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THE SIGNAL OF NOAH'S FLOOD
A Theological and Chronological Evaluation of *Fāra al-Tannūr* as a Volcanic Eruption

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Abstract

This article evaluates a volcanic reading of the Quranic phrase "fāra al-tannūr" (Q 11:40; 23:27). Starting from the widely accepted sense of the root f-w-r as "overflowing", it asks whether, for the early-seventh-century Ḥijāzī community, al-tannūr could denote a volcanic feature; where it might be located; whether its eruption can be dated; and how testable these answers are in light of geological and archaeological evidence. The study applies four criteria—internal evidence, comparative philology, narrative function, and external corroboration—to evaluate the volcanic-eruption scenario, revealing its comparability with the ancient Hell-tannūr theological cluster that pairs fāra al-tannūr with Hell tafūr (Q 67:7). Through a systematic survey of a global volcanic database, the article isolates the Tendürek volcano (located in eastern Turkey) as a compelling candidate on philological and onomastic grounds. Published volcanological work on Tendürek is used to establish a temporal window for a major eruptive activity, which this study suggests as a noteworthy temporal correlation with an intersecting demographic bottleneck visible in the archaeological record. As a case study in Quranic hermeneutics, the article offers a testable framework that links philological grounding, a concrete locus, and a provisional temporal window to a plausible, intersecting demographic event, indicating how further

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research could refine or falsify the proposal.

[Artikel ini mengevaluasi pembacaan vulkanologis terhadap frasa Al-Qur'an fāra al-tannūr (Q.S. 11:40; 23:27). Berangkat dari makna akar kata f-w-r yang secara luas diterima sebagai "meluap", artikel ini mempertanyakan apakah, bagi komunitas Ḥijāz pada awal abad ketujuh, istilah al-tannūr dapat merujuk pada suatu fitur vulkanik; di mana lokasinya mungkin berada; apakah peristiwa erupsinya dapat ditentukan secara kronologis; serta sejauh mana jawaban atas pertanyaan-pertanyaan tersebut dapat diuji melalui bukti geologis dan arkeologis. Penelitian ini menerapkan empat kriteria—bukti internal, filologi komparatif, fungsi naratif, dan koroborasi eksternal—untuk mengevaluasi skenario erupsi vulkanik tersebut, yang menunjukkan kesamaanna dengan klaster teologis kuno "Neraka–tannūr" (Hell-tannūr), yang mengaitkan ungkapan fāra al-tannūr dengan Hell tafūr (Q.S. 67:7). Melalui survei sistematis terhadap basis data vulkanik global, artikel ini mengidentifikasi Gunung Tendürek (terletak di Turki bagian timur) sebagai kandidat yang meyakinkan berdasarkan pertimbangan filologis dan onomastik. Kajian-kajian vulkanologi yang telah dipublikasikan mengenai Tendürek digunakan untuk menetapkan suatu rentang waktu bagi aktivitas erupsi besar, yang dalam penelitian ini diusulkan memiliki korelasi temporal yang patut diperhatikan dengan suatu penyempitan demografis yang tampak dalam catatan arkeologis. Sebagai sebuah studi kasus dalam hermeneutika Al-Qur'an, artikel ini menawarkan suatu kerangka kerja yang dapat diuji yang menghubungkan landasan filologis, lokasi geografis yang konkret, serta jendela kronologis yang bersifat sementara dengan suatu peristiwa demografis yang masuk akal dan saling beririsan, yang menunjukkan bagaimana kajian lanjutan dapat menyempurnakan atau membantah hipotesis yang diajukan.]

Keywords: *fāra al-tannūr*; Tendürek volcano; Noah's flood.

A. Introduction

The Quran retells and refines the narrative of the Flood of Prophet Noah, presenting the deluge as a pivotal event that divides human history into distinct pre- and post-Flood eras, and as a cataclysmic account that resonates with similar narratives widely attested across ancient civilizations.[1] This narrative has long been read within Jewish and

[1] LaHaye and Morris state that such stories have been reported from all over the world, on every continent, in nearly every culture, and name more than 200 versions, grouped by global distribution in continents or area, see Tim F. LaHaye and John D. Morris, *The Ark on Ararat*, 4th edition (New York: Thomas Nelson, 1976), 231-7.

Christian scriptural and literary traditions as a moral and theological text, shaping doctrines of divine justice that contrast human faithfulness with disbelief. In the Quranic account, these moral and theological themes emerge through the portrayal of the Flood as a sign (*āyah*) for humanity,[2] warning against the denial of the hereafter.[3] As recorded in the Quran, Allah informs Noah that no one beyond those who have already believed will accept his message and commands him to build the Ark according to the divine design (Q. 11:36–37). Noah is then instructed to remain prepared until the moment when "Our command came and *fāra al-tannūr*" (Q. 11:40). Classical and modern exegetes generally agree that *fāra al-tannūr* served as the critical sign that triggered the boarding of the Ark. In what follows, the English term "signal" is used as a shorthand for this critical sign marking the onset of the Flood. Once this signal appears, the gates of heaven open with pouring water, while springs burst forth from the earth (Q. 54:11–12). Those who board the Ark are saved, whereas the rest of Noah's people are consigned to Hell (Q. 71:25).

To understand the nature of this decisive signal, it is necessary to examine the conceptual range of *fāra*, which broadly includes the meaning of "overflowing". Hence, the signal is widely understood as "the overflow of *al-tannūr*". A diachronic survey[4] of the signal's depictions in exegetical literature reveals at least five major scenarios:[5] (1) overflowing

[2] Q. 69:12: *li-naj'alahā lakum tadhkiratan wa-ta'īyahā udhunun wā'iyah,* "so that We may make it a reminder for you, and so that an attentive ear may take it in."; see also Q. 26: 119-21.

[3] It is one of the principles of the religious thought and the Quran explicitly refers to "denying the Hereafter" as what brought the punishment, see Q. 69:1-15.

[4] In what follows, dates are given in Gregorian years (without the "CE" suffix); e.g., 622 should be read as 622 CE. Publication dates for which the author could not obtain reliable Gregorian conversions are retained in their original calendar notation (AH or SH).

[5] For the broad agreement on "overflow", the five strands and their variants, see Muḥammad b. Jarīr al-Ṭabarī, *Jāmi' al-bayān fī tafsīr al-Qur'ān,* vol. XII, 1st edition (Beirut: Dār al-Ma'rifa, 1992), pp. 24-5; 'Abd al-Raḥmān b. Muḥammad b. Idrīs b. Abī Ḥātim al-Rāzī, *Tafsīr al-Qur'ān al-'Aẓīm (Tafsīr Ibn Abī Ḥātim)*, vol. 6, 3rd edition (Riyadh: Maktabat Nizār Muṣṭafā al-Bāz, 1419 AH), pp. 2028–9; 'Alī b. al-Ḥusayn 'Alam al-Hudā (al-Sharīf al-Murtaḍā), *Nafā'is al-Ta'wīl*, ed. Mujtabā Aḥmad Mūsawī, vol. II, 1st edition (Beirut: Mu'assasāt al-A'lamī li'l-Maṭbū'āt, 2010), pp. 436-8.

water from the oven,[6] (2) overflowing water from the ground surface,[7] (3) overflowing water from high ground, (4) the illuminating dawn, and (5) the manifestation of divine wrath.[8] While all scenarios focus

[6] Overflowing water from the oven is the first scenario whose written attestation is in hand, first endorsed by Muqātil (d. 767) and then accepted by many i.e. al-Farrā' (d. 822), al-Ṣanʿānī (d. 827), al-Tustarī (d. 896), al-ʿAyyāshī (d. 932), Dīnawarī (d. 930), Al-Qummī (d. 919), Al-Zamakhsharī (d. 1144), Fakhr al-Rāzī (d. 1209), Sayyid Quṭb (d. 1966), and Makarem. See Muqātil b. Sulaymān, *Tafsīr Muqātil b. Sulaymān*, ed. by ʿAbdullāh Maḥmūd Shaḥatah, vol. II, 1st edition (Beirut: Dār Iḥyā' al-Turāth al-ʿArabī, 2002), p. 282; Yaḥyā b. Ziyād al-Farrā', *Maʿānī al-Qur'ān,* vol. II, 2nd edition (Cairo: al-Hay'a al-Miṣriyya al-ʿĀmma li'l-Kitāb, 1980), p. 14; ʿAbd al-Razzāq b. Hammām al-Ṣanʿānī, *Tafsīr al-Qur'ān al-ʿAẕīẕ (al-musammā Tafsīr ʿAbd al-Razẕẕāq)*, ed. by ʿAbd al-Muʿṭī Amīn Qalʿajī, vol. II, 1st edition (Beirut: Dār al-Maʿrifa, 1991), p. 39; Sahl b. ʿAbd Allāh al-Tustarī, *Tafsīr al-Tustarī (Tafsīr al-Qur'ān al-ʿAẕīm),* 1st edition (Beirut: Dār al-Kutub al-ʿIlmiyya, 2002), p. 79; Muḥammad b. Mas'ūd al-ʿAyyāshī, *al-Tafsīr (Tafsīr al-ʿAyyāshī),* vol. II, 1st edition (Tehran: al-Maktaba al-ʿIlmiyya al-Islāmiyya, 1380 SH), p. 146; ʿAlī b. Ibrāhīm al-Qummī, *Tafsīr al-Qummī,* vol. I, 3rd edition (Qom: Dār al-Kitāb, 1984), p. 327; Maḥmūd b. ʿUmar al-Zamakhsharī, *al-Kashshāf*, ed. Ḥusayn Aḥmad Muṣṭafā, vol. III, 3rd edition (Beirut: Dār al-Kitāb al-ʿArabī, 1986), pp. 183-4; Muḥammad b. ʿUmar Fakhr al-Dīn al-Rāzī, *al-Tafsīr al-Kabīr (Mafātīḥ al-Ghayb),* vol. XVII, 3rd edition (Beirut: Dār Iḥyā' al-Turāth al-ʿArabī, 2000), pp. 346–7; Sayyid Qutb, *Fi Ẓilāl al-Qur'ān,* vol. IV, 35th edition (Beirut: Dar Al-Shorugh, 1425 AH), p. 1877; Naser Makarem Shirazi et al., *Tafsir Nemooneh,* vol. IX, 10th edition (Tehran: Dar al-Kotob al-Islamiyah, 1991), pp. 97–8.

[7] Overflowing of water from the ground surface endorsed by Ibn Qutaybah (d. 889), defended by al-Māturīdī (d. 944), reported by Al-Baghawī (d. 1122), and accepted by some modern commentators such as Nasr, see Abū Muḥammad ʿAbd Allāh b. Muslim b. Qutaybah al-Dīnawarī, *Gharīb al-Ḥadīth*, vol. II, ed. by ʿAbd Allāh al-Jubūrī (Baghdad: Maṭbaʿat al-ʿĀnī, 1977), p. 105; Abū Manṣūr Muḥammad b. Muḥammad al-Māturīdī, *Ta'wīlāt Ahl al-Sunna (Tafsīr al-Māturīdī)*, ed. by Majdī Bāslūm, vol. VI, 1st edition (Beirut: Dār al-Kutub al-ʿIlmiyya, 2005), pp. 131-2; Ḥusayn b. Masʿūd al-Baghawī, *Maʿālim al-Tanẕīl*, vol. II, 1st edition (Beirut: Dār Iḥyā' al-Turāth al-ʿArabī, 1999), pp. 448-9; Seyyed Hossein Nasr, *The Study Qur'ān: A New Translation and Commentary,* digital edition (San Francisco: HarperOne, 2015), p. 1047.

[8] The divine wrath scenario accepted by Rashīd Riḍā (d. 1935) and preferred by Ṭabāṭabāʾī (d. 1981). It is based on the Arabic proverb *ḥamiya al-waṭīs* ("the oven got hot"), cited in Ibn Durayd's lexicon and then other sources to depict the intensity of battle. For Instance, during the Day of Hunayn, when the Muslims returned after the initial rout, the Prophet stated: "Now the pit-oven has become hot." Abū Bakr noted this expression was not heard from anyone except him, peace and blessings be upon him and his family."; See Abū Bakr Muḥammad b. al-Ḥasan b. Durayd al-Azdī, *Jamharat al-Lughah*, vol. II, (Beirut: Dār al-ʿIlm lil-Malāyīn, 1978), p. 829; Muḥammad Rashīd Riḍā, *Tafsīr al-Qur'ān al-Ḥakīm*, vol. XII, 1st edition (Beirut: Dār al-Maʿrifah, 1994), pp. 75-6; Muḥammad Ḥusayn Ṭabaṭabā'ī, *Tarjomeh Tafsir Al-Mizan,* vol. X, 5th edition (Qum: Jamiah Mudarresin Huze ʿAlmieh, 1995), p. 226.

on the same theological core, the oven and ground-surface scenarios have garnered wider acceptance among classical and modern exegetes. It has been suggested that the eschatological resonance of the phrase *fāra al-tannūr* may indicate a connection with the Midrashic tradition.[9] When one integrates the two pieces of Midrashic tradition, one reads that "boiling fountains overflow from below[10] and merge with drops boiled in Hell fall from above."[11] This is a mature rabbinic vision of the Flood uniting the nature and Hell within a single scene.

Beyond these traditional views, a few modern Arabic preachers and lecturers,[12] operating in popular forums rather than peer-reviewed scholarship, have invoked a sixth scenario: a magmatic volcanic eruption.[13] According to this perspective, the signal constitutes the "overflowing of a volcano." Although these popular commentators omit the historical connection, this interpretation conceptually intersects with the Talmudic depiction of the *tannūr* as the gate of Hell (Eruvin 19a; Bereshit *Rabbah* 26:6), a parallel that implicitly pairs *fāra al-tannūr* with the Quranic depiction of Hell when it "bursts forth" (*hiya tafūr*) in Q. 67:7. Furthermore, the volcanic scenario offers a distinct advantage by providing a potentially

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[9] "This may reflect a Midrashic tradition—for example, in Leviticus Rabbah (which dates from around the period of the Quran's origins)—mentioned by Speyer that the waters of the flood were hot: 'R. Joḥanan said, 'Every single drop [of rain] which the Holy One, blessed be He, brought down on the generation of the Flood, He made to boil in *Gehinnom*' (*Leviticus Rabbah* 7:6). Similar is a tradition in the Talmud: 'With hot passion they sinned, and by hot water they were punished.'" Gabriel Said Reynolds, *The Qur'ān and the Bible: Text and Commentary,* 1st edition (New Haven: Yale University Press, 2018), pp. 537–8.

[10] And they were punished with great, as it is stated: "All the fountains of the great deep were breached" (Genesis 7:11). Rabbi Yoḥanan says: Three fountains of the great deep that were breached in the flood remained, and boiling water continues to flow in them as it did during the flood. They are: Beloa of Gader, and the hot springs of Tiberias, and the great spring of Beiram, see *Sanhedrin* 108a:10.

[11] Both *Sanhedrin* 108a:10 (as cited in this study) and *Leviticus Rabbah* 7:6 converge on the same biblical verse: "the same day were all the fountains of the great deep broken up, and the windows of heaven were opened.", see Genesis 7:11 (English Standard Version).

[12] These figures include Dr. Zaghloul El-Naggar, Dr. Ḥasan Muḥammad Ḥasan ʿAlī Ḥamza, Shaykh Bassām Jarrār, and Shaykh Maḥmūd al-Mubīd.

[13] This study examines the purely volcanic reading, distinguishing it from the hydrovolcanic scenario developed by Al-Tajdeed Cultural & Social Society (Bahrain). For hydrovolcanic argument, see Qism al-Dirāsāt wa-l-Buḥūth, *Ṭūfān Nūḥ: Bayna al-Ḥaqīqa wa'l-Awḥām,* 1st ed. (Manama: Jamʿiyyat al-Tajdīd al-Thaqāfiyya al-Ijtimāʿiyya, 2005), pp. 99-110, 120-4, 135, 152-4, 168.

dateable physical signal. This study evaluates the plausibility of this volcanic reading of *fāra al-tannūr*. Specifically, it addresses three interelated questions: First, can *fāra al-tannūr* be understood as a volcanic signal? Second, what kind of temporal window emerges from such a volcanic interpretation? Finally, how might this timeframe be correlated with the broader timeline of human history and the historicity of the Flood?

B. Four-Criteria Framework

The Quran employs the root *f-w-r* in two identical clauses to identify the primary signal of the Flood: *ḥattā idhā jā'a amrunā wa fāra al-tannūru* (Q. 11:40) and *fa-idhā jā'a amrunā wa fāra al-tannūru* (Q. 23:27). These are the only occurrences of the term *al-tannūr* in the Quran. In addition, the root *f-w-r* appears in the description of Hell: *idhā ulqū fīhā sami'ū lahā shahīqan wa hiya tafūr* (Q. 67:7),[14] where it describes the roaring and boiling state of the inferno. It is widely accepted that these verses were revealed in Mecca before 622.[15] While the Quran addresses the early-seventh-century Arabs of the Ḥijāz, this study proceeds on the premise that its vocabulary was both expressible and comprehensible within their established language-world. This principle is explicitly acknowledged by Ibn Durayd (d. 933), who remarked on *fāra al-tannūr*, that "the people were addressed with what they already knew",[16] and by al-Ṭabarī (d. 923), who maintained that divine speech utilizes "the most prevalent and well-known meanings among the Arabs."[17]Consequently, a precondition for the volcanic scenario is that *al-tannūr* could have been understood as a volcano by the early-seventh-century Ḥijāzī community. If this condition is met, the literal meaning of *fāra al-tannūr* should be capable of supporting a vivid depiction of a

[14] The last appearance of the root *f-w-r* is in *ya'tūkum min fawrihim* (Q. 3:125), which refers to a war situation and falls outside of our present concern, whereas *hiya tafūr* in (Q. 67:7) is semantically comparable to *fāra al-tannūru*.

[15] On the Meccan classification of Q. Hūd [11], Q. al-Mu'minūn [23], and Q. al-Mulk [67], see the traditional Makki–Madani lists reproduced in modern reference works; standard introductions and Quran portals classify all three as Meccan *sūras*, with disagreement only about a few individual verses. For a classical treatment, see ʿAbd al-Raḥmān b. Abī Bakr al-Suyūṭī, *Al-Itqān fī ʿUlūm al-Qur'ān*, vol. I (Cairo: al-Hay'a al-Miṣriyya al-ʿĀmma li'l-Kitāb, 1974), pp. 58-66. and the relevant discussions in the exegetical works mentioned above.

[16] Ibn Durayd, *Jamharat al-Lughah*, vol. I, p. 395: *jā'a fī al-tanzīl: wa-fāra al-tannūr li-annahum khuṭibū bimā ʿarafū.*

[17] Al-Ṭabarī, *Jāmiʿ al-bayān,* vol. XII, p. 25: *li anna dhālika huwa al-maʿrūfu min kalāmi al-ʿArab, wa kalāmu llāhi lā yuwajjahu illā ilā'l-aghlabi al-ashhari min maʿānīhi ʿinda'l-ʿArab illā an taqūma ḥujjatun ʿalā shay'in minhu bi-khilāfi dhālik.*

volcanic eruption.

As part of the intra-textual profile, this study seeks semantic coherence between *fāra al-tannūr* and *hiya tafūr,*[18] specifically by aligning the root-pattern *f-w-r* shared between the signs of the Flood and the imagery of Hell. Within this framework, pre-Quranic Jewish sources explicitly connect *tannūr* with Hell.[19] For instance, Eruvin 19a, commenting on Isaiah 31:9("whose fire is in Zion and whose *tannūr* in Jerusalem"), glosses the verse by stating "Whose fire is in Zion' – this is *Gehenna*; 'and whose *tannūr* in Jerusalem' – this is an entrance to *Gehenna*." Similarly, Bereshit Rabbah 26:6, in its exposition of Malachi 3:19 ("the day is coming, burning like a *tannūr*"), interprets the burning *tannūr* as the advent of *Gehenna*. Given that this tradition was current at the time of the Quranic presentation of the Flood narrative, we therefore evaluate whether correspondences between this rabbinic tradition and the volcanic scenario could be regarded as supporting evidence.

Furthermore, for the pre-Flood population, *fāra al-tannūr* marked a critical threshold: once the signal manifested, it forced an immediate binary outcome between boarding the Ark for survival or facing annihilation. If the Flood is conceptualized as regional event, the volcanic signal should have been capable of signifying its onset across a vast geographic domain; under a global reading, the required scale expands exponentially. Hence, the narrative function of *fāra al-tannūr* is to serve as an adequate warning mechanism characterized by widespread acoustic perceptibility and communicative accessibility across the entire affected region. While this functional capacity aligns closely with the physical

[18] The present study does not aim to fully decipher the phrase *sami'ū lahā shahīqan wa hiya tafūr*, as it belongs to a broader complex that requires an independent study. Any comprehensive discussion of Q. 67:7 should, at minimum, consider (a) the auditory description of Hell, (e.g., Q. 11:106; Q. 21:100, 102; Q. 25:12); (b) the fire of Hell and its eruptive imagery, (e.g., Q. 77:30–33; Q. 70:15–16; Q. 92:14); and (c) the cosmic rending of the heavens prior to Hell's blazing (e.g., Q. 55:37–44; Q. 81:11–12; Q. 84:1–5; Q. 69:15–16). This study limits its scope to the linguistic and thematic connection of the root *f-w-r*.

[19] *Eruvin* 19a (Babylonian Talmud); *Bereshit Rabbah* 26:6 (*Genesis Rabbah*). Regardless of the precise redaction dates of these rabbinic compilations, they function as commentaries on prophetic passages wherein the furnace is already structurally linked to divine judgment. Examples include Isaiah 31:9 ("whose fire is in Zion, and whose *tannūr* in Jerusalem") and Malachi 3:19 ("the day is coming, burning like a *tannūr*"). The rabbinic glosses explicitly solidify the identification with *Gehenna* (e.g., "this is an entrance to *Gehenna*"), mirroring the New Testament imagery in Matthew 13:42 and 50, which speaks of "the furnace of fire" into which the wicked are cast.

nature of volcanic eruptions, large-scale and long-lasting eruptions provide a far more compelling analogue for such a cross-regional signal.

If *fāra al-tannūr* indeed denotes a volcanic phenomenon, the eruption should have left traceable physical remnants that, if plausibly localized, could be dated through standard geochronological methods. Moreover, according to the narrative, once the signal manifests, only a small remnant boards the Ark while the rest of humanity perishes, leaving post-Flood generations to descend exclusively from the survivors (Q. 11:48).[20] Such cataclysmic transition should theoretically leave a profound signature on human demography. Under a regional interpretation of the Flood, this imprint would appear as a localized demographic bottleneck; under a global reading, it would manifest as a pronounced population bottleneck visible in archaeological and genetic records worldwide.[21]

Accordingly, merely dating the volcanic samples associated with the signal is insufficient. Any proposed timeframe must chronologically coincide with independent evidence of a demographic crisis. These methodological assumptions are organized into a cohesive four-criteria framework to systematically evaluate the volcanic scenario. The criteria include: (1) internal evidence, drawing from Quranic diction, syntax, and early Arabic usage; (2) comparative philology, assessing the semantic connection between the proposed interpretation and the Hell-*tannūr* cluster; (3) narrative function, examining how well the volcanic signal aligns with the scale, constraints, and internal logic of the Flood narrative; and (4) external corroboration, evaluating the extent to which the volcanic scenario permits a plausible, empirically verifiable estimation of the Flood's timeframe.

Traditional exegesis implicitly operates within a historical horizon shared with other scriptural traditions. However, an inquiry that integrates

[20] See Q. 69:11: *innā lammā ṭaghā al-mā'u ḥamalnākum fī'l-jāriyah* ("Indeed, when the water overflowed, We carried you in the sailing vessel."); see also Q. 11:48: *qīla yā Nūḥu ihbiṭ bi salāmin minnā wa barakātin ʿalayka wa ʿalā umamin mimman maʿaka wa umamun sanumattiʿuhum thumma yamassuhum minnā ʿadhābun alīm*("It was said, O Noah, disembark with peace from Us and blessings upon you and upon generations from those who are with you. And [other] generations We shall grant enjoyment, then a painful punishment from Us will touch them").

[21] While the insights of paleogenetics, paleolinguistics, paleoanthropology, zooarchaeology are valuable for constraining prehistoric timelines, this study adopts archaeology and stratified site sequences as its primary framework for external corroboration. Consequently, any proposed eruptive date or demographic anomaly should first be verified against the established archaeological record before being correlated with other lines of empirical evidence.

external corroboration from empirical fields like geology and archaeology must remain receptive to whatever chronology the scientific evidence dictates, even if it diverges significantly from conventional assumptions. While classical and modern *tafsīr* remain central to the conceptual framework of this inquiry, the volcanic scenario is treated here strictly as a text-based proposal regarding the potential; chronological clues embedded within *fāra al-tannūr*. This scenario aims to provide a plausible, tentative timeframe for the Flood based on early-seventh-century Arabic understanding of the phrase, without claiming to exhaust the multifaceted exegetical meanings of the verses.

Methodologically, the assessment of the volcanic scenario proceeds through seven systematic steps. It begins with a philological analysis of the lexeme *tannūr* across the Quran, early Arabic sources, and relevant contemporary cultures. The investigation undertakes a systematic onomastic analysis that identifies Tendürek—known in some historical sources as *Thonir* (lit. "oven")—as the primary volcanic toponym qualifying as *al-tannūr*. This followed by a lexical and syntactic assessment of the root *f-w-r* and subsequently by a coherence assessment of the *Hell-tannūr* intertextual cluster. The study next examines the narrative function of the volcanic signal to evaluate its effectiveness as a public, unmistakable sign. Building on these textual and conceptual analyses, it synthesizes of published volcanological data to establish a temporal window for Tendürek's major eruptive activity. Finally, the proposed timeframe is subjected to a corroborative test against the archaeological record, specifically analyzing evidence of a major demographic bottleneck that aligns with the proposed volcanic signal.

C. Internal Evidence: Al-Tannūr and Volcano

This section undertakes a diachronic review of the lexical meaning of *tannūr* in order to assess whether the term can plausibly be interpreted as a volcano. Formally, *al-tannūr* consists of the definite article *al-* prefixed to the common noun *tannūr*. In principle, this definiteness may indicate three grammatical possibilities: (a) *tannūr* as a generic type, (b) a particular *tannūr* identifiable from the context, or (c) a proper noun in which the definite article has become an integral part of the name. Accordingly, for the volcanic interpretation to be plausible, *al-tannūr* must denote either a volcano as a generic category, a specific volcanic structure recognizable from the narrative context, or the proper name of a particular volcano.

1. The Meaning of Tannūr

A diachronic comparison of Biblical Hebrew usage and Arabic lexicography provides an initial basis for assessing the semantic range of *tannūr*. In Biblical Hebrew, *tannūr* appears fifteen times[22] and consistently denotes an oven or furnace.[23] Al-Khalīl (d. 786), in *Kitāb al-ʿAyn*, does not provide an isolated definition for *tannūr*, but simply notes that *al-tannūr ʿammat bi-kull lisān* ("tannūr is common to all languages").[24] This assessment is echoed by later major Arabic lexica, some of which explicitly classify *tannūr* as a universal loanword or as a term shared between Arabic and Persian. Ibn Qutaybah (d. 889) in *Adab al-Kātib*, adds the gloss *al-tannūr wajh al-arḍ* (the ground surface).[25] Ibn Durayd (d. 933) in *Jamharat al-Lughah*, abstains from defining *tannūr* directly, stating instead that it is employed in the phrase *fāra al-tannūr* because "the people were addressed with what they already knew."[26]

Al-Azharī (d. 995) in *Tahdhīb al-Lugha*, introduces two further dimensions, a specific oven located at *ʿAyn al-Warda*,[27] and *tanwīr al-ṣubḥ* ("the illumination of dawn").[28] Al-Jawharī (d. 1008) in *Tāj al-Lugha,* explicitly glosses *tannūr* as a baking oven.[29] This inclusion does not imply that he was the first lexicographer to identify this sense; rather, the

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[22] Genesis 15:17; Exodus 8:3 (Hebrew numbering: Exod 7:28); Leviticus 2:4; Leviticus 7:9; Leviticus 11:35; Leviticus 26:26; Nehemiah 3:11; Nehemiah 12:38; Psalm 21:9 (Hebrew: Ps 21:10); Isaiah 31:9; Lamentations 5:10; Hosea 7:4; Hosea 7:6; Hosea 7:7; Malachi 4:1 (Hebrew: Mal 3:19).

[23] The term *oven* is attested eleven times in the corpus, whereas *furnace* occurs four times, see "H8574 - tannûr", in *Blue Letter Bible,* https://www.blueletterbible.org/lexicon/h8574/kjv/wlc/0-1/, accessed 22 Nov 2025.

[24] Al-Khalīl b. Aḥmad al-Farāhīdī, *Kitāb al-ʿAyn*, ed. by ʿAbd al-Ḥamīd al-Hindawī, vol. I, 1st edition, (Beirut: Dār al-Kutub al-ʿIlmiyyah, 2003), p. 191.

[25] ʿAbdullāh b. Muslim b. Qutaybah al-Dīnawarī, *Adab al-Kātib*, ed. Muḥammad al-Dālī (Beirut: Muʾassasat al-Risālah, 1981), p. 496.

[26] Ibn Durayd, *Jamharat al-Lughah*, vol. 1, p. 395.

[27] *ʿAyn al-Warda*, accepted by some later commentators, lies in the *al-Jazīra* (Upper Mesopotamia) near modern *Ras al-ʿAyn* or *Tell Tamer* in Syria, for the place name in thirteenth century and its relation to late-seventh-century history see Yāqūt ibn ʿAbd Allāh al-Rūmī al-Ḥamawī, *Muʿjam al-Buldān*, vol. IV, 2nd edition (Beirut: Dār Ṣādir, 1995), p. 180. Also, Yāqūt notes two places named *Tonnaynīr* on the *Khabur* River, near *Ras al-ʿAyn*, which may be related to this conclusion, see *Ibid.*, vol. II, p. 54.

[28] Muḥammad b. Aḥmad al-Azharī al-Harawī, *Tahdhīb al-Lugha*, ed. by Muḥammad ʿAwaḍ Murʾib, vol. XIV, 1st edition (Beirut: Dār Iḥyāʾ al-Turāth al-ʿArabī, 2001), p. 192.

[29] Ismāʿīl b. Ḥammād al-Jawharī, *al-Ṣiḥāḥ: Tāj al-Lugha wa-Ṣiḥāḥ al-ʿArabiyya*, ed. Aḥmad ʿAbd al-Ghafūr ʿAṭṭār, vol. II (Beirut: Dār al-ʿIlm liʾl-Malāyīn, 1987), p. 602.

meaning "oven" was so foundational that earlier lexicographers likely deemed it unnecessary to explicitly define. Later, Ibn Sīda (d. 1066) in *al-Muḥkam* introduces the meaning of *kull mafjar mā'* ("every bursting place of water."). [30] While al-Rāghib (d. 1109) omits *tannūr* in *al-Mufradāt*, Ibn Manẓūr (d. 1311), in *Lisān al-ʿArab*, adds *tanānīr al-wādī*, [31] and al-Zabīdī (d. 1790), in *Tāj al-ʿArūs*, explains this phrase as *maḥfil mā' al-wādī*, ("the gathering basin of the valley's water"). [32] Finally, Mukhtār 'Umar in *al-Muʿjam,* adds the interpretation of a fountainhead of hot waters latent in the earth's inner depths. [33] Regarding the universality of *tannūr,* Arthur Jeffery (d. 1959) argues that it represents an ancient cultural term for an oven or furnace, extensively attested in Akkadian, Aramaic, Hebrew, Syriac, Avestan, Pahlavi, Armenian and later Turkish. [34] Subsequent scholarship further demonstrates that across the Arabian Peninsula, the Levant, Mesopotamia, the Iranian plateau, Anatolia, and Armenia, this domestic instalation was designated using the cognate lexemes *tennūr*, *tanūra*, *tanūr*, *tinūru*, *tanūrā*, *tandır*, *tendir*, *thonir*, *thondir*, or *thondrak*. [35]

This extensive corpus indicates that for the early-seventh-century Hijāzi community, the term *tannūr* was widely understood as an "oven"

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[30] ʿAlī b. Ismāʿīl b. Sīda al-Mursī, *al-Muḥkam wa'l-Muḥīṭ al-Aʿẓam*, ed. by Abd al-Ḥamīd al-Hindawī, vol. IX, 1st edition, (Beirut: Dār al-Kutub al-ʿIlmiyya, 2000), p. 475.

[31] Muhammad b. Mukarram b. Alī b. Ahmad b. Manzūr al-Ansārī al-Ifrīqī al-Misrī al-Khazrajī, *Lisan al-Arab*, vol. IV, 3rd edition (Beirut: Dar Sader, 1414 AH), p. 95.

[32] Muḥammad Murtaḍā al-Ḥusaynī al-Zabīdī, *Tāj al-ʿArūs min Jawāhir al-Qāmūs*, vol. X, 1th edition (Kuwait: Maṭbaʿat ḥukūmat al-Kuwayt, 1965–2001), pp. 295.

[33] Aḥmad Mukhtār ʿUmar, *Al-Muʿjam al-ʿArabī al-Muʿāṣir*, vol. I, 1st edition, (Cairo: ʿĀlam al-Kutub, 2008), p. 303.

[34] Arthur Jeffery, *The Foreign Vocabulary of the Qur'ān*, (Oriental Institute Baroda, 1938), pp. 92–5.

[35] For Turkish *tandır/tennûr/tandur* as loans from *tanūr/tannūr* "oven" (especially a well-shaped clay bread oven), ultimately from Aramaic–Syriac *tanūrā* and cognate with Akkadian *tinūru*, see Sevan Nişanyan, "tandır", in *Nişanyan Sözlük: Çağdaş Türkçenin Etimolojisi*, (3 Nov 2025), https://www.nisanyansozluk.com/kelime/tandir, accessed 11 Nov 2025. Kurdish *tendur* corresponding to Turkish *tandır*, see Zana Farqînî, *Ferhenga Mezin ya Kurdî–Tirkî*, 1st edition (Istanbul: Enstîtuya Kurdî ya Stenbolê, 2004), p. 1831. For Armenian *thondir, thondruk, thonir* (*թոնդիր, թոնդրուք, թոնիր*) meaning oven, bakehouse, furnace, stove, *tandour*, or "eastern stove and oven", see Mesrob G. Kouyoumdjian, *A Comprehensive Dictionary: Armenian–English*, 1st edition (Beirut: Atlas Press, 1970), p. 237. On the long-term stability of *tandır* ovens in south-eastern Anatolia and their characteristic beehive-shaped core and surrounding mud or mud-brick structure, see Bradley J. Parker, "Bread Ovens, Social Networks and Gendered Space: An Ethnoarchaeological Study of Tandir Ovens in Southeastern Anatolia", *American Antiquity*, vol. 76, no. 4 (2011), pp. 603–27.

or "furnace". Crucially, none of these classical lexicons cite "volcano" as a definition for *tannūr*. For lexicographers, it was recognized as an intercultural loanword that was frequently left without explicit glossing because its primary sense was assumed to be self-evident, deeply rooted in a culturally ancient and remarkably stable material practice. However, from the late-ninth century onward, lexica began recording additional semantic extensions of *tannūr* beyond the basic oven sense,[36] with Ibn Durayd and al-Rāghib standing as notable exceptions.

To circumvent this limitation, some modern commentators have proposed that *tannūr* is a compound of *tan* ("mountain", possibly derived from *atān*) and *nūr* ("fire"), thereby (yielding the meaning "mountain of fire") to point toward a volcanic cone.[37] However, this folk etymology finds no support in major Arabic lexicons, which uniformly treat *tannūr* as an indivisible loanword.[38] The lexical evidence is therefore conclusive: the word *tannūr* does not inherently mean "generic volcano", nor can it contextually refer to one as a common noun. This conclusion establishes a critical premise for the study: for the volcanic reading of *fāra al-tannūr* to remain plausible, the term *al-tannūr* must be interpreted not as a common noun, but as a proper noun, specifically a unique volcanic toponym. While this premise marks an interpretive departure from the classical exegetical consensus, which treats *al-tannūr* differently, it is crucial to emphasize that this study does not invalidate those historically and theologically rich readings. Rather, by adopting a physical phenomenon, the toponymic hypothesis emerges as a logical necessity. The analysis proceed, not in opposition to the *tafsir* tradition, but alongside it, exploring a historical-geographical dimension that its framework was not originally designed to address. Consequently, the investigation now turns to testing this toponymic hypothesis.

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[36] The fact that these broader meanings are first recorded in later works does not by itself prove that they are late innovations; however, in the absence of earlier corroboration it cautions against treating them as securely attested elements of the pre-Quranic *tannūr* inventory.

[37] See Al-Tajdeed, *Ṭūfān Nūḥ*, p. 106; for the meanings of *atān*, see Ibn Manzūr, *Lisan al-Arab,* vol. XIII, p. 7.

[38] The scholarly consensus on *tannūr*'s status as a stable, indivisible loanword across Semitic and neighboring languages is summarized by Arthur Jeffery, see Jeffery, *The Foreign Vocabulary of the Qur'ān*, pp. 92–5.

2. Oven-name Volcanic Toponym

The preceding analysis concluded that the volcanic hypothesis hinges fundamentally on *al-tannūr* being interpreted as a proper toponym. In order to test this premise, a comprehensive search across major digital corpora of classical Islamic sources was conducted.[39] However, it yielded no direct historical attestation of *al-tannūr* functioning explicitly as a volcanic toponym. This negative result does not refute the hypothesis but instead clarifies the parameter of the search. The literary silence must be evaluated within the broader context of how mountain and volcanic toponyms were cataloged in ancient and medieval literary cultures. Evidence from later geographers confirms that a rich toponymy for volcanic fields (*ḥarrah*) existed within the Arabic tradition. Crucially, Yāqūt (d. 1229) documented these sites by relying heavily on pre-Islamic poetry and the oral reports of early philologists, consequently, the dozens of *ḥarār* he lists are situated almost exclusively within the Arabian Peninsula and its immediate frontiers.[40]

This pattern, a geographically specific nomenclature preserved primarily in oral-based sources, is not unique to the Arab world. It aligns consistently with findings from the contemporary Latin West, where the literary recording of mountain toponyms (*oronyms*) was generally rare,[41] and volcanic toponyms were particularly scarce in formal texts.[42] This cross-cultural parallel underscores the vital role of oral tradition as a more resilient repository for such place names than formal literature.[43] Therefore, assuming a foreign volcanic toponym like *al-tannūr*, its absence from the early Arabic literary record is entirely unsurprising. This reality dictates the next step: the investigation cannot be confined to Arabic literary sources but must broaden its scope to identify a prominent

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[39] Digital corpus of 7604 Shi'a and Sunni books in 17537 volumes, in Computer Research Center of Islamic Sciences, *Eshia*, https://lib.eshia.ir/, accessed 3 Dec 2025.

[40] Yāqūt's section on *ḥarār* documents 29 distinct volcanic fields. An analysis confirms these are all located within the Arabian Peninsula or its Syrian frontier, see Yāqūt, *Mu'jam al-Buldān*, vol. II, pp. 245-50; he scarcely mentions other volcanoes outside this geographic scope, for example see *Ibid.*, vol. III, 417-8.

[41] Peter Drummond, "Hill and Mountain Names", in *The Oxford Handbook of Names and Naming*, ed. by Carole Hough (Oxford: Oxford University Press, 2016), p. 115.

[42] Theodore Ziolkowski, "Volcanic Eruptions and Their Literary Reverberations", *Modern Language Review*, vol. 112, no. 4 (2017), pp. 793–821.

[43] Margaret Scott, "Names and Dialectology", in *The Oxford Handbook of Names and Naming*, ed. by Carole Hough (Oxford: Oxford University Press, 2016), pp. 489-501.

foreign candidate[44] through a framework grounded in the principles of oral transmission and onomastic analysis.[45]

To structure this counter-hypothesis, the investigation adopts a classical framework of three critical questions: (1) Why would a volcano be given an oven-name? (2) Where could such a volcano be located? and (3) When would it need to have been named?[46] The following sections address the first two questions by identifying a conceptually and geographically plausible candidate before turning to the third through an examination of the candidate's specific onomastic history.

The answer to the Why question is twofold. First, the practice is empirically grounded. Arabic onomastic evidence confirms that designating a mountain or a volcanic feature as *al-tannūr* (the oven) is an established convention. Cases such as *Jebel et-Tannur* (the Mount Oven of Jordan)[47] and the medieval toponym *al-Tannūr* (an otherwise obscure

[44] This study focuses on prominent volcanoes, as major oronyms (mountain toponyms) known to be diachronically conservative and stable, as cases such as Etna volcano and Mount of Olives (*Har HaZeitim, Jabal al-Zaytūn*) suggest. Etna volcano in Sicily, whose name (*Aitna*/*Aetna*) is already securely attested in Latin sources noted below (95); Mount of Olives provides another example, where the same ridge east of Jerusalem is already named in the Hebrew Bible *Har HaZeitim*. See 2 Samuel 15:30; Ezekiel 11:23; Zechariah 14:4, and continues to bear that name in the New Testament, see Matthew 24:3; Acts 1:12.

[45] As the *Oxford Handbook of Names and Naming* explains, the adaptation of place-names occurs through language contact and can manifest in several ways, including morphological, phonological, semantical, lexical, or combined adaptations, while the lexical adaptation of toponyms is quite rare, see Berit Sandnes, "Names and Language Contact", in *The Oxford Handbook*, ed. by Carole Hough (Oxford: Oxford Uniersity Press, 2016) pp. 545-9. Phonological: the replacement of unfamiliar sounds and sound combinations by sounds and sound sequences that are acceptable in the recipient language; Morphological: grammatical features of the original form may be translated into the recipient language; Semantic: implies the translation of the elements of a name; Lexical: place-name elements may be replaced by words in the recipient language that are phonetically similar but semantically unrelated, that is words that sound similar.

[46] Toponymic studies have classically attempted to answer the WH- questions for each placename: what is it? where is it? who named it? when was it named? and why was it given that name? See Jan Tent and David Blair, "Motivations for Naming: A Toponymic Typology", *ANPS Technical Paper No. 2* (Canberra: Australian National Placenames Survey, 2009, revised online edition 2014), p. 1. This study brackets the third question, as the identity of the original namers lies beyond its scope, and the first, as the "what" (a volcano) is defined by the hypothesis itself.

[47] In southern Jordan, the Nabataean sanctuary of *Khirbet et-Tannur* is built on top of *Jebel et-Tannur*, an isolated summit whose name is routinely glossed in modern handbooks as "Mount Oven" and whose temple complex has been studied in detail

mountain in Anatolia)[48] demonstrate that Arabic constructs *al-tannūr* as a valid oronym. More specifically, *Jabal Tennur*, a volcanic hill in Sudan,[49] proves that *tannūr* is actively available within the Arabic geographic lexicon as a specific volcanic toponym.[50] Second, the conceptual motivation is exceptionally robust. A volcano shares its core physical attributes with a traditional *tannūr*, namely a bounded cavity, a conic morphology, an open vent, and intense internal heat, rendering the designation conceptually intuitive.

To address the Where question, this study investigates a global database of the volcanic toponyms comprising approximately 2,500 entries.[51] However, the pragmatic challenges of conducting onomastic research on a global scale necessitate a rigorous yet manageable methodology. A purely semantic search for the meaning "oven", which would demand a comprehensive etymological investigation of all 2,500 named volcanoes, remains a valuable but immense undertaking reserved for future research. This study therefore adopts a phonetic-first approach.

To investigate whether the Quranic *tannūr* might reflect a real volcanic toponym, a constrained but replicable global search was conducted across the global volcanic database. The search was structured

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as a high-place cult site, for a brief archaeological report, see Marlena Whiting and Hannah Wellman, *A Gem of a Small Nabataean Temple: Excavations at Khirbet et-Tannur in Jordan* (Oxford: Manar al-Athar, University of Oxford, 2016).

[48] An unknown mountain named *al-Tannūr* near Misis (now Adana, Turkey), see Yāqūt al-Ḥamawī, *Mu'jam al-Buldān,* vol. 2, p. 50.

[49] A volcanic toponym called *Tennūr*, in northern Darfur (Sudan), the Tagabo Hills, also known as the Kutum volcanic field, comprise a cluster of late Cenozoic volcanic cones; modern geographic databases record within this field a feature called *Jabal Tennur*, listed as a hill but located squarely inside the volcanic province. see sd.geoview: Jabal Tennur — hill in Northern Darfur, elevation 889 m, variants *Jabal Tennur*, Gennur, Lat 15°26'25.87" / Lon 26°51'33.34", "Jabal Tennur", in *GeoView.info*, https://sd.geoview.info/jabal_tennur,7505105, accessed 11 Nov 2025; but no Sudanese volcano of that name appears in authoritative catalogues, see the Smithsonian Global Volcanism Program's country list for Sudan, "Volcanoes of Sudan", in *Global Volcanism Program*, Smithsonian Institution, https://volcano.si.edu/volcanolist_countries.cfm?country=Sudan, accessed 18 Nov 2025, names Bayuda, *Jebel Marra*, Meidob, Kutum, and Umm Arafieb, but does not list any volcano called *Jabal Tannur/Tennur.*

[50] While these precedents confirm the naming convention, they do not represent the prominent, historically significant candidate required by the Quranic narrative. *Jabal Tennur* is likely a late or local toponym and is not listed as a major volcano in authoritative databases.

[51] Smithsonian Institution, *Global Volcanism Program*, https://volcano.si.edu/, accessed 3 Dec 2025.

as a threefold filtering procedure, designed to isolate any volcano whose name (a) is phonologically compatible with *tannūr*, (b) lies within a geographical region from which a plausible trajectory of early seventh-century language contact with the Ḥijāz can be established, and (c) is semantically associated with an "oven" or "furnace".

The search began with a broad phonetic filter, applied to the entire global volcanic database, in order to identify all volcanic toponyms containing the core consonantal sequence *t–n–r*. This initial pass produced a manageable corpus of nine candidates distributed across seven territories: Tungurahua (Ecuador), Tinguiririca (Chile), Tenorio (Costa Rica), Tongariro and Tangaroa (New Zealand), Tengger and Tenaroh (Indonesia), Tenerife (Spain), and Tendürek (Turkey). Although some of these toponyms include additional consonants, such as *g* or *d*, they were intentionally retained at this stage for further examination.

A second, geohistorical filter was applied to this set to evaluate the likelihood of language contact between speakers in the early seventh-century Hijāz and the territories where these volcanoes are located. This assessment drew upon established trade and communication networks of Late Antiquity. Consequently, the five candidates situated in the Americas and New Zealand were immediately excluded: there is no attested contact between the Hijāz and the Americas during this period,[52] and the New Zealand sites were not occupied until centuries after the revelation of the Quran.[53] Tenerife, although geographically closer, was also set aside due to its insular position and the low probability of sustained or significant linguistic contact with the Hijāz at that time.[54] After this geohistorical screening, only three candidates remained within regions historically connected to the Arab world via established trade routes: Tengger and

[52] The earliest attested contact of the Americas with external cultures is not established before the tenth century, see J. Wallenfeldt, "Did the Vikings Discover America?", *Britannica* (13 June 2025), https://www.britannica.com/story/did-the-vikings-discover-america, accessed 6 Nov 2025.

[53] "Story: When was New Zealand First Settled?", *Encyclopaedia of New Zealand*, https://teara.govt.nz/en/when-was-new-zealand-first-settled/print, accessed 3 Dec 2025; see also "Migration, Colonisation and Polynesian Settlement of Aotearoa", *University of Otago*, https://www.otago.ac.nz/spar/research/migration-colonisation-and-polynesian-settlement-of-aotearoa, accessed 3 Dec 2025.

[54] Jonathan Santana et al., "The Chronology of the Human Colonization of the Canary Islands", *Proceedings of the National Academy of Sciences,* vol. 121, no. 28 (2024), p. 3.

Tenaroh in Indonesia,[55] and Tendürek in eastern Turkey.[56]

The final step consisted of a semantic filter, examining the etymology of each remaining toponym to determine whether its local name also carries the meaning of "oven" or "furnace". Upon closer inspection, the Indonesian candidates proved to be semantic mismatches. Tengger encapsulates *Anteng*, meaning "calmness, placidity", conjoined with *Seger,* meaning "vitality and prosperity",[57] while Tenaroh in the Gayo culture means "yolk, core".[58] By contrast, *Tendürek* in Turkey is plausibly derived from Armenian *Thonir* "oven," a meaning independently attested in Armenian ecclesiastical sources and embedded in the toponymic tradition of the region.[59]

Taken together, the phonetic, geohistorical, and semantic filters

[55] The robustly attested maritime trade routes connecting Arabia and the Indian Ocean provide support for the possible Indonesian contact. For a brief discussion, see Faisal Babu M., "Early Arab Trade with India: With Special Reference to Kerala", *International Journal of History,* vol. 3, no. 2 (2021), pp.1-4. For a detailed study, see Anjana Reddy. L, "Looking from Arabia to India: Analysis of The Early Roman 'India Trade' in the Indian Ocean during the Late Pre- Islamic Period (3rd Century BC - 6th Century AD)", PhD. Dissertation (Pune: Deccan College Post-Graduate & Research Institute, 2013).

[56] Turkey lies along vital trade routes within the larger Silk Road network. Since the sixth century BCE, the Anatolian routes integrated with networks of the Near East, Central Asia, and the Eastern Mediterranean—north to the Black Sea and Caucasus passes; east, south, and west to Iran, Mesopotamia, and Syria—later folding into the Silk Road, see Mkrtich H. Zardaryan, "Communication Network of the Ararat Plain, Armenia: Geographical, Economic, Political Dimensions (first Millennium BC – first Millennium AD)", *Armenian Journal of Near Eastern Studies,* vol. 18 (2025), pp. 48–75; in the medieval era, an additional route linked Khoy (Iran) with the Muradiye–Karahan hub, see Adnan Eskikurt, "Ortaçağ Anadolu Ticaret Yolları", *Muğla Sıtkı Koçman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* no. 33 (2014), pp. 25, 27.

[57] Sri Wahyuni et al., "Exploring the Pedagogical Significance of Tengger Communal Values in Educational Setting", in *Proceedings of the 3rd International Conference on Language, Literature, and Cultural Education* (2023), p. 7.

[58] Luthfi Auni and Nidawati, "The Semiotic Meaning and Philosophy of Symbols in the Gayo Ethnic Marriage Processions in Central Aceh", *Jurnal Ilmiah Peuradeun*, vol. 11, no. 1 (2023), p. 45.

[59] Fredition C. Conybeare, *The Key of Truth: A Manual of the Paulician Church of Armenia; the Armenian Text Edited and Translated with Illustrative Documents and Introduction*, 1st edition (Oxford: Clarendon Press, 1898), p. 60: "We recognize in the modern name the old Armenian *Thondrik* or *Thonrik*, derived from *Thonr*, an oven."; T. Kh. Hakobyan, et al., *Dictionary of Place-Names of Armenia and Adjacent Regions*, vol. 2, 1st edition (Yerevan: Yerevan University Publishing House, 1988), p. 469: *Thanduruk, Thandurek, Thandurik, Thandurlu, Thendurek, Thondrik, Thondurak, Thondurek, Thonir, Thonrak, Sunderlik, Tandurek, Tenduryuk*; notably, *Thonir* "oven" appears among the volcano names.

narrow the global volcanic corpus to a decisive and exclusive outcome. All other candidates are eliminated on rigorous grounds, either because the respective regions lacked plausible contact with the early seventh-century Hijāz, or because their local names do not bear the requisite meaning of "oven" or "furnace". Consequently, this multi-layered search isolates Tendürek as the sole candidate whose name has a consonantal pattern compatible with *tannūr*, whose location falls within a historically verified trade network, and whose meaning directly corresponds to "the oven." While this result does not claim to exhaust all conceivable semantic avenues, it provides compelling, methodologically controlled support for the plausibility of the proposed volcanic scenario, establishing Tendürek as the uniquely qualified candidate under the applied constraints.

3. Tendürek Volcano

To address the question of chronology (When?), historical evidence confirms that the "oven" designation for this specific volcano is both ancient and stable. Hübschmann identifies Tendürek as the seventh-century toponym for the volcano, while contemporary Armenian reference works document a tight cluster of related names, namely *Tendürek/Thondrak*[60] for both the volcano and a nearby settlement.[61] Furthermore, independent twelfth-century evidence by Dawit of Ganjak anchors *Thondrak* firmly within an "oven" semantic field.[62] Within the

[60] This cluster has three variants *Tendürek/Thondrak/Tondrak* which for simplicity and readability is shortened.

[61] For the volcano and the village co-labeled with the same name, *Thondrak* and a list of variants for both the village and the mountain, including *Thonir* "oven", see Hakobyan, et al., *Dictionary*, p. 469; for Cartographic reconstruction of seventh-century horizon in a comprehensive study of Vaspurakan/Turuberan toponymy, where the volcano and the village are co-labeled with the same name, Tendürek, see Heinrich Hübschmann, *Die altarmenischen Ortsnamen: Mit Beiträgen zur historischen Topographie Armeniens und einer Karte*, 1st edition (Leipzig: B. G. Teubner, 1904), pp. 484–90 and attached maps (Beilagekarte); for Eremyan's Cartographic reconstruction of tenth–eleventh-century horizon of the Kingdom of Vaspurakan where the volcano and the village are co-labeled with the same name, *Tondrak,* see *Haykakan Sovetakan Hanragitaran* [Armenian Soviet Encyclopedia], vol. 11, 1st edition (Yerevan: Armenian SSR Academy of Sciences, 1971–1986), historical cartography by S. T. Eremyan, *Historical cartography*, map *Vaspurakani t'agavorut'yun (908–1021)* [*Վասպուրականի թագավորություն (908–1021 թթ.)*], p. 320.

[62] A twelfth-century description by Dawit of Ganjak distinguishes between two oven types called *thonir* and *thondrak*, for original Armenian text see A. Abrahamyan, "Մատենագրական փորձանքներ. Դաւիթ Անաղթի որդուն կանոնները" ["Bibliographical Difficulties: The Canons of the Son of David the Invincible"],

published corpora surveyed, no other volcano or district in the immediate area appears to share this identical name cluster.

Further corroboration of the toponym's deep history, as reconstructed by Hübschmann, is preserved in tenth- and eleventh-century ecclesiastical sources, which reference the *Thondrak/Thondrakian* district and community in this region. The remarks of Gregory Magistros (d. 1058) noting that this community had already been active for two centuries securely places the toponym in the early ninth century at the latest.[63] Structurally, altering the name of a prominent mountain typically requires sustained state policy, a process illustrated by the twentieth-century Turkish homogenization campaigns that systematically replaced local place-names. The very survival of the *Tendürek/Thondrak* name cluster through such political pressures, in both Armenian and Turkish usage, renders it highly implausible that an entirely different name was current prior to the century and then vanished without a trace. This plausible stability points to a deeply rooted local identity for the volcano as "The Oven".

The geographical position of Tendürek facilitated the transmission of its name beyond eastern Anatolia into the broader Near eastern world, including the Levant. From at least the eighth century BCE onward, this volcano served as a prominent landmark along an important overland corridor.[64] Its location at the junction of the trans-Anatolian

Ejmiatsin, vol. 9, no. 11–12 (Etchmiadzin: Mother See of Holy Etchmiadzin, 1952), pp. 56–67, for English translation see C. J. P. Dowsett, *The Penitential of David of Ganjak,* 1st edition (Louvain: Secrétariat du CorpusSCO, 1961), p. 9; for modern lexical entries, see "Թոնդրուք" [Tondruk], *Nayiri.com: Online Armenian Dictionary*, https://www.nayiri.com, accessed 11 Nov 2025.

[63] Especially Gregory of Narek (d. 1003/11), Aristakes Lastivertcʿi (d. 1080), and Gregory Magistros (d. 1058), see *Grigor Narekacʿi* (*Gregory of Narek*), "Letter", in *Girkʿ tʿltʿocʿ* (*The Book of Letters*) [*Գիրք թղթոց*], 2nd edition (Jerusalem: Tparan Srbotsʿ Yakobeantsʿ [St. James Press], 1994), pp. 617–623; Aristakēs Lastivertcʿi, *Patmutʿiwn Aristakisi Lastivertcʿwoy*, ed. Karen Yuzbashyan (Yerevan: Publishing House of the Academy of Sciences of the Armenian SSR, 1963), chap. 22, digital facsimile, American University of Armenia, Digital Library, https://digilib.aua.am/en//library/100, accessed 11 Nov 2025; for Gregory Magistros' letters and his remark that the *Thondrakians* had already been active for two hundred years, see Conybeare, *The Key of Truth,* Appendix III: "Excerpts from Gregory Magistros", pp. 141–51.

[64] From the eighth century BCE, a trade route ran from Doğubayazıt along the eastern skirt of Tendürek toward its south to Muradiye and Karahan, forming a hub, see Ali Çifçi and Bilcan Gökce, "I Have Made a Highway of Biainili: Transportation and Road Networks in the Territories of the Urartian Kingdom", *Altorientalische Forschungen*, vol. 48, no. 2 (2021), pp. 221–32; for integration into the Silk Road, see

road networks, which later became integrated into broader Silk Road routes, gave it sustained onomastic visibility across languages and administrations for centuries. Beyond its strategic location, an additional factor supporting Tendürek as a plausible candidate for transmission into Arabic is the semantic transparency of its traditional designation. Unlike a mountain with an abstract or opaque name, an active volcano locally known as "The Oven" (*Thonrak*, *Thondrak*, or *Thonir*) presents a powerful and mnemonically salient concept. The image of a great, hot-breathing "oven" on the horizon would be memorable to travelers and local populations. Such landmark salience makes its name particularly suitable for adoption into a new language. This adoption would not have occurred in a vacuum, but rather through the well-attested mechanism of adaptation, known as loan-translation or calque. Crucially, this process would have been mediated by the Aramaic[65] and Syriac[66] lingua francas spoken by traders and travelers throughout the Near East. The word for "oven" itself—attested as Armenian *thonir*/*thondrak*, Aramaic/Syriac *tannūrā*, and Hebrew *tannūr*—was an ancient and widely-shared cultural loanword. Therefore, an Armenian speaker referring to the volcano as *Thondrak* would have been using a term instantly recognizable to a Syriac-speaking merchant, who would in turn render it using their own cognate. Once the landmark's identity as "The Oven" was established in the Semitic-speaking world of the Mesopotamia and the Levant, its formal adoption into Arabic would follow a predictable linguistic pattern: the common noun *tannūr*, prefixed with the definite article *al-,* to form the proper toponym *al-Tannūr*. This process of direct semantic translation is a common feature of toponymic adoption in the region, illustrated by the rendering of Hebrew *Be'er Sheva*ʿ into Arabic as *Bi'r al-Sab*.[67]

Zardaryan, "Communication Network of the Ararat Plain, Armenia", pp. 48–75; for the route Khoy (Iran)-Muradiye–Karahan south of Tendürek, and Doğubayazıt-Erzurum corridor that passed the skirts of the volcano, see Eskikurt, "Ortaçağ Anadolu Ticaret Yolları", pp. 25, 27.

[65] Chul-hyun Bae, "Aramaic as a Lingua Franca during the Persian Empire (538-333 B.C.E.)", *Journal of Universal Language*, vol. 5, no. 1 (2004), pp: 1-20.

[66] "Syriacs", in *New Catholic Encyclopedia* (Gale, 2003), https://www.encyclopedia.com/humanities/encyclopedias-almanacs-transcripts-and-maps/syriacs, accessed 10 Dec 2025.

[67] Here, a semantic adaptation can be assumed (a calque or loan-translation), similar to Arabic *Bayt Laḥm* for Hebrew *Bet Leḥem*, and *Bi'r al-Sab*ʿ for Hebrew *Be'er Sheva*ʿ, where Arabic reproduces the underlying sense rather than the precise phonetics. Hebrew *be'er* "well" and *ševa*ʿ "seven" are cognate with Arabic *bi'r* "well" and *sab*ʿ "seven". A similar pattern appears in biblical toponyms that begin with Hebrew *bet* ('house'),

The established presence of this toponym in the Levantine Semitic world provides the direct conduit to the Ḥijāz. Pre-Islamic Hijazi society, particularly the merchants of Mecca, was deeply integrated with the Levant through the well-documented caravan trade routes connecting them to the market centers of Syria and Palestine.[68] These routes were not merely channels of commerce; they were also the primary avennues for the exchange of language, ideas, and information. This sustained contact is further underscored by the significant influence of Aramaic and Syriac on the pre-Islamic Arabic lexicon.[69] Such deep linguistic integration would have created the necessary conditions for a memorable toponym such as "The Oven" to become recognizable and adoptable within a Hijazi audience.

The cumulative evidence presented in this section converges on a single candidate: Tendürek. Its case rests not on a single claim, but on multiple reinforcing pillars. The systematic filtering process isolates it as the sole known volcanic toponym to satisfy all phonetic, geographical, and direct semantic criteria. This identification is strengthened by a clear linguistic pathway for its adoption into Arabic through established trade routes and the mechanism of loan-translation. Critically, the historical stability of this "Oven" toponym is underscored by sources anchoring the *Tendürek/Thondrak* name in the region since at least the early ninth century, making the existence of an earlier, now-vanished name for such a prominent landmark highly improbable. The identification of Tendürek as the primary candidate raises a critical question: why do the great medieval Islamic geographers, who documented volcanoes elsewhere, remain silent on this specific one? The answer lies not in oversight, but in the region's specific political and literary history. As Guy Le Strange's

whose Arabic forms begin with *bayt* "house", as in the biblical *Bet Leḥem* בֵּית לֶחֶם (Genesis 35:19), whose Arabic form is *Bayt Laḥm*; also, a combination of phonological and morphological (common Arabic practice of adding the definite article *al-*) adaptations can be detected, similar to *al-Rūm* for Rome (Q. 30:1) and *al-Iskandarīyah* (Alexandria), see Yāqūt al-Ḥamawī, *Mu'jam al-Buldan*, vol. I, pp. 182–8.

[68] For a standard overview of Mecca's pre-Islamic commercial activity, particularly its caravan trade with the North (*al-Shām*), see W. Montgomery Watt, "Makka", in *The Encyclopaedia of Islam*, 2nd Edition, vol. 6, ed. by C. E Boswort et al. (Leiden: Brill, 1986), pp. 144–7.

[69] As a testament to this deep linguistic interaction, loanwords of Aramaic-Syriac origin account for more than 61 percent of the Quran's foreign vocabulary, see Martin R. Zammit, *A Comparative Lexical Study of Quranic Arabic*, 1st edition (Leiden: Brill, 2002), p. 58; see also Jeffery, *The Foreign Vocabulary of the Qur'ān*, "Introduction", and especially p. 19.

comprehensive review of the primary sources confirms, the province of Armenia, where Tendürek is located, was for centuries a "debatable land" between the Caliphate and the Byzantine Empire. Le Strange concludes that this frontier status meant the country was "never permanently settled by the Arabs, and detailed description of it is for the most part lacking in our earlier authorities."[70] The geographers' silence is therefore a predictable reflection of the region's long-standing peripheral status and the resulting scarcity of reliable information, rather than a challenge to the volcano's physical prominence.

D. Internal Evidence: *Fāra* Lexical and Syntactic Profile

This section examines the lexical and syntactic profile of the verb *fāra*, the past-tense form derived from the root *f-w-r*. The analysis is twofold: it first presents a diachronic survey of the semantic range of the root *f-w-r*, and subsequently delineates its characteristic syntactic behaviors. The objective of this dual approach is to assess whether a literal interpretation of *fāra al-tannūr* can be aligned with a volcanic eruption, specifically the eruption of Tendürek, thereby situating this reading within the linguistic milieu of the early-seventh-century Hijāz. Accordingly, this lexical review is problem-driven and targeted rather than exhaustive.[71]

1. The Semantic Range of The Root f-w-r

The root *f-w-r* displays a broad semantic spectrum in classical lexica. However, for the purposes of this study, it highlights only the usages and nuances that bear directly upon the expressions *fāra al-tannūr* and (Hell) *tafūr*. Lexicographical consensus holds that the core conceptual image of *f-w-r* is "overflowing", originally associated with heat. While this semantic field later extended to human and animal excitation, a diachronic survey of the extant sources reveals a shifting pattern in the types of subjects to which the root *f-w-r* is applied. Significantly, no reliable instance of *f-w-r*

[70] Guy Le Strange, *The Lands of the Eastern Caliphate* (Cambridge: Cambridge University Press, 1905), p. 4. Le Strange's conclusion is borne out by the details of his study. He notes, for instance, that while the geographers mentioned the prominent peak of Kūh Sīpān (Mount Süphan), they provided "no description" for the major city of Van on the shores of the same lake, confirming that their knowledge of the region was specific, patchy, and incomplete. See *Ibid.*, pp. 183-4.

[71] The omission of certain recorded meanings, or of particular lexica, should therefore not be read as ignorance or rejection, but simply as an indication that they either replicate material already cited or do not add interpretive value for the questions pursued here.

governing *tannūr* has yet been attested in pre-Quranic Arabic, whether in the surviving written or oral record. A survey of available Ḥijāzi and Najdi poetry from the pre-Quranic period up to the mid-eighth century[72] yields nine distinct morphological patterns across fourteen occurrences: *fawwar, fā'ir, fawrān, fā'ira, fuwār, fuwāra, fūr, fārat,* and *yafūr*. The majority of the subjects in these loci are horses and cooking pots, each attested four times, followed by fire, attested three times. The remaining subjects comprise an unidentified beast and a human chest, each attested once, as well as the changing color of garments, which is likewise attested once.[73]

Al-Khalīl (d. 786) likewise associates *f-w-r* with the cooking pot and fire, while adding smoke and anger (*fawr al-qidr wa'l-nār wa'l-dukhān wa'l-ghaḍab*). He further notes that the noun *fawwārah* denotes a fountain of overflowing water.[74] However, subsequent lexicographers began to shift away from this configuration. While Al-Khalīl and the early poets cite fire as the subject of *f-w-r*, Ibn al-Sikkīt (d. 866), in *Iṣlāḥ al-Manṭiq,*[75] and Ibn Qutaybah (d. 889)[76] omit fire from their definitions. Ibn Durayd (d. 933) follows this omission, regarding the *f-w-r* of cooking pot, he states that, it signifies boiling until its contents overflow (*ghalat ḥattā ya'lū mā fīhā fa-yafīḍ*).[77] This exclusion of fire is maintained by al-Azharī (d. 995).[78]

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[72] Although the clauses in question were revealed in the early-seventh-century Hijāz context, the earliest extant Arabic lexica available to us were compiled only from the mid-eighth century onward and are themselves often shaped in part by Quranic usage and exegetical traditions. To help bridge this chronological gap and obtain a broad picture of usage from the pre-Quranic period to roughly mid-eighth century, I searched all lexicons referred to this study, and digital corpus *al-Mausū'a al-Shi'riyya* (poetry.dct.gov.ae) for derivatives of the root *f-w-r*, restricting the query to poets associated with Ḥijāz and Najd and dated to the pre-Islamic and early Islamic periods. This study uses these *f-w-r* expressions only to sketch the main semantic domains in which the root appears. I used the corpus to sketch this broad picture, while the specific verses discussed later in the article are checked against standard lexica and printed sources and are cited from those works; see Dā'irat al-Thaqāfa wa'l-Siyāḥa bi Abī Ẓabī, *al-Mawsū'a al-Shi'riyya* (Mar 2016), https://poetry.dct.gov.ae/poets, accessed 20 Nov 2025.

[73] The three attestations of *tannūr* did not prove interpretable for our purposes. While *tannūr* is widely accepted as an ancient word with an intercultural and interlanguage background (see the following discussions in this section), the rarity of its attestations in the poetry corpus does not affect the results.

[74] Al-Khalīl, *al-'Ayn*, vol. III, p. 345.

[75] Ya'qūb b. Isḥāq b. al-Sikkīt, *Iṣlāḥ al-Manṭiq*, ed. Muḥammad Mur'ib (Beirut: Dār Iḥyā' al-Turāth al-'Arabī, 2002), p. 98.

[76] Ibn Qutaybah, *Adab al-Kātib*, p. 204.

[77] Ibn Durayd, *Jamharat al-Lughah*, vol. II, p. 788.

[78] Al-Azharī, *Tahdhīb al-Lugha*, vol. XV, pp. 178–80.

Al-Jawharī (d. 1008) introduces *fawr al-ḥarr: shiddatuh* ("the intensity of the heat"),[79] yet Ibn Sīda (d. 1066) continues to ignore fire as a direct subject.[80] Conversely, al-Rāghib (d. 1109) returns to the *f-w-r* of fire, defining it as "flaring up". Later, Ibn Manẓūr (d. 1311)[81] and al-Zabīdī (d. 1790)[82] omit fire while reporting the *ḥadīth* in which the severity of worldly heat is attributed to the *fawr* (boiling and seething) of Hell.

In the modern era, the concepts of overflowing and heat remain central. Notably, Mukhtār 'Umar expands this definition to include frothing, volume increase, and the release of gas bubbles, explicitly extending the term to non-thermal events by providing the example of carbonated water effervescing.[83] Concurrently, specialised modern Arabic literature utilizes the root *f-w-r* to denote volcanic eruptions (*fawrān burkānī*).[84] Based on this diachronic trajectory, it is reasonable to infer that for the early-seventh-century Hijāzi community, *f-w-r* primarily signified "overflowing", a core meaning that structurally persists into modern usage. In material up to the mid-eighth century, the subjects of *f-w-r* include pot, fire, smoke, anger, and water. From the ninth century onward, however, fire and smoke largely disappear, with al-Rāghib as a notable exception.

2. Syntax and Semantic

From a syntactic perspective, *fāra* ("overflowed") functions as an intransitive inchoative–resultative verb (a type of *fi'l lāẓim* conveying an immediate resultant state) whose affected participant may remain unexpressed. In the classical idiom *fāra al-qidr* ("the pot overflowed"), the construction instantiates a container-content metonymy (*tasmiya al-shay' bi-ẓarfih*), where the container ("pot") is syntactically profiled as the subject, while the actually affected patient, the boiling liquid, remains

[79] Al-Jawharī, *Tāj al-Lugha*, vol. II, p. 783.

[80] Ibn Sīda, *al-Muḥkam*, vol. IV, p. 191.

[81] Ibn Manẓūr, *Lisān al-'Arab*, vol. V, pp. 67–8.

[82] Al-Zabīdī, *Tāj al-'Arūs*, vol. XIII, pp. 347-53.

[83] Mukhtār 'Umar, *Al-Mu'jam,* vol. III, p. 1751.

[84] For an authorized international usage see United Nations, General Assembly, Special Committee on the Situation with Regard to the Implementation of the Declaration on the Granting of Independence to Colonial Countries and Peoples, "Working Paper on Montserrat", U.N. Doc. A/AC.109/2002/17 (Arabic version, 2002), pp. 4, 14: the Arabic text explicitly employs *fawrān burkānī* (volcanic eruption) when discussing Montserrat.

implicit.[85] Al-Rāghib's intertextual correlation between *fāra al-qidr*, *fāra al-tannūr*, and *hiya tafūr*[86] underlies this metonymic framework.[87] In the Quranic *hiya tafūr,* the pronoun refers to Hell, encoding an internal, heat-driven effervescence.[88] When *al-tannūr* is interpreted to denote a volcano in *fāra al-tannūr*, no syntactic argument is overtly omitted. Instead, *al-tannūr* activates a container-based semantic frame that licences a default implicit theme, such as magma, smoke, heat, and fire.

For the volcanic scenario, the early Hijāzi usage of *f-w-r* and the container-based syntax of *fāra al-tannūr* establish a remarkably coherent reading: a literal "overflow from a boiling container." This imagery, as conceptualized by Ibn Durayd (a pot boiling until its contents spill over), finds an exact geological counterpart not in the violent, paroxysmal explosion of stratovolcanoes, but specifically in the effusive eruptions of shield volcanoes. This volcanic type is defined by the gentle, persistent overflow of low-viscosity lava from its summit crater, serving as a perfect physical manifestation of the action implied by *fāra*. As demonstrated in Section F, the geological profile of Mt. Tendürek as a shield volcano

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[85] The same pattern appears in *fārat al-ʿayn* "the spring burst forth", where the spring's water is conceptually present though not overtly realised. If one says *fārat al-arḍ* "the earth burst forth", unlike *fāra al-qidr* there is no syntactically elided theme. The presence of a "substance" (water, lava, steam, gas, oil, fire) is only pragmatically inferred, not grammatically implied, because the earth is not, in ordinary usage, a conventional container. Hence, Ibn Durayd shows the correct form: *fāra al-mā' mina'l-arḍ* "water burst forth from earth." See Ibn Durayd, *Jamharat al-Lughah*, vol. II, p. 788: *wa fāra al-mā'u mina'l-arḍ, yafūru fawāran wa fawran, idhā naba'a*, "And when water *fāra* from the earth, *yafūru fawāran* and *fawran*, that is when it gushes/springs forth."

[86] Al-Ḥusayn b. Muḥammad al-Rāghib al-Iṣfahānī, *al-Mufradāt fī Gharīb al-Qur'ān*, 1st edition (Damascus–Beirut: Dār al-Qalam; al-Dār al-Shāmiyyah, 1412 AH), p. 647: *al-fawr: shiddat al-ghalayān, wa yuqālu dhālika fī'l-nār nafsihā idhā hājat, wa fī'l-qidr, wa fī'l-ghaḍab, naḥw: wa hiya tafūru wa fāra al-tannūr.* In his *Tafsīr* al-Rāghib likewise groups *hiya tafūr* and *fāra al-tannūr* together with *fāra al-qidr*, see al-Ḥusayn b. Muḥammad al-Rāghib al-Iṣfahānī, *Tafsīr al-Rāghib al-Iṣfahānī,* vol. III, 1st edition (Tanta: Faculty of Arts, Tanta University, 1420 AH), p. 840.

[87] The metonymy and intransitive effervescence events are only modern labels to patterns that the classical lexica and examples already imply (for instance, *fāra al-qidr*, *fārat al-ʿayn*). No independent theoretical model is being imposed beyond what these usages themselves show.

[88] No patient is overtly expressed, but the verse invites the listener to imagine an interior with fire and hot air surging violently. The appeal to *tafūr* here is strictly semantic: it serves as a comparator for how Classical Arabic patterns intransitive effervescence events, not as a full account of Hell's fire or acoustics, nor as a claim that it shares a physical referent with *fāra al-tannūr*.

satisfies these precise narrative and semantic requirements. This specific linguistic-geological alignment, reinforced by al-Rāghib's equation of *fāra al-tannūr* with the effervescence of Hell (*hiya tafūr*), provides robust internal validation for the volcanic scenario and bridges the text to the Hell-*tannūr* theological cluster.

E. Comparative Philology: Hell, *Tannūr*, and Volcano Imagery

The Jewish tradition explicitly citing the lexeme *tannūr* as the gateway to Hell was introduced in section B. This conceptual linkage between Hell and volcano phenomena resonates with ideas established within the Islamic tradition itself, for instance, an oral report traced to the early seventh century describes a distinct feature of Hell as a "mountain of fire" (*jabal min nār*).[89] The following materials further delineates the late antique Christian semantic milieu, demonstrating how the volcano similarly functioned as a vivid typological figure of Hell. This comparative framework, spanning Jewish, Christian, and Islamic traditions, illuminates a shared conceptual core defined by internal effervescence and acoustic roaring, a phenomenological pattern encoded by the Quranic root *f-w-r*. Consequently, this contextualization substantiates the intratextual harmony between *fāra al-tannūr* and (Hell) *tafūr* without necessitating a hypothesis of direct textual dependence on any single predecessor.

This Hell-*tannūr* conceptual cluster extends significantly into Christian traditions. In Gospel of Matthew 13:42 and 13:50, the "furnace of fire" serves as the site of eschatological punishment into which the wicked are cast. Furthermore, in the *Apocalypse of Paul*, a widely circulated pre-Quranic visionary text,[90] the seer is led through a subterranean Hell marked by deep pits boiling like great cauldrons and illuminated by immense flames. Evaluated alongside the Arabic lexical

[89] Abū ʿĪsā al-Tirmidhī, *Jāmiʿ al-Tirmidhī*, *ḥadīth* 3326. Al-Tirmidhī notes the hadith's status as *gharīb* (uncommon) and that its chain relies on the narrator Ibn Lahīʿah. While the chain has been subject to scholarly discussion, the concept itself remained part of the imaginative landscape of eschatology in later Islamic literature.

[90] The Apocalypse of Paul is a widely disseminated Christian apocalypse—originally in Greek and translated into Latin, Armenian, Arabic, Ethiopic, Syriac, and Slavonic—and the Sahidic Coptic version likely reflects an early Greek Vorlage (3rd century). See a detailed history of the work and its transmission in Lautaro Roig Lanzillotta and Jacques van der Vliet, *The Apocalypse of Paul (Visio Pauli) in Sahidic Coptic: Critical Edition, Translation and Commentary*, 1st edition (Leiden–Boston: Brill, 2023), pp. 1–16.

proximity of *tannūr* to *sāʿūr* (oven-pit) and *saʿīr* (Hell),[91] this visionary topography establishes the oven-pit as natural cultural metaphor for *Gehenna*. Moreover, the text portrays Hell as a desolate landscape desiccated by burning winds, characterized by boiling, belching sulfur, and dense smoke plumes.[92] This combination constitutes an imagery that geomorphologically approximates a volcanic field.[93]

This volcanic framing is explicitly historicized in Western patristic accounts. Gregory the Great (d. 604) recounts a vision in which a tyrant is cast into Hell through Vulcano, a volcanic crater in the Aeolian Islands off Sicily.[94] Here, the volcanic vent is not merely analogized

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[91] *Sāʿūr/sāʿūra* —the oven-pit, al-Khalīl relates *tannūr's* shape and heat to *sāʿūr: ka hayʾat tannūr yuḥfar fī l-arḍ*, "an oven-pit dug into the ground, similar to a *tannūr*", and this trend continues in later lexica, see al-Khalil*, al-ʿAyn,* vol. 2, p. 247; al-Azharī*, Tahdhīb al-Lugha*, vol. II, p. 54; Ibn Manẓūr, *Lisan al-Arab,* vol. IV, p. 265.

[92] E. A. Wallis Budge, *Miscellaneous Coptic Texts in the Dialect of Upper Egypt,* 1st edition (London: Oxford University Press, 1915), p. 1058: "And I Paul looked and I saw a large desolate region which had been dried up by a burning wind and was awful to contemplate; and it was [full of] pits and deep holes in the ground. There was a pit which had been dug to a depth of one hundred cubits, there was a pit which had been dug to a depth of fifty cubits, there was a pit which had been dug to a depth of thirty cubits, there was a pit which had been dug to a depth of twenty cubits, and there was a pit which had been dug so deep that [its end] reached the confines of the abyss. There was a pit filled with dragons, there was a pit filled with ice (or, snow), there was a pit filled with pitch and sulphur which boiled up like [the water in] a boiling cauldron, and from which portions of pitch and sulphur belched up [into the air] to a height of thirty cubits, there was a pit filled with worms (or, serpents), which stank exceedingly, there was a pit filled with some most horrible liquid, there was a pit filled with fire, the flame of which was like unto leeks in colour, there was a pit the smoke of which rose up to the very firmament, and there was a pit over which the angels of death presided."

[93] On the wider late antique circulation of Hell–volcano imagery, it is worth noting that the *Apocalypse of Paul* enjoyed broad readership. Late antique maritime and overland networks densely linked Sicily and southern Italy with the Levant and Arabia, and Christian monastic and mercantile communities along the eastern Mediterranean and Red Sea coasts, together with Christian Arab groups in Syria and northern Arabia, provided obvious channels by which such motifs could travel. This does not license any specific route of influence into the Quran, and the present argument does not depend on one; it simply assumes that coupling Hell with volcanic vents belonged to the wider late antique imaginary accessible to Near Eastern audiences.

[94] Edmund Garratt Gardner, *The Dialogues of Saint Gregory the Great,* 1st edition (London: P. L. Warner, 1911), p. 214: "When they were come to the man of God, amongst other talk which they had, he asked them this question: 'Do you', quoth he, 'hear that king Theodoricus is dead?' to whom they quickly answered: 'God forbid: we left him alive at our departure from Rome; and before this present we never heard of any such thing.' Then the servant of God told them that certainly he was dead: '

to Hell. It functions ontologically as Hell's gate, a concrete, terrestrial opening into punitive fire. Similarly, Isidore of Seville (d. 636), in his discussion of Mount Etna, the famous Sicilian volcano, describes its terrifying acoustic roaring generated by seething fires, explaining the phenomenon as pressurized air struggling against internal volcanic fire within the mountain. He concludes that "this is beyond doubt a symbol of *Gehenna*, whose perpetual fire will spew out flames to punish sinners who will be tormented forever and ever."[95] Isidore's account seamlessly

for yesterday,' quoth he, 'at nine of the clock, he was without shoes and girdle, and his hands fast bound, brought betwixt John the Pope and Symmachus the Senator, and thrown into Vulcan's gulph, which is not far from this place.' When they heard this news, carefully they wrote down the time, and at their return into Italy, they understood that king Theodoricus died upon that very day, in which his unhappy passage out of this world and punishment was revealed to the servant of God." And for as much as he had, by miserable imprisonment, been the death of Pope John, and also killed Symmachus, justly did he appear to be thrown of them into fire, whom before in this life he had unjustly condemnedition"

[95] Isidore of Seville, *On the Nature of Things*, trans. and comm. by Calvin B. Kendall and Faith Wallis, 1st edition (Liverpool: Liverpool University Press, 2016), pp. 174–5: "Mount Etna. Justinus wrote this about Mount Etna in his book of Histories: the earth of Sicily is thin and brittle, and so penetrable through certain cavities and openings that it lies almost completely open to the blasts of the winds. Also the substance of the soil itself is of a nature for generating and nourishing fires; indeed, it is said to be layered on the inside with sulphur and pitch. This is the cause of the fact that, as the air struggles against the fire within, the earth frequently and in many places belches sometimes flames, sometimes vapours, and sometimes smokes. This is the reason, finally, that the fire of Mount Etna endures through so many ages, and, whenever the wind has pressed more violently through the vents of the caverns, masses of sand and stones are discharge. The Aeolian Islands are also always ablaze, as though that fire were fed by their very waters. For so great a fire would never otherwise have been able to endure for so many ages in so narrow a place, unless it were fed by the nutriment of moisture. Hence, therefore, this has been the cause of the fables of Scylla and Charybdis, of reports of barking, of incredible phantoms of monstrosity, while sailors, terrified by the great whirlpools of the sundered sea, imagine that the waves, which the swirl of the sucking surge beats together, are barking. The same cause creates the perpetual fires of Mount Etna as well. For that convergence of waters draws the air trapped within it into the lowest depth and holds it compressed there until, after being diffused through the vents of the earth, it kindles the nutriment of fire. This is beyond doubt a symbol of hell, whose perpetual fire will spew out flames to punish sinners who will be tormented forever and ever."; Similar volcano roaring process is common from before Christ, such as poetic clause of Virgil (70–19 BC.): "There lies a harbour, safe from the winds' approach and spacious in itself, but near at hand Aetna thunders with terrifying crashes, and now hurls. forth to the sky a black cloud, smoking with pitch-black eddy and glowing ashes, and uplifts balls of flame and licks the stars—now violently vomits forth rocks, the mountain's uptorn entrails, and whirls molten stone

synthesizes an acoustic mechanism with a symbolic mapping. The roar is simultaneously a natural consequence of internal effervescence and an eschatological portent.

Within this late antique network, the Quranic description of Hell's *shahīq* (gasping or roaring) introduces a complementary acoustic dimension. In a poetic line, al-Hudhalī (d. 700),[96] a Hijazi poet from Banū Hudhayl, contrasts the blessed being hurried to the sweet fragrance of paradise (*rayḥān al-jinān)* while the damned are driven to the rumbling roars of pale blazing fire (*zamāzīm fawwār mina'l-nār shāhib*).[97] This early usage of *f-w-r* functions as a near-contemporary poetic gloss, revealing how a seventh-century Arabic-speaking audience might have conceptualised the *shahīq* and *tafūr* of Hellfire. It evokes an image of internal, effervescent combustion characterized by successive, blast-like acoustic bursts of pure flame, akin the sound of a large metal furnace. Centuries later, al-Ṭabarānī (d. 982) explains *shahīq* as the loud, roaring acoustic resonance produced when a blaze intensifies, as if seeking fuel,[98] while modern commentators like Nasr, maintain that, *shahīq* denotes the hideous sound emitted by Hellfire."[99]

This comparative reading reveals a striking typological parallel. Isidore's mechanical explanation for a volcano's roar mirrors the Quranic description of Hell, whose own effervescent boiling (*tafūr*) generates a terrifying acoustic roar (*shahīq*). While this study does not attempt to define the physical nature of Hell's fire, it utilizes this cross-cultural evidence to corroborate al-Rāghib's pivotal intratextual argument that the pairing of *fāra al-tannūr* with (Hell) *tafūr* is structurally non-arbitrary. Although al-Rāghib himself did not draw upon these external historical parallels, the evidence demonstrates that both the Quran and the late

skyward with a roar, and boils up from its lowest depths.", see Virgil, *Eclogues. Georgics. Aeneid I–VI,* trans. by H. Rushton Fairclough, Loeb Classical Library, vol. 1 (London: William Heinemann; New York: G. P. Putnam's Sons, 1996), pp. 386–7.

[96] Abū Ṣakhr al-Hudhalī ('Abd Allāh b. Salamah al-Sahmī) is an Umayyad-period poet. For general information, see 'Abd al-Fattāḥ 'Āyish Qayṣar, *Mu'jam al-Udabā' min'al-'Aṣr al-Jāhilī ḥattā Sanat 2002*, vol. I, 1st edition (Beirut: Dār al-Kutub al-'Ilmiyya, 2003), p. 72.

[97] For the full verse "*fa 'ujjiltu rayḥānu al-jināni wa 'ujjilū/zamāzīmu fawwārin mina al-nāri shāhibī*", see al-Zabīdī, *Tāj al-'Arūs*, vol. 3, p. 164; for the meanings "*zamzama al-ra'd tatābu' ṣawtih*" and "*zamāzim al-nār: aṣwāt lahabihā*", see Ibn Manzūr, *Lisan al-Arab*, vol. 12, p. 274.

[98] Sulaymān b. Aḥmad al-Ṭabarānī, *al-Tafsīr al-Kabīr: Tafsīr al-Qur'ān al-'Aẓīm,* vol. VI, 1st edition (Irbid: Dār al-Kitāb al-Thaqāfī, 2008), p. 313.

[99] Nasr, *The Study*, p. 2552.

antique imagination operated within a shared conceptual matrix.

The continuous strand of evidence from Jewish, Christian, and early Arabic sources is therefore compelling. It confirms that a Hell-*tannūr*–volcano conceptual cluster was a robust, active component of the late antique imagination. The existence of this shared, non-derivative conceptual network is precisely what renders the volcanic reading of the Quranic signal so resonant with the theological landscape of its era. Consequently, interpreting *al-tannūr* as literal reference to the toponym of Mt. Tendürek situates the Quranic signal within an established theological framework. The eruption of The Oven becomes a direct, potent evocation of the gate of Hell. This reading integrates the phrases *fāra al-tannūr* and (Hell) *tafūr* into a coherent theological sign, wherein the opening of the earth's furnace unleashes an immediate, terrifying premonition of divine punishment, thereby powerfully reinforcing the theological core of the Flood narrative.

F. Narrative Function: Audibility and Accessibility

The narrative role of *fāra al-tannūr* is not that of a random omen, but of a pre-ordained, promised event. This status is implicit in the command to Noah to stand ready for that specific trigger (*ḥattā*, Q. 11:40). Hence, it functioned as a pre-arranged signal that, upon its occurrence, had to be instantly and unambiguously recognizable. This concept aligns with the commentary of al-'Ayyāshī (d. 932): *innallāh aḥabb an yarā qawm Nūḥ al-āya*, ("Indeed, God wished that the people of Noah would see the sign").[100] This high functional burden, requiring the signal to be public, clear, and pre-announced, is the primary criterion that any proposed physical candidate must satisfy. Having established Tendürek as the sole qualifying toponym and paired it with the theological framework of Hell's effervescence (*tafūr*), the argument now turns to this functional test, demonstrating how the volcano's specific geological characteristics render it an exceptionally effective candidate for this demanding narrative role.

Tendürek is a broad volcanic massif with two main cones, Greater (3549 m), and Lesser (3313 m).[101] The geological profile of Greater

[100] al-'Ayyāshī, *al-Tafsīr,* vol. II, p. 146.

[101] Tendürek, one of the largest Late Quaternary volcanoes in eastern Anatolia, straddles the eastern flank of the sub-longitudinal Aladağ ridge, which forms the watershed between the Murat and Bendimahi basins. Its lava fields descend toward the Doğubayazıt plain to the north and the Çaldıran plain to the south. The edifice is an isolated, low-relief, elliptical volcanic center with two summit cones: the western peak,

Tendürek corresponds to a classic shield volcano, constructed during its latest and most expansive eruptive phase from low-viscosity lava. Its broad, domal morphology and open summit vent establish a physical profile that structurally comports with the lexeme *tannūr* (oven). These eruptive products significantly exceed those of earlier stages, blanketing much of the contemporary edifice. Furthermore, Lebedev's volcanological reconstruction demonstrates that ancient lava flows regularly breached the mountain's flanks, cascading down into the adjacent plains.[102] This effusive eruptive style is crucial, as its defining signature is a continuous, non-paroxysmal overflow from an open vent, serving as a precise physical manifestation of the action implied by the phrase *fāra al-tannūr*. The most visually salient feature of such an eruption is a long-lasting, incandescent crater that spills lava down its flanks over an extended period, potentially spanning years or even decades.[103] Such eruptive activity would generate a persistent, high-salience public signal. By day, it manifests as a towering pillar of volcanic gas and aerosol dominating the regional airspace; by night, it transforms into an incandescent beacon of molten lava commanding the horizon. This enduring and unforgettable regional phenomenon satisfies the narrative requirement for a potent, widely accessible, and unambiguous warning.

This volcanic signal, however, operates not merely as a physical marker but a profound theological signpost. The eruption of The Oven (Tendürek), thus functions symbolically as the opening of Hell's gate, delivering an urgent eschatological message: this represents the final

known as Greater Tendürek (3549 m), and the eastern, known as Lesser Tendürek (3313 m). Today, the Greater and Lesser Tendürek peaks are the mountain's most visible and distinctive features.

[102] Vladimir A. Lebedev, et al., "Late Pleistocene Tendürek Volcano (Eastern Anatolia, Turkey), I. Geochronology and Petrographic Characteristics of Igneous Rocks", *Petrology*, vol. 24, no. 2 (2016), p. 148.

[103] In contrast to short, explosive paroxysms, effusive eruptions at shield volcanoes are often long-lived: Hawaiian-style basaltic cone- and shield-building episodes typically last weeks to months, see Bruce F. Houghton et al., "Proximal Tephra Hazards: Recent Eruption Studies Applied to Volcanic Risk in the Auckland Volcanic Field, New Zealand", *Journal of Volcanology and Geothermal Research*, vol. 155, no. 1–2 (2006), pp. 138–49; and in some documented cases at Kīlauea the effusion has continued almost uninterrupted for decades, see U.S. Geological Survey, "Kīlauea", *U.S. Geological Survey*, https://www.usgs.gov/volcanoes/kilauea, accessed 21 Nov 2025, and U.S. Geological Survey, Hawaiian Volcano Observatory, "The Puʻuʻōʻō Eruption Lasted 35 Years" (22 November 2023) https://www.usgs.gov/volcanoes/kilauea/science/puuoo-eruption-lasted-35-years, accessed 21 Nov 2025.

opportunity for the pre-Flood generation to make their ultimate choice. The Quranic clause *idhā jā'a amrunā wa fāra al-tannūru* (Q 11:40; 23:27) could thus be conceptualized in heuristic shorthand as "when Our command came and *al-tannūr* erupted." Within the historical context of Tendürek, this translates into a clear operational instruction: "When The Oven erupts, initiate the ark-loading operation."

The boarding of the Ark was itself a long-duration logistical task, an extended timescale that perfectly comports with the protracted eruptive behavior typical of a shield volcano. Throughout this operational window, the eruption of The Oven would have continued unabated, broadcasting its visual warning across the landscape and framing the ultimate choice for humanity: board the Ark or succumb to Hell. Subsequently, God unleashed the gates of heaven with torrential rain and caused the springs of the earth to burst forth in overflowing streams (Q. 54:11–12; Genesis 7:11), thereupon drowned all the transgressors and casted them into eschatological punishment (Q. 71:25), while sparing only those who secured refuge within the Ark.

G. External Corroboration: Timeframe and Demographic Bottleneck

Having established Tendürek as a linguistically, theologically, and functionally coherent candidate for *al-tannūr*, this framework addresses its final and most critical empirical test: external historical corroboration. It is essential to reiterate that this framework treats the volcanic eruption solely as the pre-ordained signal for the impending Flood, rather than its physical or hydrological cause. The objective, therefore, is to determine whether the geological timeframe of this volcanic signal intersects with empirical evidence of a subsequent, major demographic bottleneck in the human population.

To achieve this, this study does not generate new dates but reinterprets published volcanological and archaeological datasets in light of the Quranic signal. While the most recent comprehensive reconstruction of Greater Tendürek's eruptive history[104] places its primary episodes within a broad chronological window between 10,000 and

[104] In Lebedev's reconstruction, K–Ar dating of ten lavas from the Greater Tendürek shield yields a mean age of about 30 thousand years with an average analytical uncertainty on the order of 20 thousand years, and does not reject smaller historic eruptions, see Lebedev, "Late Pleistocene Tendürek Volcano", pp. 143, 148, 150.

50,000 years ago,[105] a higher-precision radiometric dating from a specific lava flow provides a significant testable timeframe of 11,000 to 15,000 years ago.[106] An ancient regional signal of this magnitude must be cross-examined against a distinct demographic shadow in the archaeological record, which manifest through (1) contemporary population thinnings and widespread settlement interruptions, and (2) significant structural reorganizations of human occupation visible across site sequences and regional surveys. Only if a compelling alignment between this geological signal and a catastrophic archaeological event can be established is it possible to responsibly propose a specific historical horizon for the Flood narrative.

An examination of the temporal window of 11,000 to15,000 years ago reveals a compelling convergence between the geological signal, the paleoclimatic record, internal Quranic clues, and the archaeological data. First, the paleoclimatic record confirms that this epoch was defined by extreme hydrological instability. The hyper-arid and cold conditions of the preceding Last Glacial Maximum were brought to an abrupt end by the Bølling-Allerød warming around 14,800 years ago,[107] a period of intense, rapid global climate change that provides plausible environmental context for a catastrophic regional flooding event. Second, the Quranic narrative itself implicitly comports with this pre-Flood climate. Prophet Noah's rhetorical promise that repentance would bring "plentiful rain" (Q. 71:11) strongly implies an antecedent environment of severe, prolonged drought, which mirrors the scientific consensus for the period immediately

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[105] Tightening Lebedev's window requires higher-precision dating on a larger number of samples whose place in the eruptive sequence is stratigraphically well controlled. For example, charcoals or paleosols for ^14C where suitable, also, new dating for existing samples. Personal communication via email with Vladimir A. Lebedev, 29 Sep 2025).

[106] Keisuke Nagao, et al., "Highly Reproducible 13 and 17 ka K–Ar Ages of Two Volcanic Rocks", *Geochemical Journal*, vol. 25, no. 6 (1991), p. 449.

[107] In 2006, Sune Rasmussen and colleagues proposed 14,692 +/-186 before year 2,000 for the onset of Bølling–Allerød warming. For our purpose in 2026, it is 14,718 +/- 186 years ago. Another date which was used those dates was 14,750 +/- 50 which in 2026 means 14,776 +/- 50 years ago. Both of these scientific dates cover 14,800 years ago. See S. O. Rasmussen et al., "A New Greenland Ice Core Chronology for the Last Glacial Termination," *Journal of Geophysical Research*, vol. 111, D06102 (2006). For the abrupt nature of the Bølling–Allerød warming, see Peter Köhler, Gregor Knorr, and Edouard Bard, "Permafrost Thawing as a Possible Source of Abrupt Carbon Release at the Onset of the Bølling/Allerød", *Nature Communications*, vol. 5, no. 5520 (2014), pp. 1-10.

prior to the Bølling-Allerød transition. Finally, the archaeological record of this exact period exhibits profound structural disruption. This is evidenced by the abrupt emergence of the Early Natufian horizon in the Levant,[108] around 14,800 years ago, occupying a landscape that was largely depopulated.[109] Furthermore, wider archaeological signs of demographic stress and systemic reorganisation around 14,800 years ago—characterized by settlement discontinuities, faunal turnovers, and cultural transformation spanning the Mediterranean,[110] North Africa,[111]

[108] For the Natufian as a terminal Pleistocene horizon marking the threshold to agriculture and early sedentism in the Levant and framing Natufian as the threshold to the origins of agriculture, see Ofer Bar-Yosef, "The Natufian Culture in the Levant, Threshold to the Origins of Agriculture", *Evolutionary Anthropology*, vol. 6, no. 5 (1998), pp. 159–77.

[109] For around 14,800 years ago dating of initial Early Natufian habitation in *el-Wad*, see Reuven Yeshurun et al., "A Natufian Demographic Cycle at El-Wad Terrace, Israel: The Rise and Fall of The Architectural Compound", *Archaeological Research in Asia*, vol. 41, no. 100599 (2025), pp. 1-17. For emptiness of the Levant and the adjacent lands, see Brian F. Byrd, "Reassessing the Emergence of Village Life in the Near East," *Journal of Archaeological Research,* vol. 13, no. 3 (2005), pp. 231-90.

[110] For the signs of discontinuies in these landscapes, see Andrew. M. T. Moore, "Post-Glacial Transformations Among Hunter-Gatherer Societies in the Mediterranean and Western Asia", in *The Oxford Handbook of The Archaeology and Anthropology of Hunter-Gatherers*, ed. Vicki Cummings, Peter Jordan, and Marek Zbelebil (Oxford: Oxford Univ. Press, 2015), pp. 456-78; Valentín Villaverde Bonilla et al., "The End of the Upper Palaeolithic in the Mediterranean Basin of the Iberian Peninsula", *Quaternary International*, vol. 272-273 (2012), pp. 17-32; Denise Leesch et al., "The Magdalenian in Switzerland: Re-Colonization of a Newly Accessible Landscape", *Quaternary International*, vol. 272–273 (2012), pp. 191–208; Alexander Verpoorte and Petr Šída, "The Magdalenian Colonisation of Bohemia (Czech Republic)", *Archäologisches Korrespondenzblatt*, vol. 39, no. 3 (2009), pp. 325–32; Sandrine Costamagno et al., *Animal symbolisé, animal exploité: du Paléolithique à la Protohistoire* (Paris: Éditions du Comité des travaux historiques et scientifiques, 2018); Carmen Cacho et al., "Human landscapes of the Late Glacial Period in the interior of the Iberian Peninsula: La Peña de Estebanvela (Segovia, Spain)", *Quaternary International*, vol. 272–273 (2012), pp. 42–54; Carmen Cacho and Jesús Jordá Pardo, "El Tossal de la Roca", in *Pleistocene and Holocene Hunter-Gatherers in Iberia and The Gibraltar Strait: The Current Archaeological Record*, ed. by Robert Sala Ramos (Burgos: Universidad de Burgos, 2014), pp. 568-73; Maïlys Richard et al., "Chronology of Upper Paleolithic Human Activities Recorded in a Stalagmite at Points Cave (Aiguèze, Gard, France)", *Geoarchaeology: An International Journal*, vol. 39, no. 5 (2024), pp. 470-84; Lidia Cabello et al., "New Archaeological Data on the Upper Paleolithic Site of Cueva de Malalmuerzo (Moclín, Granada, Spain)", *Munibe Antropologia-Arkeologia*, vol. 71 (2020), pp. 41–57.

[111] Kayla B. Worthey et al., "Expansion of Forest Cover and Coeval Shifts in Later Stone Age Land-Use at Taforalt and Rhafas Caves, Morocco, as Inferred From Carbon Isotopes in Ungulate Tooth Enamel", *Plos One*, vol. 20, no. 6 (2025), 1-15;

South America,[112] East Asia,[113] and the Near East[114]—all converge within this narrow chronological window. This convergence establishes a plausible illustrative horizon for exploring historical correlations. While a genuinely corroborative validation will require a broader, systematized survey of global stratigraphic sequences, which lies beyond the immediate scope of this article, it nonetheless delineates a clear, empirical program for future interdisciplinary research.

H. Concluding Remarks

In the Quranic narration, the signal expressed by the phrase *fāra al-tannūr* serves as profound historical and theological dividing line between pre-Flood and post-Flood humanity. While classical exegetes have consistently operated within a shared interpretive framework, conceptualizing the overflowing of *al-tannūr* as the immediate portent of the impending deluge, this study has argued that a volcanic reading provides a rigorous scaffolding for identifying both a plausible historical timeframe and a deeper theological insight. Specifically, this volcanic framing pairs the complementary expressions *fāra al-tannūr* and (Hell) *tafūr* into a coherent semiotic signal of divine retribution manifested at the very gates of Hell, thereby powerfully illuminating the eschatological core of the Flood narrative.

Grounded in realistic textual and historical parameters, this study developed and implemented a four-criteria framework to systematically assess the volcanic scenario. While respecting the internal coherence of the classical tafsir heritage, the evaluation demonstrates that for a volcanic interpretation to hold, the term *al-tannūr* must be fundamentally

Alessandro Potì et al., "Human Occupation and Environmental Change in the Western Maghreb during the Last Glacial Maximum (LGM) and the Late Glacial. New Evidence from the Iberomaurusian Site Ifri El Baroud (Northeast Morocco)", *Quaternary Science Reviews*, vol. 220 (2019), pp. 87-110;

[112] David B. Madsen et al., "Characterizing the American Upper Paleolithic," *Science Advances*, vol. 11, no. 43 (2025), pp. 1-18;

[113] Jangsuk Kim and Chuntaek Seong, "Final Pleistocene and Early Holocene Population Dynamics and the Emergence of Pottery on the Korean Peninsula", *Quaternary International*, vol. 608–609 (2022), pp. 203-14.

[114] For the same pattern in the Near East, see Marcel Otte, Ignacio Lopez Bayon and Pierre Noiret, "Sedimentary Deposition Rates and Carbon-14: the Epi-paleolithic Sequence of Okuzini Cave (Southwest Turkey)", *Journal of Archaeological Science*, vol. 30, no. 3 (2003), pp. 325–41; Eleni Asouti et al., "The Zagros Epipalaeolithic Revisited: New Excavations and 14C Dates from Palegawra Cave in Iraqi Kurdistan", *Plos One,* vol. 15, no. 9 (2020), pp. 1-99; Byrd, "Reassessing the Emergence".

understood as a specific toponym. Geohistorically, this methodological framework isolates Mount Tendürek not merely as a tentative candidate, but as an exclusively qualified locus whose empirical geological profile, theological resonance, and narrative function align with the Quranic account. The *Tendürek/Thondrak* onomastic cluster provides a robust, historically attested pathway for the term's conceptual integration into the early Arabic lexicon.

This inquiry originated from the theological nucleus of the Flood narrative, exploring whether correlating the text with a traceable geohistorical event could better elucidate its Late Antique eschatological reception. Translated into empirical terms, such a correlation requires identifying a distinct chronological window marked by a pronounced demographic bottleneck. With Mount Tendürek firmly established as the primary candidate, its eruptive history yields this crucial timeframe. One of its major effusive phases, securely dated to approximately c. 11,000-15,000 years ago, offers an externally testable window that remarkably resonates with internal Quranic clues. For instance, Noah's rhetorical promise of "plentiful rain" (Q 71:11) implies an antecedent environment of severe drought, a well-documented feature of the regional paleoclimate during this specific arid epoch. When viewed alongside the wider Paleolithic archaeological record, this geological window achieved significant explanatory leverage.

Taken together, these findings demonstrate that the proposed volcanic scenario satisfies the rigorous constraints of the four-criterion framework. While absolute corroboration requires further multidisciplinary work, this study has established the foundational pillars for a novel, testable historical reconstruction. To that end, it calls for further research along several targeted avenues. Given Tendürek's placement within an ancient trade-route network, systematic investigations are needed to trace early attestations of *al-tannūr* or its cognates within Anatolian, Armenian, or Syriac literary corpora. In addition, an independent, dedicated linguistic-historical study of the lexeme *tannūr* is warranted to further augment the existing etymological evidence base. Obtaining refined, high resolution dates for Tendürek's specific eruptive events would also narrow current chronological windows, providing a firmer basis for assessing its historical intersection with the text *al-tannūr*. Furthermore, a more comprehensive integration of regional archaeological sequences, re-analysis of sample datings, and targeted paleoclimatic provenance studies are necessary to detect localized demographic shadows coincident with Tendürek's activity.

In essence, this study does not claim to have conclusively dated the Flood narrative. Rather, it offers a methodologically controlled, testable framework comprising a philologically grounded reading of *al-tannūr* as a volcanic toponym, a prioritised geographical locus (Tendürek), and a provisional chronological window. This framework is then tested against the archaeological record, revealing a noteworthy correlation with a plausible, intersecting global demographic bottleneck. This working framework should not be construed as narrowing the legitimate semantic range of classical *tafsīr* of *fāra al-tannūr* or as assigning dogmatic status to any particular physical scenario. Should future philological, historical, or geological research validate an alternative locus or timeframe, such data would naturally revise this specific case-study without undermining the transcendent authority of the Quranic text or the theological legitimacy of established exegetical traditions. The reconstruction advanced here is therefore offered as a fallible, testable historical contribution that stands respectfully alongside, rather than in place of, the timeless heritage of the classical Islamic scholarship.

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