Earth: Day Zero — Paper I

The Middle Mountain Sequence

A Geometry-First Reconstruction of a Formative Earth Event

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Frozen Canonical Version v1.0

Frozen canonical version v1.0 — Earth: Day Zero, Paper I.

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Abstract

Earth: Day Zero advances a replacement-level causal hypothesis concerning a formative event in early Earth history. The framework begins not with a specified impactor, energy calculation, or interior-mechanical model, but with a proposed planetary-scale geometric relationship.

The primary claim examined in this paper is an ordered three-domain sequence:

Antarctic Entrance → Hawai'i/Mauna Kea Middle Mountain → Arctic Exit.

The event is placed within a broad formative interval extending approximately from 4.544 Ga to 4.096 Ga. No exact event date is asserted.

The central question is deliberately narrower than the full Earth: Day Zero hypothesis: whether the proposed entrance, Middle Mountain, and exit domains constitute a coherent and recoverable spatial relationship sufficiently specific to warrant investigation as a common-cause structure.

The geometric claim is evaluated independently of any newly introduced mechanism. However, Earth: Day Zero is reconstructed within Astro-Ballistic Chronostratigraphic Sequencing (ABC Sequencing), in which later events may modify structures inherited from earlier events. A later transformation may therefore be reversed when it was independently specified by the sequence record before the earlier-state fit is evaluated. Such a transformation may not be invented, selected, or tuned after inspection merely to force agreement.

This paper therefore treats geometry as the first adjudicative layer of Earth: Day Zero. It distinguishes observation from reconstruction, reconstruction from causal interpretation, and compatibility from demonstration. Alternative middle-domain interpretations, reconstruction uncertainty, non-uniqueness, and deep-time recoverability are treated as direct attack surfaces.

The objective is not to presume the formative event. It is to determine whether the Middle Mountain Sequence presents a sufficiently constrained geometric object to deserve causal explanation.

At the geometric resolution used in Paper I, the uncorrected present-state Antarctic–Arctic relationship is intentionally broad. The Level 1 baseline therefore places Hawai'i/Mauna Kea within the intermediate region but does not independently determine longitude. Its present-state verdict is consequently **broadly admissible, positionally non-unique, and non-discriminating**.

The historical Middle Mountain claim remains **unresolved pending sequence-corrected reconstruction**. The later approximately 256 Ma Aegean–Everest–Mariana ABC event is retained only as a previously registered, source-derived modification that may explain why the modern Middle Mountain expression is offset from the older equatorial relationship. No exact paleo-coordinate or complete displacement mechanics are asserted in Paper I. A torus-like three-dimensional resemblance of the polar entrance–exit axis and equatorial middle response is noted only as a descriptive geometric observation and receives no mechanistic or evidentiary credit.

1. Research Status and Scope

This paper is testing one thing first: whether Antarctica, Hawai'i/Mauna Kea, and the Arctic form a meaningful three-part planetary geometry.

Earth: Day Zero originated as a broad investigation into the formative history of Earth, the origin of the Moon, and large-scale planetary structure. Its developmental research archive explored numerous geometric, energetic, geological, geophysical, and Earth–Moon hypotheses.

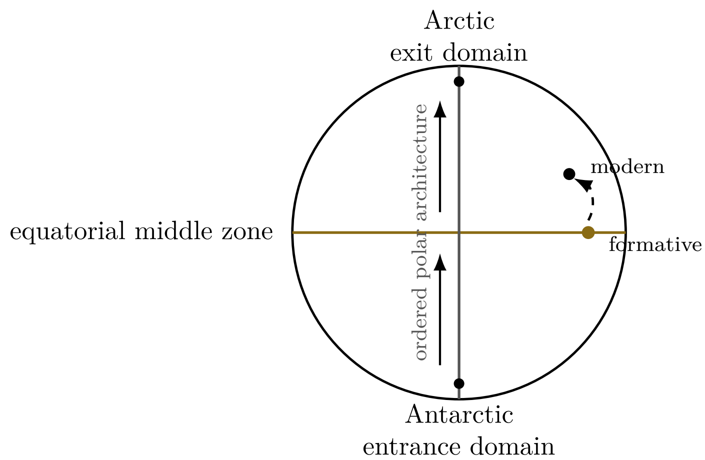

Figure 1: Canonical Paper-I geometry, shown schematically and not to scale. The Day Zero claim is the ordered Antarctic Entrance → Middle Mountain → Arctic Exit relationship. The later ABC modification is shown only to distinguish a modern expression from the proposed formative equatorial state; it is not a fitted displacement.

The revised canonical program does not require every developmental hypothesis to survive.

This paper deliberately narrows the first scientific burden to the framework's strongest claimed structure: the proposed relationship among an Antarctic entrance domain, a Hawai'i/Mauna Kea Middle Mountain domain, and an Arctic exit domain.

The sequence is written:

$$D_{\text{in}} \to D_{\text{mid}} \to D_{\text{out}},$$

where

$$D_{\text{in}} = \text{candidate Antarctic entrance domain},$$

$$D_{\text{mid}} = \text{candidate Hawai'i/Mauna Kea Middle Mountain domain},$$

and

$$D_{\text{out}} = \text{candidate Arctic exit domain}.$$

These labels describe the proposed reconstruction. They do not, by themselves, establish that an entrance occurred, that material exited Earth, or that the Middle Mountain was produced by the same event.

Those are causal claims and therefore carry a later burden.

1.1 Replacement-Level Thesis

Earth: Day Zero is advanced as a replacement-level causal hypothesis where its reconstruction conflicts with conventional explanations of the same formative observations.

"Replacement-level" describes the strength of the claim being proposed. It does not describe the evidentiary verdict.

A replacement claim must ultimately demonstrate that the proposed framework can perform the explanatory work it seeks to replace. Establishing a geometric correspondence alone is therefore insufficient for replacement-level closure.

The present paper addresses only the first required component of that burden.

1.2 Modular Adjudication

The revised program treats its principal claim families independently.

A geometric correspondence may survive while its proposed mechanism fails.

A proposed Moon-forming consequence may fail without automatically eliminating a geometric result that does not depend upon it.

A physical mechanism may remain possible while lacking evidence that the event actually occurred.

A successful result in one claim family does not validate another.

Likewise, an ad hoc later hypothesis may not be introduced to erase a failed result. This restriction does not prohibit a pre-existing, independently registered ABC transformation from being used in the historical reconstruction of an earlier Earth state.

2. ABC Sequencing Identity and Reconstruction Order

Earth changes through time, so an older structure can be moved or altered by a later event. That is why modern Hawai'i does not have to occupy exactly the same position as the proposed formative Middle Mountain.

Earth: Day Zero is an **early-event reconstruction within ABC Sequencing**, not a separate theory later combined with ABC. The governing sequence is

$$S_0 \xrightarrow{E_0} S_1 \xrightarrow{E_1} S_2 \xrightarrow{\cdots} S_n,$$

where each later event acts on an inherited Earth state rather than on a pristine one.

For Paper I, this matters for one reason. The present Hawai'i/Mauna Kea state is not assumed to equal the formative Middle Mountain state. A later ABC event may modify an older structure, and an older state may therefore be reconstructed through that later event when the later transformation was independently proposed from its own sequence record.

2.1 The 256 Ma Hawai'i Branch

The approximately 256 Ma Aegean–Everest–Mariana reconstruction already contains a source-derived secondary hypothesis involving a pre-existing Hawai'i/Mauna Kea structure. Canonical ABC Paper I describes Mauna Kea as a pre-existing structure proposed to have been affected by far-field displacement associated with the Mariana-side terminal region. [44] Canonical ABC Paper II formalizes that branch as a displacement problem with direction, magnitude, comparison models, and a falsifier. [45] Paper V retains the branch as source-derived but unresolved. [46]

The 2014 *Grand Slam / Affinity Theory* source also depicts Hawai'i as being displaced eastward during the 256 Ma reconstruction while interacting with an older Pacific structure. [43] That source establishes developmental provenance, not validation.

2.2 Sequential Reconstruction Rule

> **A later ABC transformation may be used to reconstruct an earlier state only when that transformation was independently specified before the earlier-state fit is evaluated. It may not be invented, direction-selected, or magnitude-tuned merely to force the Day Zero Middle Mountain into agreement.**

This is the only reconstruction rule Paper I needs. The later event is neither proof of Day Zero nor a rescue from a failed geometry; it is the pre-existing sequence step relevant to the modern Middle Mountain offset.

3. Formative Interval

Day Zero is placed broadly in early Earth history. Paper I does not claim an exact event date because the geometry can be tested without one.

Earth: Day Zero places the hypothesized formative event within an approximate interval extending from

$$4.544\,\mathrm{Ga} \quad \text{to} \quad 4.096\,\mathrm{Ga}.$$

The older bound is intentionally close to the established age scale of the Earth and earliest Solar System solids, while the younger bound is a framework boundary rather than a radiometric event date. Modern radiometric chronology places Solar System formation near 4.567 Ga and the Earth's age near 4.55 Ga within measurement uncertainty. [1, 2]

This interval is not presented as a measured event date.

It defines the broad early-Earth period within which the formative reconstruction is proposed to occur.

The revised framework therefore does not require that the entrance, Middle Mountain, exit, or proposed Earth–Moon consequences be assigned to a single numerically exact epoch before the geometric claim can be examined.

Chronological precision beyond what the reconstruction requires is not introduced merely to make the model appear more exact.

If subsequent evidence materially narrows the allowable interval, that result may be incorporated as a later constraint.

If a required component of the framework proves incompatible with the entire formative interval, that incompatibility becomes a legitimate falsification or weakening condition.

4. Geometry Before Mechanism

Before asking what could have caused the pattern, we first ask whether the pattern itself is sufficiently real and specific to deserve an explanation.

Earth: Day Zero adopts a strict ordering principle:

> **The proposed geometry must earn the right to be explained.**

A physical mechanism generally admits more adjustable variables than a geometric relationship. Impactor properties, material state, energy partition, planetary response, ejecta behavior, and subsequent evolution can potentially be varied across wide parameter spaces.

The geometric hypothesis is intentionally constrained first.

The initial question is therefore not:

> What mechanism could create the proposed configuration?

It is:

> **Does the proposed configuration exist as a sufficiently coherent geometric relationship to require a common-cause explanation?**

No impactor model, Earth–Moon mechanism, or speculative physical process receives evidentiary credit toward answering that question. A later ABC sequence correction may change the historical state being tested, but it does not count as evidence that the Day Zero geometry is true.

4.1 Three-Dimensional Torus Observation

In three dimensions, the proposed polar entrance–exit axis and equatorial Middle Mountain relationship have a simple torus-like visual resemblance: an axial through-line with a transverse equatorial expression. Figure 2 records that resemblance because it is geometrically suggestive and easy to visualize. It is not used as a fit criterion, a physical mechanism, or evidence that Earth became toroidal.

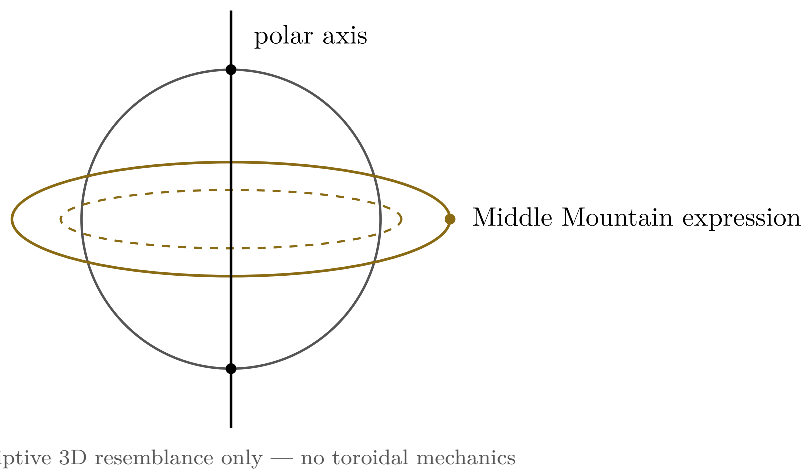

Figure 2: The limited "torus" observation retained in Paper I: a polar axis together with a transverse equatorial expression has a torus-like three-dimensional visual form. The figure is illustrative only and contributes no independent evidence to the geometric verdict.

4.2 The Three-Domain Sequence

The proposed ordering consists of three distinguishable domains.

Entrance Domain. A broad Antarctic region is proposed as the entrance side of the formative sequence. At the geometric stage, "entrance" is a reconstruction label. The existence of Antarctic structure does not independently establish that an object entered Earth there.

Middle Mountain Domain. Hawai'i/Mauna Kea is proposed as the present candidate expression of the Middle Mountain domain.

The term **Middle Mountain** does not mean merely "a mountain near the equator." It refers to the full candidate mountain structure occupying the intermediate position prescribed by the larger entrance-to-exit architecture. Mauna Kea is a large Hawaiian shield volcano whose edifice continues well below sea level; multibeam bathymetry and geological mapping document the substantial submarine construction of the Hawaiian volcanoes. [20–25] Because most of Mauna Kea is submarine, summit elevation above sea level and total base-to-summit mountain height are different measurements; Paper I uses the latter only to describe why Mauna Kea is physically distinctive, not to score the geometry.

The distinction is essential. If the definition of "middle" is sufficiently broad that many unrelated terrestrial features satisfy it equally well, the correspondence loses discriminating value.

Exit Domain. A broad Arctic domain is proposed as the terminal side of the sequence. At the geometric stage, "exit" likewise remains a reconstruction label rather than an established physical event. The causal proposition that material or energy exited through this domain is downstream of the geometric test.

4.3 Global-Extrema Context

Several locations in the reconstruction are visually striking because they also sit near familiar global height or depth extremes. Those extrema help explain why the pattern was noticed; they are context, not proof of a shared cause.

Mauna Kea rises more than 10.2 km from its submarine base to summit and is therefore commonly described as Earth's tallest mountain by base-to-peak measurement, whereas Mount Everest is the highest summit above mean sea level. [26–28] That distinction is directly relevant to the phrase *Middle Mountain*: the candidate is a largely submarine volcanic edifice, so its full relief is physically meaningful even though elevation alone does not establish geometric correspondence. Detailed Hawaiian mapping, submarine surveys, and volume reconstructions independently confirm that the visible island is only the emergent portion of a much larger volcanic system. [20, 21, 24, 25]

At the Antarctic side, modern bed-elevation compilations reveal very deep subglacial continental troughs and basins. BedMachine Antarctica placed portions of the Denman system deeper than 3.5 km below sea level, whereas the newer Bedmap3 compilation gives a less extreme minimum near 2.6 km below sea level; a 2026 ground-based magnetotelluric transect found the sampled central trough substantially shallower still, about 1.6 ± 0.2 km below sea level. [5–9] Paper I therefore does **not** freeze a single "deepest land point" number. The robust observation is that Antarctica contains exceptionally deep continental bedrock beneath its ice sheet, and that the precise Denman extreme remains model- and survey-dependent.

The Dead Sea shoreline remains the familiar lowest exposed land surface not covered by water or ice. [29] At the terminal side, the Arctic Ocean is the smallest and shallowest of the major ocean basins in the conventional five-ocean classification, with an average depth of roughly 1.2 km; modern IBCAO compilations provide the authoritative high-resolution Arctic bathymetric framework. [30–32] By contrast, the Mariana Trench contains Challenger Deep, Earth's deepest well-measured oceanic point, near 10.98 km below sea level in modern multibeam surveys. [33, 34]

These high–low comparisons are retained because they help explain how the larger ABC pattern was noticed and why the selected domains are visually memorable. They are **not** used to select the domains, set their boundaries, score the Middle Mountain fit, or infer a common cause. Global digital relief products are useful for placing such extrema in a common topographic/bathymetric frame, but they do not supply causal evidence. [4]

4.4 Impact-Spherule Context

"Spherules" are a familiar impact-science anchor: tiny rounded droplets or particles can form from impact melt, vapor condensate, or ejecta, but their origin must be established by chemistry, texture, and geologic context rather than shape alone.

Impact spherules and related microtektitic or microkrystitic particles are a well-established part of the terrestrial impact-ejecta record, especially where an original crater has been eroded, buried, or was never formed in a conventional crater-producing event. [12–16] The diagnostic caution is equally important: spherical morphology by itself is not proof of impact, and convincing identification requires the wider mineralogical, geochemical, shock, and stratigraphic context. [15]

Antarctica provides direct modern examples. Chondritic condensation spherules recovered from the Sør Rondane Mountains and correlated Antarctic ice-core material were interpreted as products of a large meteoritic airburst/touchdown event about 430 ka ago; a separate Antarctic dust layer has since been interpreted as evidence for another touchdown event roughly 2.3–2.7 Ma ago. [10, 11]

In Greece, investigators studying the Zerelia twin lakes in Thessaly have reported carbonate spheres and spheroidal particles, glass-like or recrystallized fragments, breccias, globules, and textures interpreted by those authors as compatible with high-temperature melting and quenching. [17–19] The Zerelia meteorite-impact interpretation remains unresolved and was not established as a confirmed impact structure. Paper I therefore records only the literature observation: **spherules and related spheroidal melt-texture particles have been reported in both Antarctic meteoritic-event deposits and candidate impact structures in Greece**. Their presence does not date, validate, or connect either location to Day Zero or to the approximately 256 Ma ABC event.

Lunar visual analogy. The lunar far-side/south-polar region contains the South Pole–Aitken (SPA) Basin, the Moon's largest and among its oldest recognized impact structures. Laser altimetry, compositional mapping, gravity/magnetic work, and numerical impact studies have progressively constrained its scale, depth, elliptical planform, and impact origin. [35–41] Recent Chang'e-6 sample chronology has additionally reported a 4.25 Ga age interpreted as the SPA-forming impact, providing a new direct chronological constraint on this ancient basin. [42]

In some shaded-relief renderings, the Moon's overall silhouette and far-side relief can invite informal acorn- or teardrop-like comparisons. Paper I records that visual intuition only as developmental context; projection-dependent appearance is not treated as physical morphology, evidence of mechanical separation, or evidence of lunar extrusion from Earth.

5. Observation, Reconstruction, and Causation

Seeing a pattern is not the same as proving what caused it. This section keeps present observations, historical reconstruction, and causal interpretation separate.

The revised framework separates four epistemic levels.

5.1 Present Observation

Present observations concern what can actually be measured or documented about Antarctica, Hawai'i/Mauna Kea, the Arctic, and their surrounding structures.

Observation does not itself identify historical cause.

5.2 Reconstruction

A reconstruction infers a prior spatial or structural state from the surviving record.

The proposed Entrance–Middle Mountain–Exit relationship belongs at this level until independently established.

A reconstructed state is not a direct observation of early Earth.

5.3 Geometric Correspondence

A geometric correspondence exists when independently specified domains exhibit the spatial relationship required by the hypothesis.

Correspondence does not necessarily imply common causation.

The correspondence must therefore be evaluated for specificity, uncertainty, non-uniqueness, selection effects, and reasonable alternative configurations.

5.4 Causal Interpretation

Only after the geometric relationship survives independent examination does Earth: Day Zero ask whether a single formative event provides a viable common cause.

Accordingly,

$$\text{Observation} \neq \text{Reconstruction} \neq \text{Correspondence} \neq \text{Causation.}$$

No stage is silently promoted into the next.

6. The Primary Claim

The central claim is simple: Antarctic entrance, Middle Mountain, and Arctic exit may preserve one recoverable planetary-scale relationship.

The primary claim of Paper I is:

> **An Antarctic entrance domain, a Hawai'i/Mauna Kea Middle Mountain domain, and an Arctic exit domain constitute a recoverable ordered planetary-scale geometric relationship.**

This claim contains several required subclaims:

1. the entrance domain can be defined sufficiently to test the relationship;
2. the exit domain can be defined sufficiently to test the relationship;
3. "middle" can be specified independently of simply choosing Hawai'i after observing it;
4. Hawai'i/Mauna Kea occupies that middle relationship sufficiently well;
5. reasonable alternative middle domains do not reproduce the same correspondence with comparable ease;
6. enough information survives subsequent Earth history for the relationship to remain meaningfully recoverable.

Failure of a required subclaim materially weakens the primary claim.
No downstream physical mechanism may substitute for a failed required condition.

Element	Paper-I role	Current evidentiary status
Antarctic Entrance	Formative endpoint domain	Broad continental-to-polar domain; no preferred coordinate or local wound feature is required.
Hawai'i/Mauna Kea Middle Mountain	Candidate intermediate domain	Present state is broadly admissible but non-unique; historical state remains unresolved.
Arctic Exit	Formative terminal domain	Broad polar/basin domain; Mariana is explicitly excluded as the Day Zero exit.
~ 256 **Ma Aegean–Everest–Mariana event**	Later ABC modification of inherited Hawai'i/Paco structure	Source-derived and pre-existing, but unresolved; it may not be tuned to repair the Day Zero fit.
3D torus-like resemblance	Visualization only	Descriptive observation with zero mechanistic or adjudicative weight in Paper I.

Table 1: Claim-and-evidence map for Paper I. The table separates the geometry actually being tested from later-event reconstruction and from the non-mechanical torus visualization.

7. Geometric Test Specification

This section sets the geometric rules before judging whether Hawai'i fits them, so the target cannot be moved after the result is seen.

The Middle Mountain Sequence must be testable without selecting the final geometry after observing the desired result. This section therefore defines the geometric procedure before any verdict is assigned.

7.1 Representing the Three Domains

Let the surface of Earth be represented, for geometric purposes, by the unit sphere S^2. This is a deliberately simplified geometric abstraction; modern geodesy treats Earth more accurately as an ellipsoid and solves surface geodesics accordingly. [3] The three proposed domains are subsets of that sphere:

$$D_{\text{in}}, \qquad D_{\text{mid}}, \qquad D_{\text{out}} \subset S^2.$$

The entrance and exit domains are not assumed to be exact points. Each may contain a range of admissible locations reflecting the spatial extent and uncertainty of the underlying reconstruction.

The Middle Mountain domain is likewise treated as a domain rather than as an exact summit coordinate. Hawai'i/Mauna Kea is the candidate present expression of that domain, not an assumption that the modern summit coordinate is identical to its formative position.

7.2 Domain Independence Rule

The entrance and exit domains must be specified without moving their boundaries to improve the fit to Hawai'i/Mauna Kea.

Likewise, the definition of the Middle Mountain domain may not be changed after the entrance–exit relationship has been examined merely to preserve the correspondence.

Accordingly, the sequence of operations is:

1. specify the admissible entrance domain;
2. specify the admissible exit domain;
3. determine the geometric relationship permitted by those domains;
4. define the corresponding middle condition;
5. only then evaluate the Hawai'i/Mauna Kea candidate against that condition.

This ordering is a selection-effect firewall. The candidate Middle Mountain may be tested by the geometry, but it may not be used to manufacture the geometry.

7.3 Angular Separation

For any admissible entrance point $\mathbf{e} \in D_{\text{in}}$ and exit point $\mathbf{x} \in D_{\text{out}}$, represented as unit vectors, define the angular separation

$$\delta(\mathbf{e}, \mathbf{x}) = \cos^{-1}(\mathbf{e} \cdot \mathbf{x}).$$

This quantity is measured rather than assumed. The revised framework does not require exact antipodality as a definition of the endpoints.

Where the entrance and exit domains permit multiple admissible point pairs, the analysis must report the behavior across that admissible set rather than selecting only the pair that produces the best Middle Mountain fit.

7.4 Great-Circle and Middle Condition

For a non-antipodal endpoint pair, the shortest great-circle arc between $\mathbf{e}$ and $\mathbf{x}$ defines an ordered surface path. Its geometric midpoint may be represented by

$$\mathbf{m}(\mathbf{e},\mathbf{x}) = \frac{\mathbf{e}+\mathbf{x}}{\|\mathbf{e}+\mathbf{x}\|},$$

provided $\mathbf{e}+\mathbf{x} \neq \mathbf{0}$.

The candidate Middle Mountain is then evaluated by its angular residual from the independently determined middle condition. For a candidate point $\mathbf{h}$,

$$r_{\mathrm{mid}}(\mathbf{h};\mathbf{e},\mathbf{x}) = \cos^{-1}(\mathbf{h}\cdot\mathbf{m}(\mathbf{e},\mathbf{x}))\,.$$

For an extended Middle Mountain domain, the relevant residual is the smallest angular separation between the admissible domain and the independently determined middle condition, together with the width of the admissible solution set.

No numerical tolerance is assigned in advance in this working construction. Any threshold later used to classify a correspondence as close, weak, or failed must be specified before the final result is evaluated.

7.5 Antipodal Degeneracy Rule

If the entrance and exit endpoints are exactly or effectively antipodal, the endpoints alone do not determine a unique great-circle path. In that limit, infinitely many great circles can connect the same antipodal pair, and a claimed middle point cannot be treated as independently predicted by the endpoints alone.

Therefore:

> **A near-antipodal entrance–exit relationship is not, by itself, sufficient to identify Hawai'i/Mauna Kea as the Middle Mountain.**

If the admissible entrance and exit domains leave the path azimuth materially underdetermined, the Middle Mountain test is classified as **UNRESOLVED** unless an independent directional constraint exists within the entrance or exit evidence itself.

Such a directional constraint must be specified without using the location of Hawai'i/Mauna Kea to choose it.

This rule prevents the Middle Mountain from becoming the hidden variable that selects one great circle from an otherwise unconstrained family.

7.6 Uncertainty Ensemble

The geometric test is performed across the admissible entrance and exit domains, not only at one preferred centroid pair.

Conceptually, define the admissible endpoint ensemble

$$\mathcal{E} = \{(\mathbf{e},\mathbf{x}) : \mathbf{e}\in D_{\mathrm{in}},\ \mathbf{x}\in D_{\mathrm{out}}\}\,.$$

For each endpoint pair for which a unique middle condition is defined, the Middle Mountain residual is evaluated. The result must distinguish among:

- a correspondence robust across a substantial portion of the admissible geometry;
- a correspondence present only in a narrow, specially selected subset;
- a geometry too underdetermined to make a discriminating middle prediction.

The best-fitting endpoint pair is therefore not, by itself, the result.

7.7 Alternative Middle-Domain Test

A meaningful Middle Mountain claim requires comparison with alternatives.

Before the final geometric verdict, an admissible comparison set $\mathcal{A}$ must be defined using the same selection rules applied to the Hawai'i/Mauna Kea candidate. The comparison must not be populated only with obviously inferior locations.

For each alternative candidate domain $A_j \in \mathcal{A}$, the same middle-residual procedure is applied.

The relevant question is not merely whether Hawai'i/Mauna Kea can be made to fit. It is:

> **Does Hawai'i/Mauna Kea satisfy the independently specified middle condition more coherently and robustly than reasonable alternatives selected under the same rules?**

If many alternatives perform comparably, the Middle Mountain correspondence becomes non-unique and loses discriminating value.

7.8 Reconstruction Firewall

The present expression of a candidate domain need not be identical to its formative configuration. However, any historical displacement, deformation, or relocation used to reconstruct a formative position must be independently justified.

A reconstruction may not be tuned until Hawai'i/Mauna Kea reaches the desired middle condition.

Accordingly, Paper I distinguishes:

$$\text{Present Expression} \rightarrow \text{Independent Reconstruction} \rightarrow \text{Geometric Test.}$$

If no independently constrained reconstruction is available at sufficient resolution, the appropriate result is **UNRESOLVED**, not an optimized geometric fit.

7.9 Geometric Success Conditions

The Middle Mountain Sequence receives geometric support only if the test establishes, to the extent permitted by the available evidence, all of the following:

1. the entrance and exit domains are independently specifiable;
2. their relationship determines a sufficiently constrained middle condition;

3. Hawai'i/Mauna Kea satisfies that condition without post-hoc boundary adjustment;
4. the relationship remains materially stable across reasonable domain uncertainty;
5. reasonable alternative middle domains do not reproduce the correspondence with comparable ease;
6. any reconstruction required to recover the formative relationship is independently constrained rather than fitted to the desired outcome.

Failure of any one condition does not automatically determine the final framework-wide verdict, but it must be reported at the level of the claim it affects.

8. Domain Specification and Admissibility

The three locations are treated as physical domains rather than perfect points because the surviving evidence does not justify artificial coordinate precision.

The three domains are specified at only the resolution needed by Paper I. The Middle Mountain candidate may not be used to move or redefine either endpoint.

8.1 Antarctic Entrance Domain

The canonical entrance domain is **Antarctica at continental-to-polar scale**. Modern Bedmap and BedMachine products show that the subglacial continent contains major mountain ranges, basins, troughs, and large regions of bedrock below sea level. [5–7] Paper I does not define the entrance by Wilkes Land, a specific crater candidate, or a local gravity anomaly. At the geometric stage, "entrance" remains a reconstruction label applied to the broad Antarctic side of the proposed sequence.

$$D_{\text{in}} = \text{the admissible Antarctic polar entrance domain.}$$

If the available source record supports only a broad polar domain, Paper I preserves that limitation rather than manufacturing a preferred coordinate or direction.

8.2 Arctic Exit Domain

The canonical exit domain is **the Arctic polar/basin domain**. Modern Arctic bathymetry resolves a complex shallow ocean basin crossed by major ridges and deep sub-basins rather than a single simple depression. [30, 31] The Mariana Trench is not the Day Zero exit. At this stage, "exit" likewise remains a reconstruction label applied to the broad Arctic terminal side of the sequence.

$$D_{\text{out}} = \text{the admissible Arctic polar/basin exit domain.}$$

Again, no preferred coordinate is introduced unless independently supported.

8.3 Middle Mountain Candidate Domain

The candidate middle domain is Hawai'i/Mauna Kea, a shield-volcano system whose mapped structure includes extensive submarine flanks and volcanic construction below sea level. [21, 23–26]

$$D_{\text{mid}} = \text{the Hawai'i/Mauna Kea candidate Middle Mountain domain.}$$

The modern summit coordinate is an observational baseline, not an assumed formative coordinate. The approximately 256 Ma ABC branch may modify that inherited structure, but the correction must come from the later event rather than from the Day Zero fit.

8.4 Two Geometric Resolutions

Paper I distinguishes only two levels of geometric resolution:

Level 1 Broad polar-to-polar geometry. This can identify an intermediate or equatorial zone but may leave longitude and azimuth unresolved.

Level 2 Directional geometry. This is permitted only when entrance or exit evidence independently constrains a trajectory before Hawai'i/Mauna Kea is evaluated.

No numerical centroid, preferred azimuth, midpoint tolerance, or significance threshold is invented merely to make the reconstruction appear more precise.

9. Source Basis and Present Geometric Resolution

The historical sources show where the reconstruction came from; they are not counted as independent proof that the proposed geometry is physically real.

The source basis is deliberately narrow. Developmental material is used to establish what the reconstruction historically proposed; the canonical ABC corpus is used to establish the status and anti-circularity requirements of the later Hawai'i branch. Provenance is not treated as empirical validation.

The illustrated *Grand Slam / Affinity Theory* source places the formative narrative on an Antarctic-to-Arctic polar architecture and depicts Hawai'i/Paco as an inherited Pacific mountain structure; its later 256 Ma plate explicitly depicts Hawai'i as displaced eastward. [43] Canonical ABC Paper I, Paper II, and Paper V then preserve the later Hawai'i branch as source-derived while keeping it unresolved and subject to independent reconstruction tests. [44–46]

The broad endpoint architecture is therefore classified as **PARTIALLY SPECIFIED**. At this resolution, Antarctica and the Arctic define a polar-to-polar relationship and consequently an intermediate/equatorial band, but they do not by themselves select a unique longitude through that band.

That limitation is important. It means the present-state Level 1 result can establish only that Hawai'i/Mauna Kea is *admissible* as a broad intermediate candidate. It cannot establish that Hawai'i is uniquely predicted by the endpoint geometry.

Source	Permitted use in Paper I	Not credited as
Grand Slam / Affinity Theory	Developmental provenance for the polar Day Zero architecture, Hawai'i/Paco inheritance, and eastward 256 Ma displacement concept	Independent validation of any event or displacement
ABC Paper I	Canonical registration of Mauna Kea as a pre-existing structure proposed to be affected by the later event	Proof that the displacement occurred
ABC Paper II	Formal directional/magnitude reconstruction burden and falsifier for the later branch	A measured displacement vector
ABC Paper V / AI Atlas	Current source-derived, unresolved status of the branch	Evidentiary closure

Table 2: Source-use firewall. Paper I distinguishes historical provenance from empirical support so that the later sequence correction cannot receive evidentiary credit merely because it predates the current rebuild.

10. Middle Mountain Test

The question is whether Hawai'i occupies the expected middle role, not simply whether Mauna Kea is an unusually large mountain near the equator.

10.1 Middle Is a Geometric Role

The term **Middle Mountain** identifies a positional role within the ordered sequence. It does not mean merely a mountain near the equator, the tallest mountain under a chosen elevation convention, or an unusually large volcanic edifice selected after looking at the globe.

The Paper-I question is therefore:

> **Does the candidate occupy the independently specified intermediate relationship between entrance and exit?**

Why a mountain would occupy that position is a later causal question.

10.2 Level 1: Broad Middle-Zone Test

Let $Z_{\mathrm{mid}} \subset S^2$ denote the intermediate zone permitted by the independently specified broad entrance and exit domains. Hawai'i/Mauna Kea is broadly admissible when

$$D_{\mathrm{mid}} \cap Z_{\mathrm{mid}} \neq \varnothing.$$

This result is intentionally modest. If the endpoint evidence does not constrain longitude or azimuth, a low-latitude Hawai'i/Mauna Kea position is compatible with the sequence but is not strongly discriminating by itself.

10.3 Directional Refinement

If a later Level 2 test obtains an independently constrained trajectory Γ, the candidate can be evaluated by its cross-track distance from that trajectory and by whether it divides the entrance–exit path in the correct order. For an admissible nondegenerate endpoint pair $\mathbf{e}$ and $\mathbf{x}$,

$$\mathbf{n} = \frac{\mathbf{e} \times \mathbf{x}}{\|\mathbf{e} \times \mathbf{x}\|}, \qquad r_{\perp} = \sin^{-1}\left(|\mathbf{h} \cdot \mathbf{n}|\right),$$

and an ordered middle candidate should also satisfy approximately

$$\delta(\mathbf{e}, \mathbf{h}) + \delta(\mathbf{h}, \mathbf{x}) \approx \delta(\mathbf{e}, \mathbf{x}).$$

Those equations define a future refinement; they do not create a hidden directional constraint where the current endpoint record supplies none.

10.4 No Elevation Shortcut

Mauna Kea's physical scale is scientifically real and relevant to why it was historically noticed: measured from its submarine base to summit, it rises more than 10 km and exceeds Everest in total base-to-peak height, while Everest remains the highest summit above mean sea level. [27, 28] That distinction strengthens the descriptive meaning of *Middle Mountain*, but it is not geometric proof. Paper I therefore gives no extra adjudicative credit merely because Mauna Kea occupies a global height extreme under the base-to-summit convention.

10.5 Sequence-Corrected Reading

The Level 1 baseline uses the modern Hawai'i/Mauna Kea position only as a present observation. The historical Middle Mountain claim is read through ABC Sequencing: if the independently registered approximately 256 Ma modification is valid, the modern position need not equal the older Day Zero position. The correction may not be chosen after the fact to force an equatorial result.

11. The 256 Ma Sequence Correction

A later ABC event is proposed to have shifted or modified the older Hawai'i/Paco structure. If that later event is real, the present position of Mauna Kea need not be its Day Zero position.

The approximately 256 Ma Aegean–Everest–Mariana event matters to Paper I for one narrow reason: ABC Sequencing already proposes that a pre-existing Hawai'i/Paco structure was materially displaced or modified during that later event.

11.1 Why the Later Event Matters

The Day Zero reconstruction places the older Middle Mountain relationship in the equatorial region between the Antarctic entrance and Arctic exit domains. Modern Mauna Kea lies north of the equator. Under a sequential model, that offset is not automatically equivalent to the formative position because later events act on inherited structures.

The chronological reading is therefore

Day Zero Middle Mountain state → 256 Ma modification → present Hawai'i/Mauna Kea state.

11.2 Source-Derived, Not Invented for Day Zero

The displacement proposition predates the present canonical Day Zero rebuild. The 2014 *Grand Slam / Affinity Theory* source depicts eastward Hawai'i displacement during the approximately 256 Ma reconstruction. [43] Canonical ABC Papers I and II preserve and formalize the branch, while Paper V retains it as unresolved. [44–46]

That provenance does not prove the displacement occurred. It establishes that the branch was not invented after observing the modern Day Zero mismatch.

11.3 Paper-I Use of the Correction

Paper I uses only the following proposition:

> **A pre-existing Hawai'i/Paco Middle Mountain structure is proposed within ABC Sequencing to have been modified by the later approximately 256 Ma Aegean–Everest–Mariana event, so its modern position need not equal its earlier Day Zero position.**

No exact pre-256 Ma coordinate and no complete displacement mechanics are asserted here. If the later branch eventually fails, the modern off-equator position becomes a stronger attack on the historical Middle Mountain claim. If the branch remains viable, the offset is compatible with sequential inheritance.

12. Level 1 Middle Mountain Adjudication

Using only the broad modern polar geometry, Hawai'i is compatible with the middle region, but that result alone cannot uniquely predict Hawai'i.

This section preserves the uncorrected present-state result as a baseline observation. No sequence correction is applied here. Because the governing ABC model allows later events to modify inherited structures, this baseline is not treated as the final adjudication of the formative Middle Mountain state.

12.1 Research Target

The Level 1 target is deliberately narrow:

> **Given only the accessible broad Antarctic–Arctic endpoint architecture, is Hawai'i/Mauna Kea admissible as an intermediate Middle Mountain domain, and how much evidentiary discrimination does that result provide?**

This is an internal geometric adjudication of the accessible Ontomics source record. It is not an external empirical test of a formative impact mechanism.

12.2 Primary Material Used

The Level 1 reading uses the source roles summarized in Table 2. The developmental record supplies the historical Antarctic–Middle Mountain–Arctic architecture and the pre-existing eastward Hawai'i-displacement concept; the canonical ABC papers supply the later branch's current unresolved status and reconstruction rules. No source is promoted beyond the role it actually supports.

12.3 Broad Admissibility Result

Under the source-sufficiency verdict **PARTIALLY SPECIFIED**, the accessible endpoint record authorizes only a broad polar-to-polar middle-zone test. It does not authorize a unique great-circle azimuth.

Within that limited test, Hawai'i/Mauna Kea is consistent with the source-described intermediate or low-latitude role. Nothing in the accessible broad-domain geometry places the candidate on the entrance side or exit side rather than in the proposed intermediate region.

The operational Level 1 classification is therefore:

BROADLY ADMISSIBLE

This result means only that the candidate is not excluded by the broad middle-zone geometry. It does not establish that the broad geometry independently predicts Hawai'i.

12.4 Positional Non-Uniqueness

The same endpoint limitation that permits broad admissibility also prevents strong discrimination.

If the accessible Antarctic and Arctic domains supply no independently verified longitude or azimuth, then a broad polar-to-polar relationship admits an entire family of intermediate longitudes. In that geometry, Hawai'i/Mauna Kea is one admissible location among many possible positions within the broad middle zone.

This is not a numerical coincidence claim. It follows directly from the pre-result directionality finding: a polar relationship without an independently fixed azimuth does not select a unique equatorial or intermediate longitude.

Accordingly, the positional-null result is:

POSITIONALLY NON-UNIQUE

The broad correspondence therefore has the following evidentiary materiality:

NON-DISCRIMINATING AT LEVEL 1

A result can be geometrically compatible and still carry little power to distinguish the Day Zero hypothesis from other possible placements. These categories are intentionally not collapsed.

12.5 What Was Not Tested

The present result does *not* adjudicate:

- a unique great-circle trajectory;
- an independently predicted Hawai'i longitude;
- a numerical cross-track residual;
- a numerical midpoint-balance residual;
- a mountain-domain null assembled under a frozen morphological selection rule;
- a quantitative domain-uncertainty ensemble;
- the sequence-corrected pre-256 Ma Hawai'i state;
- or a causal mechanism for the Middle Mountain.

Those questions require information or assumptions beyond the presently authorized Level 1 source set.

12.6 Strongest Attack

The strongest fair attack on the Level 1 Middle Mountain claim is straightforward:

> **A broad Antarctic-to-Arctic polar architecture does not, by itself, predict Hawai'i. Without an independent directional constraint, the same broad middle condition is available across many longitudes, so Hawai'i's admissibility is not strongly surprising if the specific Middle Mountain claim is false.**

This attack does not show that Hawai'i cannot be the Middle Mountain. It shows that the accessible Level 1 geometry cannot yet distinguish that proposition strongly.

12.7 Strongest Primary-Source Response

The strongest primary-source response is no longer merely that the archive contains midpoint papers. The accessible canonical ABC corpus directly preserves the later Hawai'i displacement branch.

Canonical ABC Paper I states that the original investigation treated Mauna Kea as a *pre-existing structure affected by far-field displacement associated with the Mariana-side terminal region of the approximately 256 Ma event.* The paper compartmentalizes the branch and requires separate chronology, reference-frame analysis, paleomagnetism, plate reconstruction, and mechanics. [44]

Canonical ABC Paper II formalizes a far-field displacement vector, predicted azimuth, predicted magnitude, observational/reconstruction residuals, independent comparison models, and an explicit falsifier. It also requires the pre-existing susceptibility field to be independently defined rather than inferred from the modern Hawaiian structure. [45]

Paper V registers the branch as **source-derived** but **UNRESOLVED**. It requires independent material and trajectory evidence and keeps the prediction conditional. [46]

The 2014 source establishes additional developmental provenance for eastward Hawai'i displacement during the 256 Ma reconstruction. [43] This is important to the selection-effect audit because the displacement concept predates the present Day Zero rebuild. It still does not establish that the displacement occurred.

Accordingly, the fair response to the Level 1 non-uniqueness result is not to declare Hawai'i rescued. It is to recognize that modern Hawai'i is not necessarily the state the sequential model predicts for Day Zero, and that the already registered later transformation must be adjudicated before the historical-state geometry can be fairly scored.

12.8 Claim Status After Level 1

The uncorrected present-state result remains:

BROADLY ADMISSIBLE — POSITIONALLY NON-UNIQUE — NON-DISCRIMINATING

This result is retained because it accurately describes what the broad modern Antarctic–Arctic geometry alone can establish.

It is **not** promoted into a verdict on the original Day Zero Middle Mountain position. Within ABC Sequencing, the present state may include later inherited displacement. The historical Middle Mountain claim is therefore:

UNRESOLVED PENDING SEQUENCE-CORRECTED RECONSTRUCTION

This status preserves both findings: modern broad geometry is non-unique, while the earlier-state claim has not yet received its proper sequential reconstruction test.

The remaining geometric burden is therefore clear: the present broad geometry is compatible with Hawai'i/Mauna Kea as an intermediate domain, while a stronger historical result depends on independently constraining the later 256 Ma modification. Paper I does not need to solve that later event mechanically in order to state the sequential relationship accurately.

13. Deep-Time Survivability and Recoverability

Four billion years of Earth history can alter an old structure without necessarily erasing every trace of its original relationship.

Earth: Day Zero does not require the original formative surface to remain unchanged. Terrestrial impact geology provides an obvious preservation caution: erosion, burial, tectonism, metamorphism, and later impacts can modify or erase primary crater morphology while some shock products or distal ejecta survive. [13–15]

It distinguishes:

- **structural survival** — some physical inheritance persists;
- **relationship survival** — enough relative organization persists for the proposed geometry to remain meaningful;
- **recoverability** — surviving observations contain enough information to constrain or reconstruct that relationship.

These are not equivalent.

A structure may physically survive while becoming impossible to identify uniquely.

A relationship may be modified without being completely erased.

A modern structure may represent a later expression of an older inherited domain without preserving its original morphology.

The canonical claim is therefore not that modern Earth reproduces the pristine Day Zero surface.

It is narrower:

> **Enough of the proposed Entrance–Middle Mountain–Exit relationship must remain recoverable for the geometry to be tested rather than merely imagined retrospectively.**

If the required historical relationship cannot be distinguished from arbitrary reconstruction freedom, the claim becomes effectively untestable and is weakened accordingly.

14. Falsification Architecture

This section states how the geometry can fail, so the reconstruction cannot simply be adjusted whenever the evidence disagrees.

The Middle Mountain Sequence is intentionally exposed to failure.

14.1 Domain Failure

The claim is weakened if the entrance or exit domains cannot be specified sufficiently to define a meaningful spatial relationship.

14.2 Middle Mountain Failure

The historical Middle Mountain claim is weakened if the sequence-corrected Hawai'i/Mauna Kea state, reconstructed under independently constrained later transformations, does not occupy the required intermediate relationship.

14.3 Non-Uniqueness Failure

The claim is weakened if numerous reasonable alternative terrestrial domains satisfy the Middle Mountain condition with comparable or better correspondence.

14.4 Reconstruction Failure

The claim is weakened if the proposed relationship exists only after tuning later-event displacement or other reconstruction assumptions to the desired result, or if it disappears under reasonable independently constrained alternatives.

14.5 Recoverability Failure

The claim is weakened if later planetary evolution leaves insufficient information to distinguish the proposed formative geometry from retrospective pattern construction.

14.6 Selection-Effect Failure

The claim is weakened if the correspondence depends materially on choosing the domains, boundaries, reference frames, or evaluation criteria after observing the desired relationship.

15. Permitted Geometric Verdicts

The outcome is not forced into a simple true-or-false answer; the geometry can be supported, weakened, unresolved, or falsified depending on what the evidence actually permits.

The geometric investigation does not return a binary verdict of "Day Zero happened" or "Day Zero did not happen." Appropriate outcomes include:

FALSIFIED The required geometric relationship is contradicted by sufficiently strong evidence.

SEVERELY WEAKENED One or more required components fail in a way that substantially undermines the proposed sequence.

WEAKENED The correspondence persists but has significant problems involving uncertainty, non-uniqueness, reconstruction, or selection effects.

UNRESOLVED Available information is insufficient to adjudicate the required relationship.

SURVIVES THIS TEST A specific attempted falsification does not materially defeat the geometric claim.

SUPPORTED BY THIS TEST A discriminating test produces evidence materially consistent with the predicted geometric relationship.

None of these verdicts is equivalent to scientific validation of the entire Earth: Day Zero framework.

16. What Paper I Does Not Establish

Even a successful geometry test would not by itself prove the impact mechanism, Moon formation, or the full Day Zero causal story.

Even a strong surviving Middle Mountain correspondence would not, by itself, establish:

- the identity of a formative impactor;
- an exact event date;
- an exact impact energy;
- a particular mechanism of Middle Mountain formation;

- formation of the Moon;
- the Earth–Moon Alternator hypothesis;
- the physical truth or complete mechanics of the 256 Ma Hawai'i displacement branch;
- or the full replacement-level Earth: Day Zero thesis.

Those claims require separate evidentiary burdens.

Paper I asks only whether the foundational geometric object exists strongly enough to justify investigating its cause.

17. Advancement Condition

Only if the geometry survives its own tests does it earn the right to move on to the harder question: what physical event could have caused it?

Earth: Day Zero advances from geometry to causal interpretation only if the basic Entrance–Middle Mountain–Exit relationship remains sufficiently coherent after domain specification, alternative-domain testing, reconstruction uncertainty, and recoverability are considered.

The Level 1 present-state result remains a baseline rather than the final historical-state reading. The approximately 256 Ma Aegean–Everest–Mariana event is retained only in its sequential role: a pre-existing, source-derived later modification of the Hawai'i/Paco structure that may explain why the present Middle Mountain expression is offset from the older Day Zero equatorial relationship. No exact pre-displacement coordinate is asserted. The torus-like three-dimensional feature remains a descriptive visualization only and does not enter the evidentiary verdict.

The transition is therefore:

$$\text{Proposed Geometry} \rightarrow \text{Geometric Test} \rightarrow \text{Geometric Verdict}$$
$$\rightarrow \text{Common-Cause Investigation, if warranted.}$$

Reconstruct the sequence first. Then judge the geometry.

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