakes "obtained from instrumental seismic catalogues"; gaps, saturation and malfunctions removed; the X, Y and Z components combined into horizontal and total intensity [1 p. 3].

STEP 2

Flag anomalies

Filtering, Fourier spectra and a threshold rule, $|x_i - \mu| > k\sigma$, against a reference period; "Several threshold values may be tested" [1 pp. 3–4]. A flagged anomaly "was not automatically interpreted as an earthquake precursor" [1 p. 4].

STEP 3

Screen out space weather

Anomalies during strong geomagnetic disturbances "were treated cautiously because they could result from solar–terrestrial interactions rather than lithospheric processes", using "available global geomagnetic indices" [1 p. 4].

STEP 4

Weigh several criteria together

Deviation, persistence, quiet geomagnetic conditions, agreement between stations and timing relative to an earthquake; Pearson and Spearman correlations and time-lag analysis; comparisons with control periods [1 pp. 4–5].

The software is described in the conditional: "Python-based scientific tools and geographic information system software can be applied for time-series processing, statistical calculations, visualization, and spatial analysis" [1 p. 5].

The numbers the paper gives

The paper's illustrative numbers, which its authors say are not measurements

ITEM	VALUE IN THE PAPER	WHERE
Dataset "considered"	12 months of observations; 48 earthquakes of about M 2.5–5.8 at 15–180 km from the stations; 87% of records usable	[1 p. 5][1 Table 1]
Anomalies	67 "statistically significant electromagnetic anomalies"; 41 (61.2%) "within the selected pre-earthquake observation windows"; 26 (38.8%) with no subsequent earthquake	[1 p. 5][1 Table 1]
Lead times of the 41	14 (34.1%) at 1–3 days, 16 (39.0%) at 4–10 days, 11 at 11–30 days (26.9% in Table 2; Fig. 2 labels the bar 26.8%); durations from hours to about 8–12 days	[1 pp. 5–6][1 Table 2][1 Fig. 2]
Field components	Mean deviations of 3.8% (X), 4.6% (Y) and 5.2% (Z); maxima 11.2%, 13.1% and 14.0%; 58% of anomalies in two or more components	[1 p. 6][1 Table 3][1 Fig. 3]
Spectra and stations	63% with spectral changes, the strongest a 20–45% rise in spectral energy; 19 anomalies (46.3%) at two or more stations, 13 at one, 9 inconsistent	[1 pp. 6–7][1 Table 4]
Correlations	r = 0.46 between anomaly amplitude and magnitude; 0.52 and 0.58 for horizontal intensity and spectral energy against seismic activity; 0.35 for duration	[1 p. 7][1 Table 5]
Higher-confidence anomalies	About 18–22% of all anomalies met several criteria at once; 35–40% were low-confidence	[1 pp. 7–8]

Figures 2 and 3 chart the third and fourth rows. Figure 1 is a line of "Normalized electromagnetic intensity" over about 120 days with five earthquakes marked, without units, a station or dates [1 Fig. 1]. We redraw none of them, because they chart illustrative values.

The disclaimer, in full Three passages, from the results and the discussion.

> *"The statistical significance of these relationships should be reassessed using the complete observational dataset because the values presented here represent a preliminary statistical scenario rather than final empirical results."*
>
> Mirsaidov et al. (2026) [1 p. 7]

> *"It should be emphasized that the numerical values presented in this section are preliminary illustrative estimates intended to demonstrate the statistical structure of the analysis. They should not be interpreted as measurements obtained from a specific monitoring network until they are replaced with calculations based on the actual electromagnetic observations and earthquake catalogue."*
>
> Mirsaidov et al. (2026) [1 pp. 8–9]

> *"First, the statistical values used in the preliminary assessment are illustrative and require validation using actual long-term measurements. ... Finally, the presence of an electromagnetic anomaly before an earthquake does not demonstrate a causal relationship. A statistically associated signal may result from an external common driver or from coincidental temporal overlap."*
>
> Mirsaidov et al. (2026), limitations [1 p. 11]

What the paper concludes

"No single parameter demonstrated sufficient reliability to serve as an independent earthquake precursor" [1 p. 8]. The authors propose instead "to identify combinations of independent parameters that exhibit statistically reproducible spatial and temporal behavior" [1 p. 11], list electrokinetic, piezomagnetic and fluid–rock mechanisms as possible sources of signals [1 p. 11], and close with the need for "Further long-term observations and statistical validation using real monitoring data" [1 p. 12]. They also note that 26 of their 67 anomalies came with no earthquake, which "demonstrates that electromagnetic variability cannot be directly interpreted as evidence of a seismic precursor" [1 p. 5].

OUR ANALYSIS

What is missing, and what doesn't add up

No region, station, instrument, sampling rate, catalogue or date appears anywhere in the methods or results [1 pp. 3–9]. The dataset of Table 1, 12 months and 48 earthquakes, and the one in Figure 1, about four months and five earthquakes, are not the same thing, and neither is tied to a place or time [1 p. 5][1 Fig. 1].

Page 7 says that of the 41 anomalies "within the defined pre-earthquake windows", 12 "were not followed by a significant event" [1 p. 7], although the 41 were defined as the anomalies that preceded earthquakes and Table 2 assigns all 41 a lead time of 1–30 days [1 p. 5][1 Table 2]. The same page says the share of "spatially and temporally coherent" anomalies rose "from approximately 43% to 68%" after disturbed periods were excluded, figures that match nothing in its tables; the only coherence figure it tabulates is 46.3% at two or more stations [1 p. 7][1 Table 4]. Table 2 and Figure 2 also disagree on one rounding, 26.9% against 26.8% for the same 11 anomalies [1 Table 2][1 Fig. 2]. The Data availability statement offers "electromagnetic and geomagnetic observations, earthquake catalogue parameters, and processed results" on request [1 p. 12], which sits awkwardly beside the statement that the numbers are not measurements from a specific network [1 pp. 8–9].

Taken together, the paper reads as a template for an analysis rather than a report of one. That describes its content, not its authors' intent, and it is the authors who say the numbers are illustrative.

3 · THE WINDOW ARITHMETIC

With 48 earthquakes a year, 30-day windows cover the calendar several times over

Even taken at face value, the headline split, 61.2% of anomalies inside pre-earthquake windows, cannot be judged without knowing how much of the year the windows covered. The paper doesn't say [1 pp. 4–5].

EARTHQUAKES IN THE DATASET

48

in 12 months of observations, M 2.5–5.8 [1 p. 5]

LEAD TIMES COUNTED

1–30 days

the three bins of Table 2, the longest 11–30 days [1 Table 2]

WINDOW-DAYS OUR ANALYSIS

1,440

48 earthquakes × 30 days, against 365 days in the year: about four windows deep on average

OUR ANALYSIS

If every earthquake opens a 30-day window, 48 of them give 1,440 window-days in a 365-day year, so the windows overlap heavily and an ordinary day sits inside about four of them. With windows that wide, an anomaly drawn at random would land "before an earthquake" most of the time, and a share of 61.2% would carry little information. Shorter windows change the arithmetic, but even 10-day windows give 480 window-days, more than the year. Only the control comparison the paper describes, anomaly rates in earthquake-associated periods against control periods, could settle it, and the paper gives no numbers for it [1 p. 5].

The authors make the general point themselves: "Short observation periods may produce apparently significant relationships simply by chance, particularly when the number of earthquakes is small", and control intervals "are necessary to estimate the false-alarm rate" [1 p. 11]. The paper's percentages follow from its counts: 41 of 67 is 61.2%, and 14, 16 and 11 of 41 are 34.1%, 39.0% and 26.8%; Table 2 prints the last as 26.9%, which makes its column sum to 100, while Fig. 2 labels the same bar 26.8% [1 Table 1][1 Table 2][1 Fig. 2].

4 · WHAT THE EPISODE SAID

Five sentences, three papers

S0 News introduced this paper and its companion in the same volume as "one and two of a triple on pre-earthquake electromagnetic signals", the third being a journal paper on ionospheric data and solar activity [4 00:01:51–00:01:57][5][6]. The passage runs 36 seconds and mixes the three.

The episode, 00:01:51–00:02:27

> *"Up next is one and two of a triple on pre-earquake electromagnetic signals. E3S web conference series delivering a banger on the ways the Earth snitches on itself before big quakes through changes in various geoysical parameters. I'm glad to see geomagnetic anomalies continue to receive attention on top of the much more well doumented atmospheric electricity signals. This team thinks that by combining those various ionospheric and related data with solar signals, they have put together a working earthquake forecasting model. We need more of this."*
>
> The presenter, S0 News, October 22, 2026 [4 00:01:51–00:02:27]

"Pre-earquake", "geoysical" and "doumented" are the automatic transcript's errors for pre-earthquake, geophysical and documented.

Which paper each sentence fits

THE EPISODE	FITS	WHY
"a banger on the ways the Earth snitches on itself before big quakes through changes in various geophysical parameters" [4 00:01:57–00:02:08]	This paper, and its companion	"Various geophysical parameters" matches this paper's "multiparametric" framing [1 pp. 1, 11–12]. Its largest illustrative event is M 5.8 and it names no earthquake [1 p. 5]. The companion paper's data are repeated magnetic surveys from 1974–2025 on the Tashkent geodynamic polygon, and it reports "no correlation between released seismic energy and local geomagnetic anomalous variations" [5].
"I'm glad to see geomagnetic anomalies continue to receive attention" [4 00:02:06–00:02:12]	Both E3S papers	This paper analyses the X, Y and Z components of the field [1 pp. 3, 6]; the companion is about "local anomalous variations of the geomagnetic field" [5].
"on top of the much more well documented atmospheric electricity signals" [4 00:02:11–00:02:17]	None of the three; the presenter's own claim about the field	This paper has no atmospheric or ionospheric data [1 pp. 3–9]. The third paper uses ionospheric electron content [6]. Section 6 checks the claim against the literature.
"This team thinks that by combining those various ionospheric and related data with solar signals, they have put together a working earthquake forecasting model" [4 00:02:15–00:02:26]	The third paper, by two authors in Moscow, checked at tec-solar-earthquake-forecasting	Its title is "Short-term earthquake forecasting based on global TEC data, solar activity, and machine learning" [6]. This paper uses no ionospheric data, treats solar and geomagnetic activity as a disturbance to exclude [1 pp. 4, 7], builds no model, and says real data are still required [1 p. 12].

The companion paper is checked at geomagnetic-anomalies-earthquakes. Three of its seven authors, Yusupov, Khakimov and Mirsaidov, are also authors of this paper [1 p. 1][5].

OUR ANALYSIS

Three phrases carry the weight. "Big quakes": the paper's illustrative events top out at M 5.8, and its text names no earthquake at all [1 p. 5]. "This team": having introduced the two E3S papers, the presenter credits their authors with the model, which belongs to the third paper [4 00:01:51–00:02:26][6]. "Working": this paper forecasts nothing, and its conclusion is that no single parameter is reliable and real data are still needed [1 pp. 8, 12]. The "banger" is a 13-page proceedings paper whose numbers, by its authors' account, are placeholders [1 pp. 8–9]. The episode's wish for "more of this" is an opinion we don't rate.

5 · ELECTROMAGNETIC PRECURSORS

The best-known cases didn't survive reanalysis

After the 2009 L'Aquila earthquake, an international commission reviewed the state of earthquake prediction for Italy's civil-protection department, including electromagnetic signals [7 pp. 319, 335]. Its report, from 2011, remains the field's reference point, and this paper's own conclusion agrees with it [1 p. 12][7 p. 319].

What proponents report

Magnetometers 7 km from the 1989 Loma Prieta epicentre recorded "an increase to an exceptionally high level of activity in the range 0.01–0.5 Hz starting approximately three hours before the earthquake" [9]. At Guam in 1993, the ratio of vertical to horizontal low-frequency noise showed "a broad maximum only about one month before the earthquake", which the authors called "very likely to be magnetic precursors" [10]. A 2007 review by the same group calls such emissions "one of the most promising candidates for short-term earthquake prediction" [17]. A statistical study of ten years at Kakioka, Japan, reports that anomalies appeared more often 6–15 days before sizeable earthquakes, with a "probability gain" of "around 1.6 against a Poisson model" [16]. In Greece, the VAN group has claimed since the 1980s that "seismic electric signals" precede earthquakes [29][7 p. 335].

What the tests found

For Loma Prieta, a 2009 reanalysis found that the Stanford signal "was not local but rather widespread throughout the western United States and, therefore, expected to be due to a coincidental geomagnetic solar-terrestrial disturbance field" [11]; a second raised the instrument itself [12][7 p. 335]. For Guam, a check against Kakioka and the Kp index found "an absence of identifiable localized anomalous signals occurring prior to the earthquake": the changes "are part of normal global magnetic activity; they are unrelated to the earthquake" [13]. Claimed fractal signatures turned out to track "the geomagnetic activity both before and after the earthquake occurs" [15]. A 2015 review concluded that "a causal relationship between preearthquake magnetic changes and impending earthquakes has never been demonstrated" and saw no significant evidence in the newer studies, the Kakioka one included [14]. Of the VAN method, the commission wrote that "subsequent testing has failed to validate the optimistic SES prediction capability claimed by the authors" [7 pp. 335–336].

In the commission's words The ICEF report of 2011 [7]; the bracketed numbers inside the quotations are its own references.

> *"The search for diagnostic precursors has not yet produced a successful short-term prediction scheme."*
>
> Jordan et al. (2011), abstract [7 p. 319]

> *"The most convincing EM precursors have been ULF magnetic anomalies recorded before the 1989 M_W 7.1 Loma Prieta earthquake [144] and the 1993 M_W 7.7 Guam earthquake [145]. However, recent reanalysis has indicated that these particular anomalies were likely to have been caused by solar-terrestrial interaction [146] or sensor-system malfunction [147]. Observations from a station of the University of L'Aquila, only 6 km from the 6 April 2009 epicenter, did not indicate any type of ULF precursor [148]."*
>
> Jordan et al. (2011) [7 p. 335]

> *"In well-monitored regions, retrospective analyses of data collected prior to large earthquakes, including the L'Aquila mainshock of 6 April 2009, show no convincing evidence of diagnostic precursors. In many cases of purported precursory behavior, the reported observational data are contradictory and unsuitable for a rigorous statistical evaluation."*
>
> Jordan et al. (2011) [7 p. 361]

OUR ANALYSIS

The debate is old. A 1993 review in *Reviews of Geophysics* opened by saying that after two decades of monitoring "the scientific community is no closer to understanding why precursors are observed only in some cases" [8], and a 1997 *Science* perspective was titled "Earthquakes cannot be predicted" [30]. The commission also noted that strainmeters near the 1989 Loma Prieta, 1992 Landers and 2004 Parkfield earthquakes placed "stringent constraints on nucleation precursors" [7 p. 333].

This paper cites proponents' case reports and reviews, the 1993 review and a 2025 review we did not read, but its reference list includes none of the reanalyses [1 pp. 12–13][8]. Its text nonetheless concedes that reproducibility "remain[s] debated" [1 p. 2], and its conclusion, that no single electromagnetic parameter is a universal precursor, is the same as the critical literature's [1 p. 12][7 p. 319][14]. The gap is between the paper and the episode, not between the paper and the field.

6 · ATMOSPHERIC AND IONOSPHERIC SIGNALS

"Well documented"? Much studied, not established

The presenter contrasts geomagnetic anomalies with "much more well documented atmospheric electricity signals" [4 00:02:11–00:02:17]. The literature has models, many case reports and a few statistical studies on each side. What it lacks is a replicated signal with a known false-alarm rate.

The hypothesis and the reports in its favour

Models of "lithosphere–atmosphere–ionosphere coupling" propose that stressed rock ionizes the air or injects charge, altering atmospheric electricity and the ionosphere above a fault before it breaks [18][19][20]. A study of about 9,000 earthquakes of M 4.8 or more with the DEMETER satellite found, at night, "a statistically significant decrease by 4 – 6 dB of the measured wave intensity shortly (0–4 hours) before an intense surface (depth less than or equal to 40 km) earthquake" [21]. A study of 736 earthquakes of M 6 or more in 2002–2010 reports that "the occurrence rate of anomaly within several days before the earthquakes is overall larger than that during the background days, especially for the large-magnitude and low-depth earthquakes" [22]. On the ground, the Kakioka study reports its modest probability gain for magnetic signals [16].

The tests

Two years of data from 265 GPS stations in southern California, spanning the 2003 San Simeon and 2004 Parkfield earthquakes, showed "anomalous TEC signals but no statistically significant correlation, in time or in space, between these TEC anomalies and the occurrence of earthquakes" [23]; the authors add that this "does not disprove the possibility of precursory phenomena", only that any signal is too weak for their methods to detect [23]. A global test of 1,279 earthquakes of M 6 or more in 2000–2014 "has not found any statistically significant changes prior to earthquakes when considering all 1279 earthquakes together", and "found no evidence that would suggest that monitoring changes in GIM-TEC might be useful for predicting earthquakes" [25]. The reported rise in electron content 40 minutes before the 2011 Tōhoku earthquake, the most discussed recent precursor claim, "is an artifact induced by the definition of the reference line" [24], a finding a 2021 paper repeated in its title [26]. The commission's summary of the satellite evidence: averaged over many events, the pre-seismic signal "is small (−8 dB) compared to the noise level, and the conditional statistics of retrospective precursor detection are too weak to provide any probability gain in earthquake forecasting" [7 p. 335].

Two recent critical reviews

A 2021 review of ground observations concludes that "The proposed models of a direct propagation of an electrostatic disturbance from ground to the upper atmosphere and then in the ionosphere have been ruled out by theoretical calculations and simulations", leaving indirect routes such as atmospheric waves [27]. Its companion on satellite observations states that "Nowadays, earthquake forecasting is far from being reached and the debated about earthquake precursors is still open" [28].

OUR ANALYSIS

"Well documented" would mean a signal that different groups find with the same protocol, with false-alarm rates known and some forecasting skill shown. The atmospheric and ionospheric literature has many reports and a few statistical signals of a few decibels, contested on their baselines and selection, and the two largest independent tests found nothing usable [23][25]. "Much studied" is fair; "much more well documented" is not, so we rate the sentence Overstated. Whether the third paper of the episode's triple changes that is the question for tec-solar-earthquake-forecasting [6].

7 · BOTTOM LINE

A proposal for an analysis, not evidence that the Earth gives warning

OUR ANALYSIS

Read on its own terms, the paper is a plan: here is how one would screen electromagnetic records for signals before earthquakes, and here is what the statistics would look like. Its authors say so, and their conclusion is modest: no single parameter is a precursor, and real data are still needed [1 pp. 8–9, 12]. The episode turned that plan into "a banger" about the Earth snitching on itself before big quakes, and attached to it a forecasting model that belongs to a different paper [4 00:01:57–00:02:26][6]. On the wider claim, the independent tests of magnetic and ionospheric precursors have, so far, found nothing that forecasts [7 p. 319][14][25].

Limits of this check

Nothing to recompute

The paper presents no observations, so there was nothing to re-run beyond its own percentages and our window arithmetic. We did not ask the corresponding author for the data its Data availability statement offers [1 p. 12].

Abstracts for most of the literature

We read the paper, the Statement of Peer review and the ICEF report in full, and of the two Frontiers reviews only the parts we quote, the conclusions of one and the introduction of the other; for the other papers we read abstracts, or only titles and Crossref records where no abstract was available [12][18][19][20][29].

The review process

The Statement of Peer review is the only record of how the volume was reviewed [2]. We don't know who reviewed this paper or what they asked for.

The companion papers

What the other two papers of the episode's "triple" show is checked on their own pages, not here [5][6].

What would change this verdict

01 The authors publish the actual observations: stations, instruments, catalogue and dates, with anomaly rates in control periods and a false-alarm rate, so that the 61.2% and the correlations become measurements rather than placeholders.

02 A prospective test, with the rules fixed in advance, in which electromagnetic or ionospheric signals forecast earthquakes with a probability gain that an independent group reproduces.

03 For the "well documented" claim, a large-catalogue test of atmospheric or ionospheric precursors, on the scale of the 1,279-earthquake study, that finds a significant signal and survives the baseline critiques.

Sources

Bracketed numbers refer to this list. For the paper [1], p. and pp. are the page numbers of its PDF (1–13) and Table and Fig. its tables and figures. For the ICEF report [7], p. is the journal's page number (315–391). For the episode [4], times are positions in the video. Links checked October 22, 2026.

1 Mirsaidov, M., Yusupov, V., Boltayev, F., Khakimov, E., and Jabborov, U. (2026). Electromagnetic phenomena in the Earth's crust and the spatiotemporal manifestation characteristics of the complex of earthquake precursors. *E3S Web of Conferences* 745, 07003 (School of Young Seismologists, YSS 2026). Published online October 8, 2026. Conference proceedings, 13 pages. Open access, CC BY 4.0.

2 Boltaev, F. (2026). Statement of Peer review, E3S Web of Conferences 745: YSS 2026 – School of Young Seismologists, Tashkent, Uzbekistan, 24–28 August 2026. Signed September 25, 2026. PDF, 1 page.

3 E3S Web of Conferences (2026). Volume 745: School of Young Seismologists (YSS 2026), Tashkent, Uzbekistan, August 24–28, 2026, F. Boltaev (Ed.). Table of contents, 50 articles, published online October 8, 2026. Read October 22, 2026.

4 SpaceWeatherNews (S0) (October 22, 2026). Magnetic Pole Shift & The Largest Extinction Ever | S0 News Oct.22.2026. YouTube video. Quoted from the automatically generated transcript; times are positions in the video.

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METHOD

How this was checked

On October 22, 2026, we checked every statement, number, quotation and citation on this page against its source: the paper's full text, 13 pages, with its three figures and five tables read from pages rendered from the PDF; the proceedings' Statement of Peer review and table of contents; the episode's transcript; the companion E3S paper's abstract and first page; the ICEF report in full; the parts of the two Frontiers reviews we quote, the conclusions of one and the introduction of the other; and the Crossref and OpenAlex records and, where they carry them, the abstracts of the other papers listed, about 80 items in all. Every number quoted from the paper matched its text and tables, and its Table 1 was re-read from the rendered page after a text extraction had misaligned its rows. A fresh reviewer then read the built page against the sources. That check corrected a rounding the paper itself prints two ways (26.9% in its Table 2, 26.8% in its Figure 2), the note on which rows its figures chart, how the page describes the guest editor among the authors and the paper's reference list, three transcript timings, two quotations, Dautermann et al.'s own caveat and how this page describes its own reading of the literature; it also led us to read Le et al.'s abstract through OpenAlex and to source the Moscow affiliation of the third paper's authors.

The verdicts and the items tagged "Our analysis" are our own assessment, built on the cited sources: the window arithmetic, the inconsistencies we point out between the paper's pages, which paper each sentence of the episode fits, and our summary of what the literature does and does not show. We have tried to keep three things apart throughout: what the paper presents as illustrative, what its authors conclude, and what the episode said about it.

Nothing in the paper could be recomputed, because it presents no observations; we re-derived only the arithmetic of its 30-day windows and checked its percentages against its counts. We did not request the data its Data availability statement offers. For most of the literature we read abstracts, not full texts; Wiley's page for Le et al. sat behind a bot check, so its abstract was read through OpenAlex; five papers are cited by their titles and Crossref records only, and the review the paper cites first, Winata et al. (2026), was not read.

This page was researched and written with Claude, an AI assistant made by Anthropic, and then re-checked against its sources in a separate verification pass.

The verdicts on this page

OVERSTATED	Has some basis but claims much more than the evidence supports.
MISREAD	Cites a real source but gets wrong what it says.
UNSUPPORTED	No evidence we could find backs it up, though it hasn't been strictly disproven.
UNCONFIRMED	Rests on a preliminary result that hasn't been confirmed.
TRUE	The evidence supports the claim.

All ten verdicts, and how we check

CORRECTIONS

Corrections and changes

If we get something wrong, we fix it and record the change below with the date. If a correction changes a verdict, the log says what the old verdict was.

Change log

Oct 22, 2026 Published on factchecked.science after a full check against the sources. Built from our verification of the paper and of the episode's passage about it, with the companion pages for the episode's other two earthquake papers; the three claims the episode makes about all three papers carry the same labels on each page.

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