

About the “predecessors” of the 2023 February earthquakes in Eastern Anatolia

Supplementary material S1

**Macroseismic Data Points (EM-98 scale) for the main investigated earthquakes (this study).
HD = Heavy Damage; D = Damage; NF = Not Felt**

Time	Place name	Int. (EMS-98)
1114.11.13	Mamistra (Eski Misis)	8-9
1114.11.29	Antioch (Antakya)	7-8
	Aleppo (Alep)	6-7
	Athareb	8-10
	Azaz	7-8
	Balis (ruins)	7-8
	Damascus	NF
	Edessa (Şanlıurfa)	7-8
	Harran	7-8
	Hisn-Mansur (Adıyaman)	8-10
	Kaysun (Çakırhuyuk)	8-10
	Latakia	6-7
	Maras (Karhamanmaras)	10-11
	Monastery of Hiesuvank (Jesueen Monastery)	HD
	Raban	8-10
	Samosata (Samsat)	8-10
	Shoughr (Monastery of Basilians)	HD
	Sis (Kozan)	8-9
	Traleth (Tell Khalid)	8-10
	Zardana	8-10
1269.04.17	Amanus Monasteries	HD
	Hajar-Shaghlán or Hagar Suglan (Çalan)	HD
	Amus (Çardak)	HD
	Haru'ta (Haruniye)	HD
	Convent of Balut (Peri Kalesi ?)	HD
	Sarvandikar	HD
	Nicosia (Cyprus)	HD
1514 (≤ 03.01)	Adana	HD
	Tarsus	HD
	Malatya	HD
1544.01 ?	Elbistan	8-10
	Zeytun (Suleymanli)	8-10
	Djedjin aqueduct, south of Aintab (Gaziantep)	D

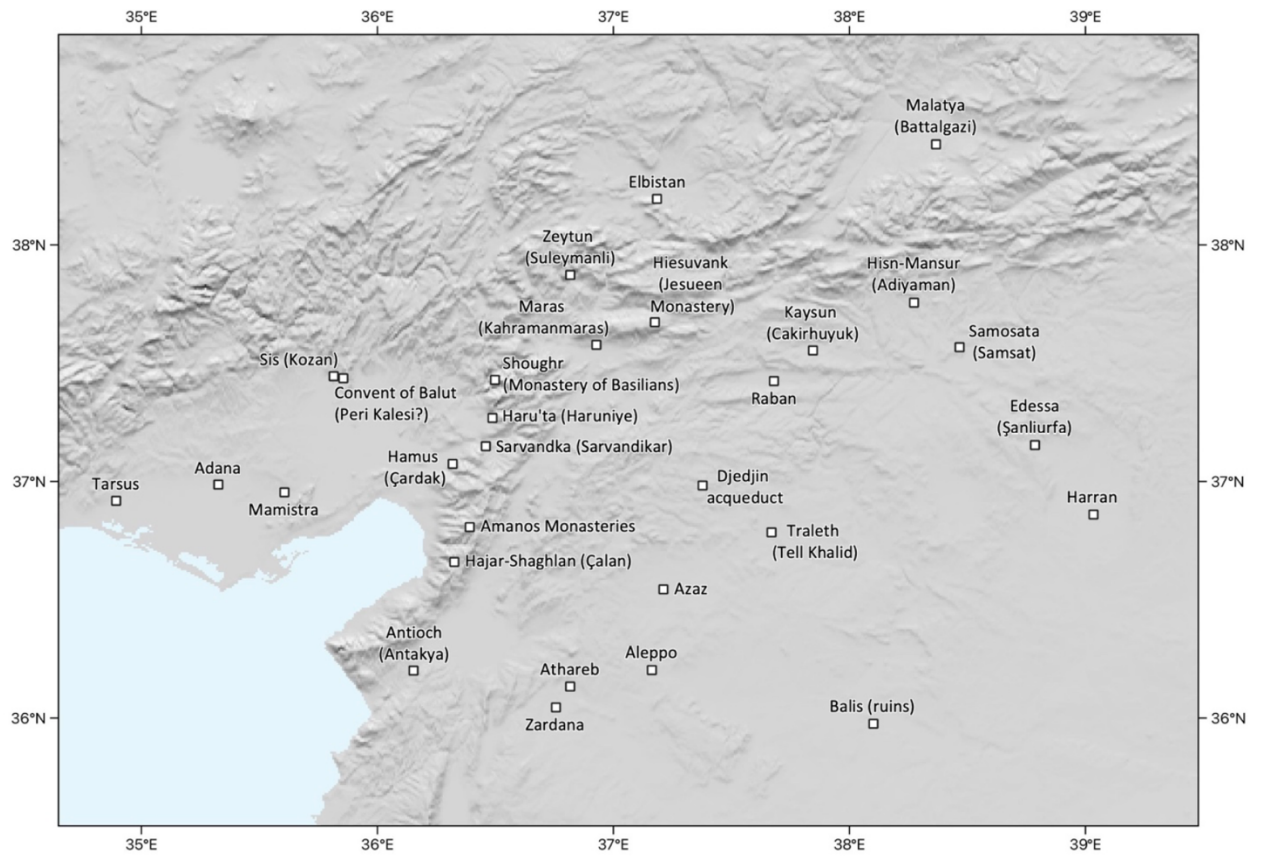


Figure S1. Localities mentioned in the above table.

Supplementary material S2: main historical sources

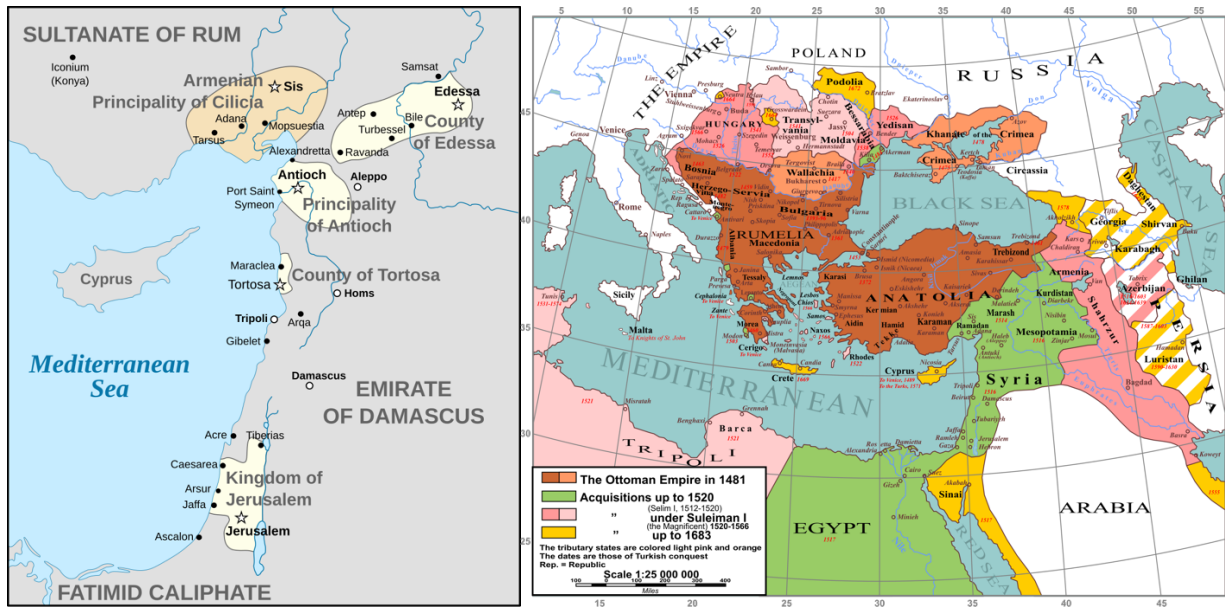


Figure S2. The figures light up the power shifts in the Middle East, described at section 3.1, which have great influence in the production and conservation of the historical sources. Left: 1102; right; after 1481 (Figures sources: https://en.m.wikipedia.org/wiki/File:Map_Crusader_states_1102-en.svg https://upload.wikimedia.org/wikipedia/commons/thumb/1/19/Ottoman_empire.svg/2000px-Ottoman_empire.svg.png).

A) 1114 earthquake sequence

Late 11th century – 1st half of 12th century

Fulcher of Chartres (1059? - after 1128).

Lived in/near Edessa 1098-1099; in/near Jerusalem 1100- to death (≥ 1128 ?).

Wrote: *Historia Hyerosolimitana* (A History of the Expedition to Jerusalem, 1095-1128).

The Earthquake That Was Felt in Many Places.

In the year **1114** an infinite multitude of locusts swarmed out of a part of Arabia and flew into the land of Jerusalem. In a few days, during the months of April and May, they severely damaged our crops. Later, on the **Feast of St. Lawrence** [10 Aug.], there was an earthquake. Still later, on the **Ides of November** [13 Nov.], an earthquake at **Mamistra** destroyed a part of the city. Likewise a greater quake, the worst ever heard of, shook the **area of Antioch** and destroyed a great many towns in whole or in part, including houses as well as walls. Some of the common people perished of suffocation in the ruins. They say that this quake destroyed the city of **Marash**, which I think is about sixty miles north of Antioch. The houses and walls were completely demolished and the people living there, alas! were all killed. Another town called **Trialet**, near the Euphrates River, was also destroyed.

Late 11th century – 1st half of 12th century

Walter the Chancellor (11th c. – 12th c.).

Lived in/near Antioch at least 1114-1128.

Wrote: *Bella Antiochena* (The wars of Antiochia, 1114-1122).

The great earthquake in Antioch and its effects on the inhabitants.

[...] in the **1115th** year after the Incarnation of Our Lord Jesus Christ, **on the eve of the Feast of the St Andrew the Apostle** [29 Nov.] and in the silence of an untimely night [...] there was a massive and terrible earthquake in **Antioch and the surrounding area**. Men were agitated by this unexpected phenomenon, feeling, seeing and hearing the walls collapsing and other things leaning over acutely. Some thought to flee, some fell from the walls and some others hurled themselves headlong from high houses. Still others were torn limb from limb in their sleep by the ruins; and since part of the wall remained intact, none could escape. Some were struck by terror, and abandoning their homes and possessions, and leaving everything, they rushed through the open spaces and neighbouring towns like madmen. Stretching out their hands to heaven on account of diverse fears and needs, they did not cease to cry out in various tongues and piteous lamentation [...].

When morning came, since so vast a mass of wretchedly slaughtered men and beasts lay under the ruins, all the Latins, Greeks, Syrians, Armenians, foreigners and pilgrims unanimously declared that this had happened because of their atrocious sins. And they did not delay: in obedience to saving counsel, they fled to the very church of the blessed Apostle Peter, seeking his advocacy in perpetual protection [...]. When the Divine Office had been celebrated and a sermon preached, and orders enjoined as to how they should behave and what they should do, they thought that nothing more serious had happened [than the events of the night], but were suddenly greeted with terrifying news. For certain men, who by God's will had escaped the destruction of **Miragium** [*Marash*], claimed that their city, together with its seigneur and bishop, the clergy and all the people, had been razed to its foundations. Not long after, report came from the city of **Mamistra**, that the citizenry and the greater part of the city had previously been destroyed **on the feast of St Bricius** [13 Nov.], which only increased their fears: what about Cyprus? What about the rest of Antiochia? Other things equally tormented the people. Fear and terror made that wretched people groan, for in short they did not know where to stay or whither to flee. Each day and hour the earthquake oppressed them dreadfully. As God permitted them to know neither when to flee nor whither, they thought it easier to live with the beasts in the open, than inside in constant fear of the buildings' collapse. And thus in the suburbs, on the plains, in gardens, thickets and deserts as well as other places, they dwelt in tents rather than houses. More of them, having left their cities and moving their huts from one place to another, remained on the plains. [...] Corrected by the fruit of their penance, and adorned with good works, they were freed from the danger of the **earthquake of five months and more**, not by their own merits, but by the grace of God [...] Having visited the **forts and other places**, the prince [*Roger*] obtained what was needed as quickly as possible, then, noting the things which would be useful for the defence of his land and were closer to the enemy, he did not rush to do everything, but made whatever repairs and works were necessary for immediate safety. And thus, having dismissed his army, and returned to Antioch with a few of his men, he summoned the mayor of Antioch, Radulf of Acre, a man of sound judgement and discussed with him first what was to be done about repairs to and the condition of the whole city [...].

Late 11th century – 1st half 12th century

Matthew of Edessa (? – 1144?).

Born in Edessa, Armenian monk, abbot of Karmir Vank (Kaysun, E of Marash).

Wrote: *Chronicle* (952-1131/2).

In that same year [563 *Armenian calendar*: 21 February 1114 to 20 February 1115] [...] On the 12th of the month of Mareri [29 Nov. 1114], a Sunday, the day of the Finding of the Cross, [...] While we were deep in sleep, suddenly an awful noise was heard, echoed by the entire universe. An earthquake was felt; the plains and the mountains were cast up with a roar; the hardest rocks shattered and the hills broke open. The mountains and hills were shaken violently, echoed and, like living creatures, grew agitated and emitted a blast of air. To our ears this was like the sound made by a multitude of men [...] Like a raging sea, creatures rushed from all sides, overcome with terror which the wrath of the Lord had inspired in them [...] The earth was like a fugitive, at bay and trembling, in consternation like a condemned man who cries out in lamentations and tearful groans. Its sound was heard again after the earthquake for about an hour, on the same night. Faced with this disaster, everyone thought that he had reached the end of his life [...] That night saw the **ruin of many towns and provinces**, but this was **only in the part occupied by the Franks**; in the other parts and in those of the infidels nothing unfortunate occurred. **Samosata, Hisn-Mansur, Kaysūm and Raban** were ravaged by this plague. At **Marash** it was terrible and 40.000 persons lost their lives: it was a very populous city, and no one escaped. The same happened in the town of **Sis** where an innumerable multitude of the inhabitants perished; many villages and monasteries were destroyed and a multitude of men and women wiped out. On the famous **Black Mountain**, the holy monks and the Armenian doctors of the **Basilian monastery** were assembled for the blessing of the church. While they were celebrating the Divine Office, the building fell on them, and thirty monks as well as two doctors were swallowed up in the ruins: their bodies are still buried there. A similar incident occurred near Marash: the **great monastery of the Jesuians** crushed all the religious under its ruins. When the shocks ceased, snow began to fall, and the country was buried under a thick blanket. The illustrious Armenian doctor Gregory, surnamed **Mashgevor**, died in the **same place**.

12th century

Ibn al-Jauzi [Abd al-Raḥmān b. ‘Alī b. Muḥammad Abu ‘l-Farash b. al-Jawzī] (Baghdad, 1113/26 – 1200/01).

Judge, preacher, teacher.

Wrote: *al-Muntazam*; *Mirat al-Zaman*.

[*al-Muntazam*] Al-Masaaf said: I saw in the handwriting of our Shaykh Abu Bakr ibn ‘Abd al-Baqi al-Bazaz the following: on Thursday 17th Rajab 508 [17 Dec. 1114] there arrived in Baghdad a document which described how, in the night of Sunday 18th Jumada I akhira of this year [19 Nov. 1114, a Thursday] an earthquake had occurred in which thirteen towers in the walls of **Ruha [Edessa]** fell down. Some of the walls of **Harran** fell down and many houses came down on top of people, who perished. **Sumaisat** sank and its position was swallowed up. About 100 houses crashed down in **Balis**, where half the citadel was thrown down and half stayed secure.

12th century

Michael the Syrian (Melitene/Malatya, 1126-1199).

Monk in Bar Sauma monastery, Patriarch of Jacobite Church from 1166 to death

Wrote: *World Chronicle* (from world creation to 12th c.).

In the year 1426, on 29th teʿsrin II [29 November 1114], at the dawn of Sunday, [...] there was a very violent earthquake in which the town of **Mar'aʿs** was completely swallowed up. It was overturned, that is to say that its foundations were tossed up high and the buildings thrown down. It became the tomb of its inhabitants and a source of terror to all who saw it. In this earthquake the church of Mar John of **Kayʿsum** collapsed, along with that of the Forty Martyrs; they were rebuilt under the care of Mar Dionysius, bishop of Kayʿsum. **Samosata** also collapsed in this earthquake, and in that town Constantine, lord of Gargar, was suffocated along with many other people. Large parts of **all these towns and of villages** collapsed.

13th century

Kemal al-Din [Kamāl al-Dīn Ibn al-ʿAdīm] (Aleppo, 1191/2 - Cairo 1262).

Teacher, judge and vizir in Aleppo. Left for Egypt after Mongol conquest of Aleppo.

Wrote: *Zudbat al-ḥalab fī taʾrīkh Ḥalab* (The cream of Aleppo history).

During the night of Sunday 28th of latter Jumada of 508 [27 November 1114], a terrible earthquake laid waste the **districts of Aleppo, Harran, Antioch, Mar'ash and the Syrian borders**. The tower of the north gate of **Antioch** and a few houses in the high quarter [Akabah] collapsed and there were numerous victims. As the fort of **Aʿzaz** was no more than a ruin, the governor went to seek asylum at Aleppo, but when he arrived he was put to death by order of Lulu, with whom he was at loggerheads; Lulu charged another governor to re-populate and repair the fort. The damage was not very serious in **Aleppo**, but other places, like **el-Athareb** and **Zerdanah**, were almost completely destroyed.

13th century

Smbat Sparapet (1208 – 1276) a.k.a. Smbat/Sempad the Constable.

Younger brother of Armenian king Heʿtum I, commander-in-chief of Armenian army, diplomat.

Wrote: *Chronicle* (951/2-1274).

In the year 563 A.E. [1114] [...] the ground trembled from God's wrath, on the night of the feast of the Discovery of the Cross in the month of Marer. There was a booming sound that issued from the depths of the earth. The sea also was agitated and the sea and land together presaged God's anger. Mountains and hills heaved and in places the earth was split asunder. In numerous cities the Christians were destroyed. **Antioch, Mamistra, Hisn Masnsur, Aplast'ayn, R'apan, Samosata, and Marash** collapsed and 40,000 people perished. At the **Basilians** [monastery] on **Black Mountain** yardapets and clerics had gathered in the church for blessing, and the church collapsed on them, killing 30 monks and two yardapets. Similarly among the **Jesuans** the entire rank of clerics was killed, while the great vardapet (*) Mashkewor died at **Vardku** (**).

(*) Vardapet= in the **Armenian** Apostolic Church title reserved to a highly educated hieromonk. It has been variously translated as 'doctor', 'doctor-monk'.

(**) unidentified.

B) 1269 earthquake

13th century

Smbat Sparapet (1208 – 1276) a.k.a. Smbat/Sempad the Constable.
Younger brother of Armenian king He'tum I, commander-in-chief of Armenian army, diplomat.
Wrote: *Chronicle* (951/2-1274).

In the year 718 [*Armenian Era, 13 Jan. 1269 - 12 Jan. 1270*] a severe earthquake occurred in the **land of Cilicia** and **many places** were reduced into ruins. This was even more devastating **around Black Mountain** [*Mt. Amanus*]; and the impregnable fortress of **Sarvandaw/Sarvandik'ar** became a ruin with its inhabitants dying; in the blessed congregation of **Arka'kalin/Ark'akaghin** and priests and clerics died under the collapsed houses. On that stretch of the mountain flank, many buildings and the fortress of **Deznk'ar/Delnk'ar** and many other **places** were completely demolished.

13th century

Grigorios Barebroyo (1225/26-1286) a.k.a. Gr. Abu'l-Faraj, Barhebraeus, Abulfaragius
Born near Melitene/Malatya (maybe in Ebra village, hence the surname). Orthodox bishop.
Wrote: *Chronicon Syriacum* (from the creation to 13th c.).

In the year fifteen hundred and eighty of the Greeks [*1269*], on the seventeenth day of the month Nisan [*April 17*], at the first hour of the night of the fourth day [*of the week*], a severe earthquake took place in **Cilicia**, and it destroyed the rock fortress of **Serwand** [*Sarbanda*], and that of **Amaos** [*Amus*], and that of **Haru'ta** [*Haruniye*], and the great **Monastery of the Armenians, that is of Balut the king** [*Ark'akalin*]. And about eight thousand souls perished in this catastrophe.

13th century

Het'um [the Historian] (13th c.).
Possibly Armenian nobleman Hayton/Het'um of Corycus (c. 1240 – c. 1310/20).
Wrote: *Chronicle* (1-1294).

In 1269, owing to an earthquake, **Sarvantikar(n)**, **Hamus(n)** and **Dekhnar(n)** collapsed and other monasteries, fortresses and villages **in Sew Lern** [the **Black Mountains**] also collapsed.

13th century

Anonymous Armenian **author** (13th c.).
No biographical data.
Wrote: *Annals of King Het'um* (1076-1296).

In Armenian Year 718 [*1269/1270*] **Sarvandikar(n)** and **Hamus(n)** collapsed because of an earthquake.

13th-14th century

Anonymous author (Cyprus or W Europe, 13th-14th century).

No biographical data.

Wrote: *Continuation of chronicle of William of Tyre/L'estoire de Eracles/Gestes des Chiprois*).

In the year 1269 there was a great earthquake in **Armenia**, which destroyed five castles, three abbeys and twelve villages.

14th-15th century

Al-Maqrizi (Cairo? - 1441).

Egyptian historian.

Wrote: *Kitab al-suluk li-ma'rifat duwal al-muluk*.

[*Year of the Hegira 667, 1268-1269*] News was received of an earthquake occurred in the **province of Sis**, which completely destroyed the fortress of **Sarfandkar**, as well as **several other places**; it ruined a large number of cantons, and caused the deaths of so many men that the rivers flowed with waves of blood."

14th-15th century

Badr al-Din al-Ayni (Aintab, 1360? - 1453?).

Turkish historian.

Wrote: *'Iqd al-juman fi tarikh al-zaman*.

[*Year of the Hegira 667, 1268-1269*] News came that there had been an earthquake in the **region of Sis**, that its citadels such as **Sarvandirkar** and **Hajar Shaglan** [*Hagar Suglan*] had been destroyed, and many people had been killed.