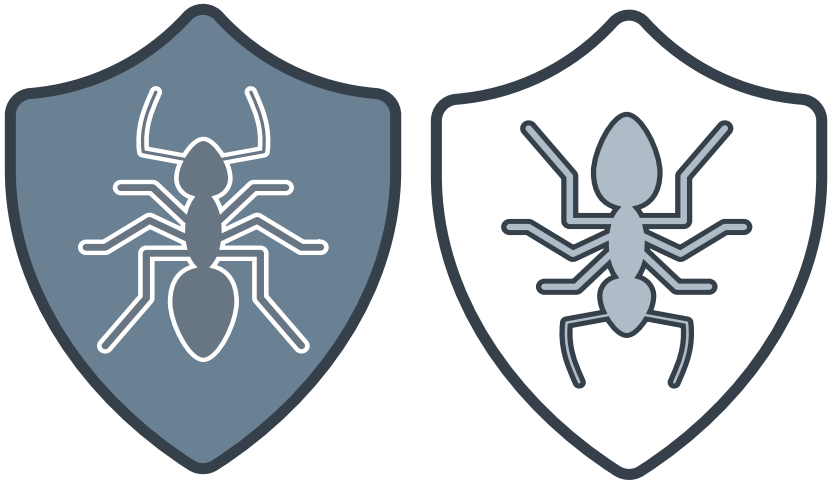

Ants

Atlantis and Plato's Ratio

Paul McKay Easter
Fairbanks, AK

Archaeological Renaissance: Part I

Archaeological Renaissance

Part I: Ants

Part II: Pivots

Part III: Projections

Part IV: Frames

Summary

Archaeological Renaissance is a four (4) part series that explores the details of recent **archaeological/scientific discoveries**. These discoveries are **groundbreaking** and will change both human history and science as we know it. **Some** of these discoveries include:

1. Mathematical proof of the **existence of Atlantis** and that its layout is a **model of the solar system**.
2. Mathematical proof that **Plato knew the precise orbits of the planets in the solar system**.
3. Mathematical evidence that the **poles have shifted** several times.
4. Physical proof of the **"ruins" of Atlantis** with measurements **verified** mathematically.
5. Evidence that human **civilization is at least 40,000 years older** than the currently accepted timeline.
6. Evidence of other "mythical" locations such as **Hyperborea**, **Hy-Brasil**, and **Aztlan**.

Archaeological Renaissance

Part I: Ants

Part II: Pivots

Part III: Projections

Part IV: Frames

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Grant of Public License

Archaeological Renaissance

Part I: Ants

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For Elaina, Collin, and Arianna:

This lost world I've found; I rebuild for you.

-Dad

Section 0:

Technical Primer

The following section provides an overview of basic mathematical and astronomical concepts. If you are already familiar with these subjects, you can skip to Section I, but it is recommended that you at least skim through this section, as it also provides context for Section I.

Primer: Mathematical Definitions

Radius/Diameter

In classical geometry, the radius (**R**) of a circle or sphere is any of the line segments from its center to its perimeter, and in more modern usage, it is also their length. I.e., it is the length from the center of a circle or sphere to its edge. The diameter (**D**) is defined as twice the radius.

$$D = 2 * R$$

https://en.wikipedia.org/wiki/Radius

Primer: Mathematical Definitions

Circumference

In geometry, the circumference (C) (from Latin *circumferens*, meaning "carrying around") is the perimeter length of a circle or ellipse. I.e., It is the length around the outside of a circle. It is calculated as follows:

$$C = 2 * \pi * R$$

or

$$C = \pi * D$$

https://en.wikipedia.org/wiki/Circumference

Primer: Mathematical Definitions

$$\pi$$

The number **π** (/paɪ/; spelled out as "pi") is a mathematical constant, approximately equal to 3.14159. It is defined as the ratio of a circle's circumference (**C**) to its diameter (**D**). It is calculated as follows:

$$\pi = \frac{C}{D}$$

https://en.wikipedia.org/wiki/Pi

Primer: Mathematical Definitions

Inverse

In mathematics, a multiplicative inverse or reciprocal for a number x, denoted by 1/x or x–1, is a number which when multiplied by x yields the multiplicative identity, 1.

I.e., the inverse of **any** number is 1 "over" (divided by) that number. Multiplying **any** number by its inverse is equal to 1.

$$x \underset{inv}{\Longrightarrow} \frac{1}{x}$$

or

$$\frac{x}{1} \nearrow\!\!\!\searrow \frac{1}{x} \quad \textit{or} \quad \frac{x}{1} \searrow\!\!\!\nearrow \frac{1}{x} \quad \textit{or} \quad \frac{x}{1} \nwarrow\!\!\!\searrow \frac{1}{x} \quad \textit{or} \quad \frac{x}{1} \nearrow\!\!\!\nwarrow \frac{1}{x}$$

https://en.wikipedia.org/wiki/Multiplicative_inverse

Primer: Mathematical Definitions

Inverse

Every number has as inverse, including numbers with decimals/fractions:

$$.012694 \underset{inv}{\Longrightarrow} \frac{1}{.012694}$$

$$\frac{1}{.012694} = 78.78°$$

The inverse of a negative number is always a negative number:

$$-.0150015 \underset{inv}{\Longrightarrow} \frac{1}{-.0150015}$$

$$\frac{1}{-.0150015} = -66.66°$$

https://en.wikipedia.org/wiki/Multiplicative_inverse

Primer: Mathematical Definitions

Inverse of π

The inverse of the definition of **π** is:

$$\frac{C}{D} \underset{inv}{\Longrightarrow} \frac{D}{C}$$

The inverse of the value of **π** is:

$$\pi \underset{inv}{\Longrightarrow} \frac{1}{\pi}$$

$$3.14159 \underset{inv}{\Longrightarrow} \frac{1}{3.14159}$$

$$\frac{1}{3.14159} = .318309$$

https://en.wikipedia.org/wiki/Pi

Primer: Mathematical Definitions

Scientific Notation

Scientific notation is a way of expressing numbers that are too large or too small (usually would result in a long string of digits) to be conveniently written in decimal form (the standard format). This base ten notation is commonly used by scientists, mathematicians, and engineers, in part because it can simplify certain arithmetic operations. In scientific notation, nonzero numbers are written in the form:

$$m \times 10^n$$

Decimal Notation	Scientific Notation
2	2×10^0
300	3×10^2
4,321.768	4.321768×10^3
−5,3000	-5.3×10^4
6,720,000,000	6.72×10^9
0.2	2×10^{-1}
987	9.87×10^2
0.00000000751	7.51×10^{-9}

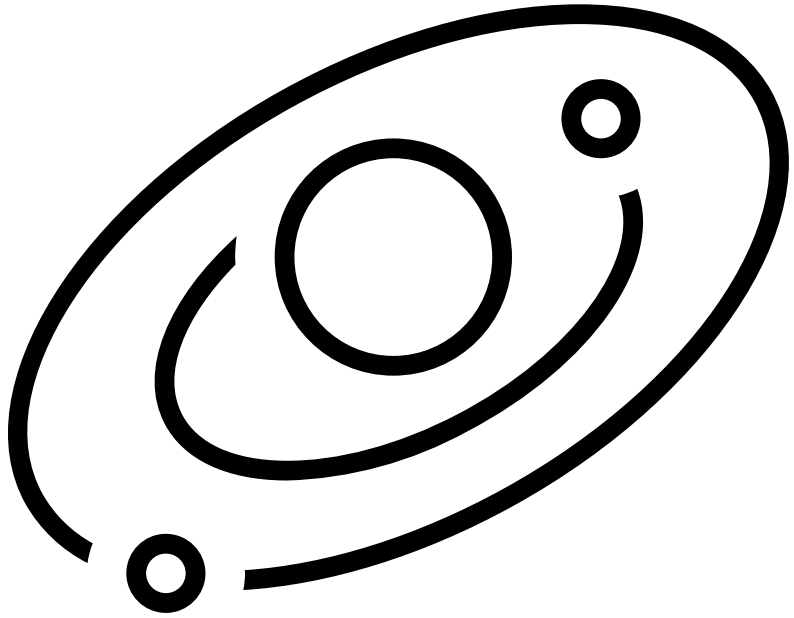
The table above illustrates decimal notation vs scientific notation.

https://en.wikipedia.org/wiki/Scientific_notation

Primer: Astronomy Definitions

Orbit

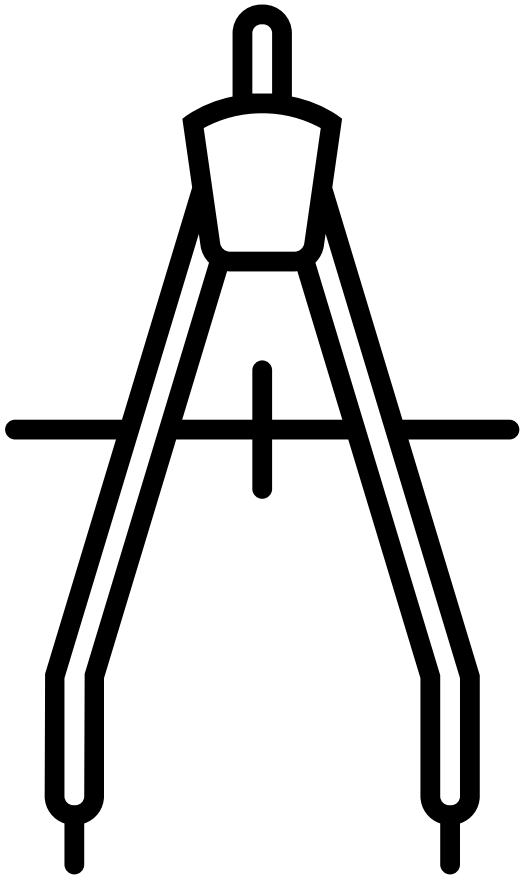
In celestial mechanics, an orbit is the gravitationally curved trajectory of an object, such as the trajectory of a planet around a star or a natural satellite around a planet. To a close approximation, planets and satellites follow elliptic orbits, with the center of mass being orbited at a focal point of the ellipse, as described by Kepler's laws of planetary motion.



https://en.wikipedia.org/wiki/Orbit

Primer: Astronomy Definitions

Orbital Radius

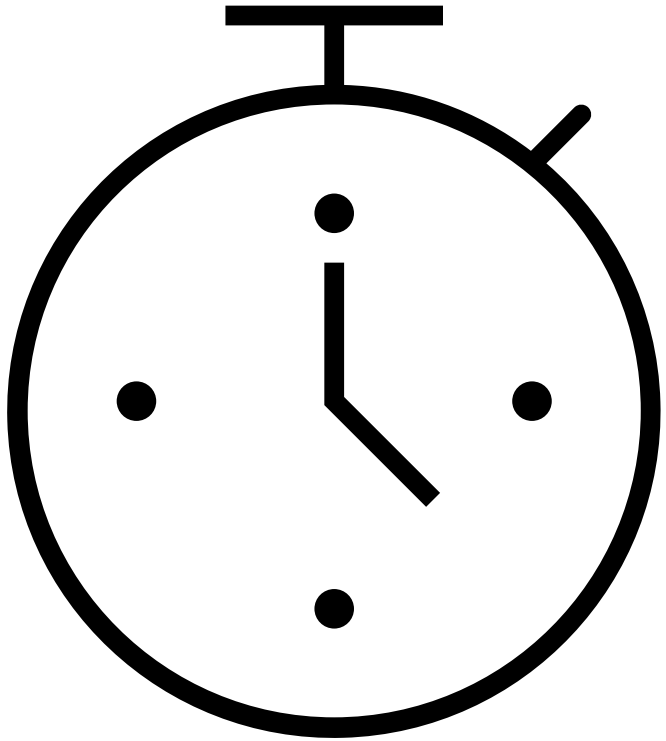


In celestial mechanics, the orbital radius is the distance from the center of mass of the Sun to the center of mass of the planet. Although it could be the radius of any one celestial body orbiting another (such as the Moon around the Earth). Since most orbits are elliptical, an orbit will be comprised of a maximum orbital radius, a minimum orbital radius, and the corresponding average orbital radius. The average orbital radius is the orbital component used to determine the orbital period.

https://en.wikipedia.org/wiki/Orbital_mechanics

Primer: Astronomy Definitions

Orbital Period

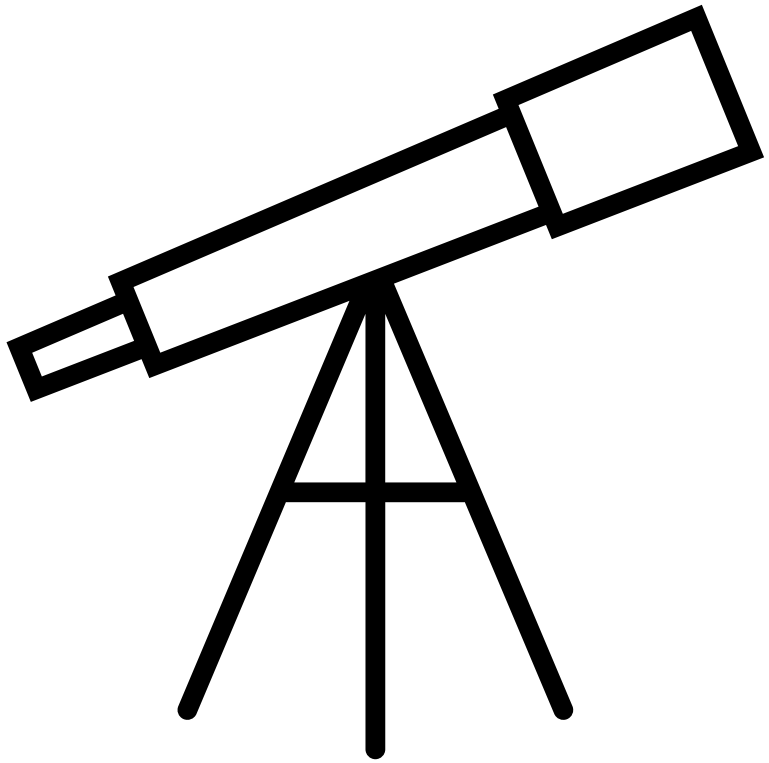


The orbital period (also revolution period) is the time a given astronomical object takes to complete one orbit around another object and applies in astronomy usually to planets or asteroids orbiting the Sun, moons orbiting planets, exoplanets orbiting other stars, or binary stars. For celestial objects in general, the sidereal orbital period (sidereal year) is referred to by the orbital period, determined by a 360° revolution of one celestial body around another, e.g., the Earth orbiting the Sun, relative to the fixed stars projected in the sky.

https://en.wikipedia.org/wiki/Orbital_period

Primer: Astronomy Definitions

Astronomical Unit



The astronomical unit (symbol: au, or au or AU) is a unit of length equal to Earth's average orbital radius. It is equal to about 150 million kilometers (93 million miles). The astronomical unit is used primarily for measuring distances within the Solar System or around other stars.

https://en.wikipedia.org/wiki/Astronomical_unit

Primer: Astronomy Definitions

Astronomical Unit Ratio

The units used to express astronomical distances are a ratio of the distance measured and the average orbital radius of the Earth. Therefore, the Earth has an average orbital radius of 1.0 AU. It is calculated as follows:

$$AU\ Ratio = \frac{Distance\ Measured}{Avg\ Orbital\ Radius\ of\ Earth}$$

https://en.wikipedia.org/wiki/Astronomical_unit

Primer: Astronomy Definitions

Astronomical Unit Ratio

Therefore, to calculate the orbital radius of any planet (as an astronomical unit ratio), divide the target orbital radius by 1 AU, which is equal to $1.49\mathbf{5}97 \times 10^8 km$. For example, the average orbital radius of Jupiter is $7.783\mathbf{5}7 \times 10^8 km$, which would be equal to $\mathbf{5}.203\ AU$.

$$Jupiter\ Orbital\ AU\ Ratio = \frac{R_{Jupiter}^{Orbit}}{R_{Earth}^{Orbit}}$$

$$Jupiter\ Orbital\ AU\ Ratio = \frac{7.783\mathbf{5}7 \times 10^8}{1.49\mathbf{5}97 \times 10^8}$$

$$Jupiter\ Orbital\ AU\ Ratio = \mathbf{5}.203$$

$$R_{Jupiter}^{Orbit} = \mathbf{5}.203\ AU$$

https://en.wikipedia.org/wiki/Astronomical_unit

Primer: Astronomy Definitions

Circumference of the Earth and the Kilometer

The base unit for distance in the Metric system is the meter. The meter (m) was originally defined in 1793 as one forty-millionth of the estimated polar circumference (C) of the Earth. A rotating object (such as the Earth) has a polar circumference and an equatorial circumference. The polar circumference is the length of the equator if it ran from north to south, and the equatorial circumference is the length of the actual equator. The equatorial circumference is larger because the Earth is not perfectly spherical, and its rotation causes it to bulge slightly at the equator. A kilometer (km) is exactly 1,000 meters.

$$C_{estimate} = \mathbf{40,000,000}\ m = \mathbf{40,000}\ km \quad (1\ km = \mathbf{1,000}\ m)$$

https://en.wikipedia.org/wiki/Earth%27s_circumference

Primer: Astronomy Definitions

Circumference of the Earth and the Kilometer

A more precise value was eventually derived for each circumference.

$$C_{polar} = \mathbf{40,007,863}\ m = \mathbf{40,008}\ km \quad C_{equatorial} = \mathbf{40,075,017}\ m = \mathbf{40,075}\ km$$

Therefore, the ratio of the equatorial circumference of the Earth to the meter is $1{:}\,40{,}0075{,}017\ m$ $(1{:}\,40{,}0075\ km)$. However, a 40,000,000-meter "average" circumference value is often used in calculations when precision is not necessary. In such cases, a ratio of $1{:}\,40{,}000{,}000\ m$ $(1{:}\,40{,}000\ km)$ is used.

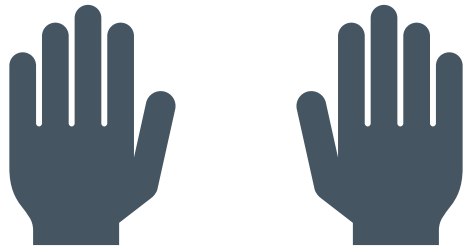
https://en.wikipedia.org/wiki/Earth%27s_circumference

Primer: Number Systems

Base 10 (Decimal)

The decimal numeral system (also called the **base-ten** positional numeral system, and occasionally called denary or decanary) is the standard system for denoting integer and non-integer numbers. It is the extension to non-integer numbers of the Hindu–Arabic numeral system. The way of denoting numbers in the decimal system is often referred to as decimal notation.

This is the standard number system used (currently). It is based on the number set $\mathbf{0-9}$ $(0, 1, 2, 3, 4, 5, 6, 7, 8, and\ 9)$.



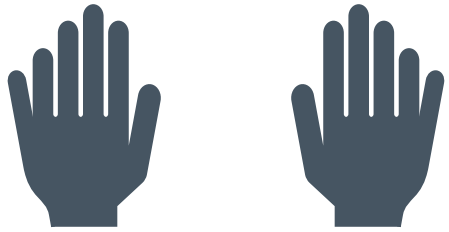
https://en.wikipedia.org/wiki/Decimal

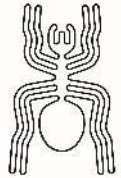
Primer: Number Systems

Base 12 (Dozenal)

The dozenal system (also known as duodecimal or **base 12**) is a positional notation numeral system using twelve as its base. The number twelve (that is, the number written as "**12**" in the base ten numerical system) is instead written as "**10**" in duodecimal (meaning "**1 *dozen and* 0 *units***", instead of "**1 *ten and* 0 *units***"), whereas the digit string "**12**" means "**1 *dozen and* 2 *units***" (i.e., the same number that in decimal is written as "**14**").

The number twelve, a superior highly composite number, is the smallest number with four non-trivial factors (**2, 3, 4, 6**), and the smallest to include as factors all four numbers (**1 *to* 4**) within the subitizing range, and the smallest abundant number. This is considered superior to ***base* – 10** (which has only **2** and **5** as factors), and to other proposed bases such as **16** or **20**.





https://en.wikipedia.org/wiki/Duodecimal

Primer: Number Systems

Base 60 (Sexagesimal)

Sexagesimal, also known as base $\mathbf{60}$ or sexagenary, is a numeral system with **sixty** as its base. According to historians, it originated with the ancient Sumerians in the $\boldsymbol{3rd\ millennium\ BC}$, was passed down to the ancient Babylonians, and is still used—in a modified form—for measuring time, angles, and geographic coordinates.

The number $\mathbf{60}$, a superior highly composite number, has twelve factors, namely $\mathbf{1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30}$, and $\mathbf{60}$, of which $\mathbf{2, 3, \boldsymbol{and}\ 5}$ are prime numbers. With so many factors, many fractions involving sexagesimal numbers are simplified. For example, one hour can be divided evenly into sections of $\mathbf{30}$ minutes, $\mathbf{20}$ minutes, $\mathbf{15}$ minutes, $\mathbf{12}$ minutes, $\mathbf{10}$ minutes, $\mathbf{6}$ minutes, $\mathbf{5}$ minutes, $\mathbf{4}$ minutes, $\mathbf{3}$ minutes, $\mathbf{2}$ minutes, and $\mathbf{1}$ minute. $\mathbf{60}$ is the smallest number that is divisible by every number from $\mathbf{1\ \boldsymbol{to}\ 6}$; that is, it is the lowest common multiple of $\mathbf{1, 2, 3, 4, 5, \boldsymbol{and}\ 6}$.

Most implementations of sexagesimal are virtual *hybrids* of $\boldsymbol{base - 10}$ and $\boldsymbol{base - 12}$ systems, as they (the implementations) exhibit mathematical properties of both systems.

https://en.wikipedia.org/wiki/Sexagesimal

Section I:

Atlantis & Plato's Ratio

The following section examines Plato's description of Atlantis and compares its measurements to the orbital distances of the planets of the solar system.

Atlantis & Plato’s Ratio

Atlantis

Atlantis (Ancient Greek: “Island of Atlas") is an island mentioned in an allegory on the hubris of nations in Plato's works **Timaeus** and **Critias**, wherein it represents the antagonist naval power that besieges "Ancient Athens", the pseudo-historic embodiment of Plato's ideal state in The Republic.

In the story, Athens repels the Atlantean attack unlike any other nation of the known world, supposedly bearing witness to the superiority of Plato's concept of a state.

The story concludes with Atlantis falling out of favor with the deities and submerging into the Atlantic Ocean.

https://en.wikipedia.org/wiki/Atlantis

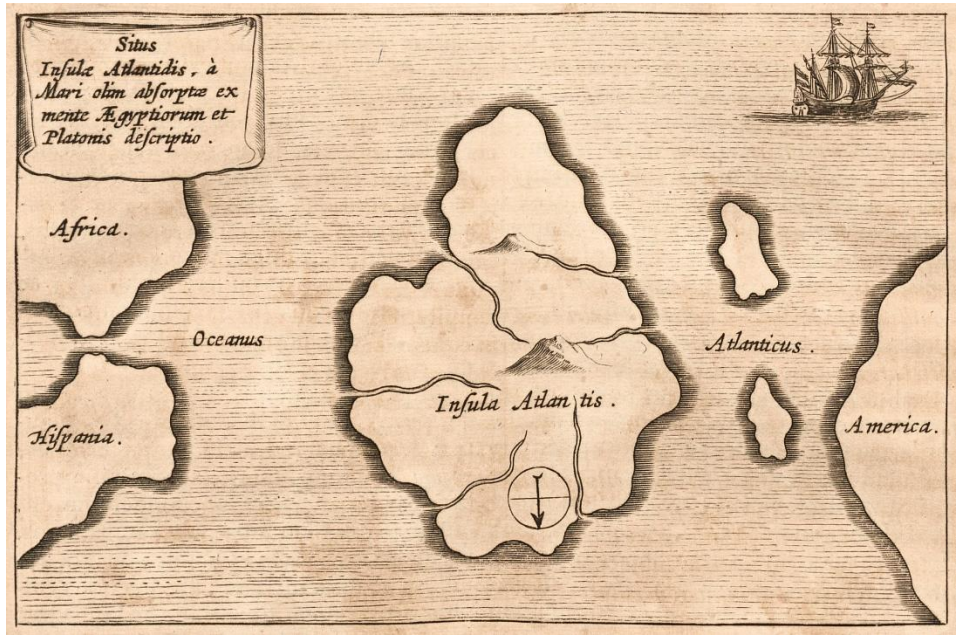
Atlantis & Plato's Ratio

Atlantis

Despite its minor importance in Plato's work, the Atlantis story has had a considerable impact on literature. The allegorical aspect of Atlantis was taken up in utopian works of several Renaissance writers, such as Francis Bacon's *New Atlantis* and Thomas More's *Utopia*.

During the nineteenth-century, the subject gained popularity amongst scholars such as L. Donnelly, author of *Atlantis: The Antediluvian World*.

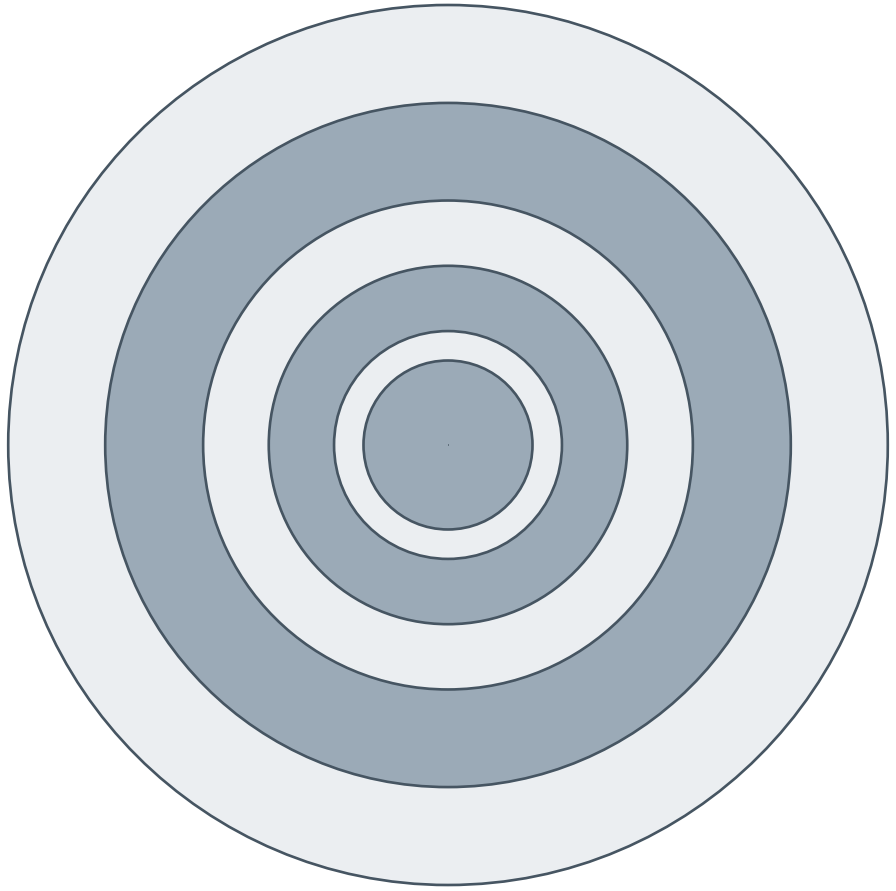
Plato's vague indications of the time of the events (more than $\mathbf{9,000}$ years before his time) and the alleged location of Atlantis ("beyond the Pillars of Hercules") gave rise to much speculation on its existence and subsequent location.



https://en.wikipedia.org/wiki/Atlantis

Atlantis & Plato's Ratio

Plato's Description of Atlantis



The layout of the zones of Atlantis.

Atlantis & Plato's Ratio

Plato's Description of Atlantis: The Stadion (Stadia)

Plato enumerates the dimensions of Atlantis using a unit of measure call the **stadion** (plural stadia). The stadion was an ancient Greek unit of length, consisting of $\mathbf{600}$ Greek feet (podes). It is also sometimes referred to as the stadium (or stade) as it presumably relates to the size of a Greek stadium. The official length of the Olympic stadion is as follows:

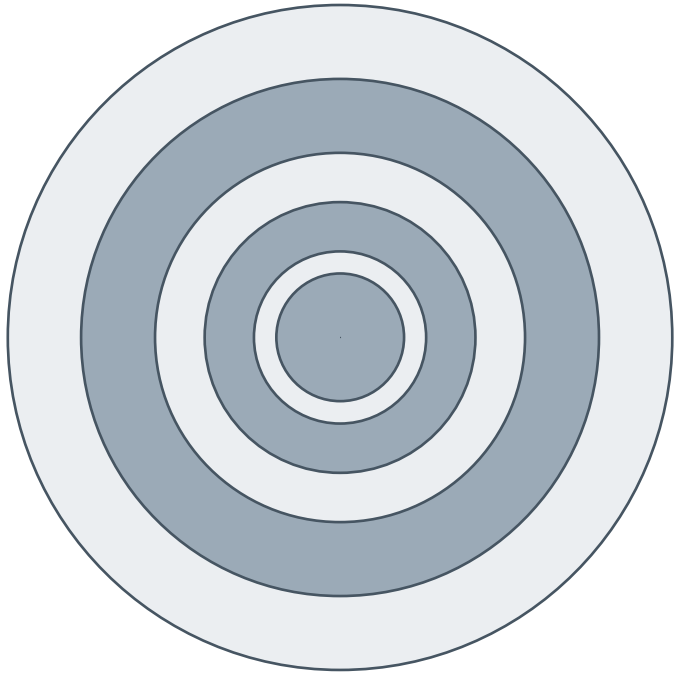
$$1\ Olympic\ Stadion = (\mathbf{600} * \mathbf{294.28}\ mm)\ = \mathbf{176.58}\ meters = \mathbf{193.10}\ yards = \mathbf{579.29}\ feet$$

The age Plato gives for Atlantis places it circa $\mathbf{10,000\ BCE}$. Given this, it is unlikely that Atlantis would have been designed and built using a Greek unit of measure. So, the dimensions could be converted values, a clue of some sort, or Plato could just be using the stadion as a placeholder.

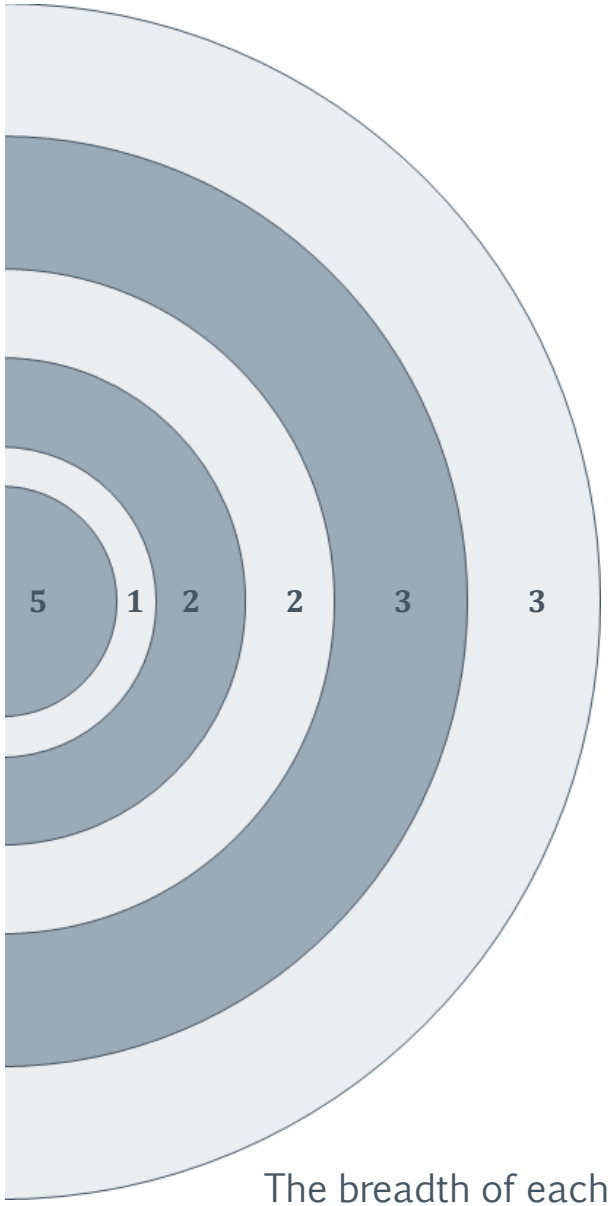
https://en.wikipedia.org/wiki/Stadion_(unit)

Atlantis & Plato's Ratio

Plato's Description of Atlantis



The layout of the zones of Atlantis.



The breadth of each zone (in stadia)

Atlantis & Plato's Ratio

Plato's Description of Atlantis

Plato states that Atlantis was created by a god named Poseidon for his mortal bride, Cleito.

For her, he "enclosed the hill in which she dwelt all round, making alternate **zones** of sea and land larger and smaller, encircling one another; there were two of land and three of water, which he turned as with a lathe, each having its circumference equidistant every way from the center".

Zone	Plato's Description
Center Island	"The island in which the palace was situated had a **diameter** of **five** stadia".
Zone 1 (Water)	"...the one which surrounded the central island was a [**one**] stadium only [in breadth]".
Zone 2 (Land)	"...the next two zones, the one of water, the other of **land**, were **two** stadia [in breadth]".
Zone 3 (Water)	"...the next two zones, the one of **water**, the other of land, were **two** stadia [in breadth]".
Zone 4 (Land)	"...the largest of the zones...was **three** stadia in breadth, and the zone of **land** which came next of equal breadth".
Zone 5 (Water)	"...the largest of the zones...was **three** stadia in breadth, and the zone of land which came next of equal breadth".
Sea Wall	".. a wall which began at the sea and went all round: this was everywhere distant **fifty** stadia from the largest zone **or** harbour".

Atlantis & Plato's Ratio

Plato's Description of Atlantis

Plato goes on to describe the island where Atlantis is located, how the land was divided amongst the ten princes (sons of Poseidon and Cleito), and then provides an abridged genealogy of the "family of the ten princes".

Zone	Plato's Description
Center Island	"The island in which the palace was situated had a **diameter** of **five** stadia".
Zone 1 (Water)	"...the one which surrounded the central island was a [**one**] stadium only [in breadth]".
Zone 2 (Land)	"...the next two zones, the one of water, the other of **land**, were **two** stadia [in breadth]".
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Sea Wall	".. a wall which began at the sea and went all round: this was everywhere distant **fifty** stadia from the largest zone **or** harbour".

Atlantis & Plato's Ratio

Plato gives the following measurements for the city of Atlantis

Plato states that "beginning from the sea they bored a canal…which they carried through to the outermost zone, making a passage from the sea up to this, which became a harbour".

This means that the last zone of water was "cut" open to connect it to the sea. Doing so created a harbor starting from this last zone. Since it is not possible to determine where a zone of water ends, and a sea harbor begins, cutting open the last zone increased its breadth.

Zone	Breadth	Boundary Radius	Boundary Diameter
Center Island	$5\ Stadia$	$2.5\ Stadia$	$5\ Stadia$
Zone 1 (Water)	$1\ Stadion$	$3.5\ Stadia$	$7\ Stadia$
Zone 2 (Land)	$2\ Stadia$	$5.5\ Stadia$	$11\ Stadia$
Zone 3 (Water)	$2\ Stadia$	$7.5\ Stadia$	$15\ Stadia$
Zone 4 (Land)	$3\ Stadia$	$10.5\ Stadia$	$21\ Stadia$
Zone 5 (Water)	$3\ Stadia$	$13.5\ Stadia$	$27\ Stadia$
Sea Wall	$50\ Stadia$	$\geq 63.5\ Stadia$	$\geq 127\ Stadia$

Atlantis & Plato's Ratio

Plato gives the following measurements for the city of Atlantis

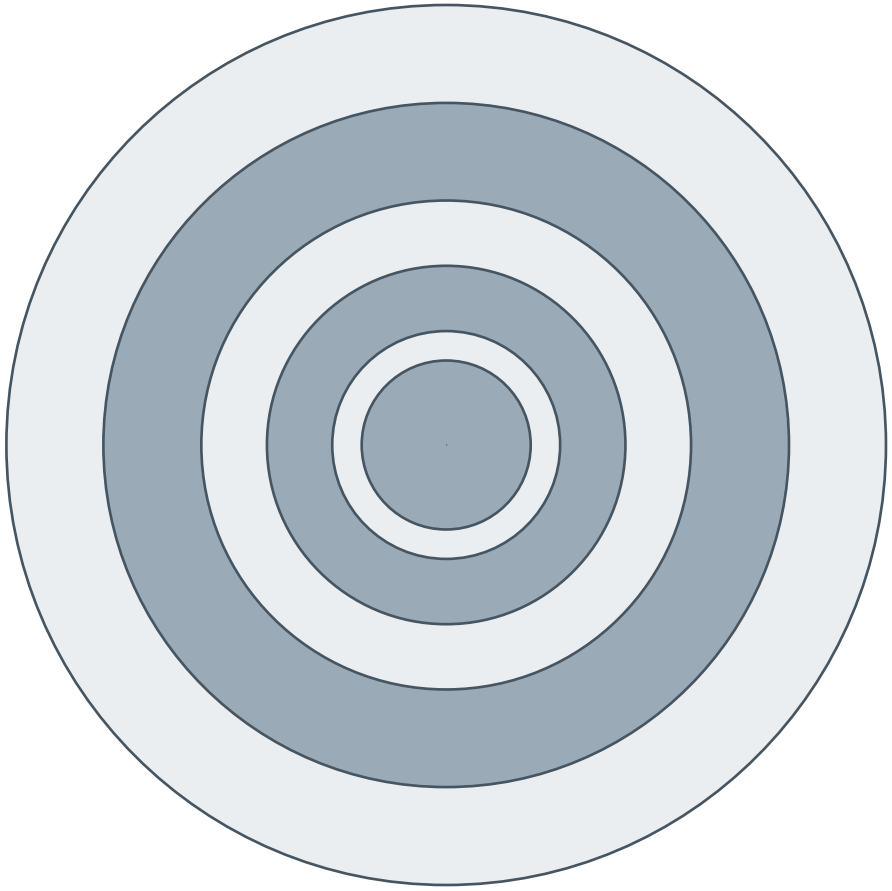
Plato also states the sea wall "was everywhere distant fifty stadia from the largest zone *or* harbour".

Since he never specifies the breadth of the harbor outside of the last zone, an exact radius/diameter for the sea wall cannot be extrapolated. All that can be inferred is that the radius of the sea wall is at least $\mathbf{63.5}$ Stadia.

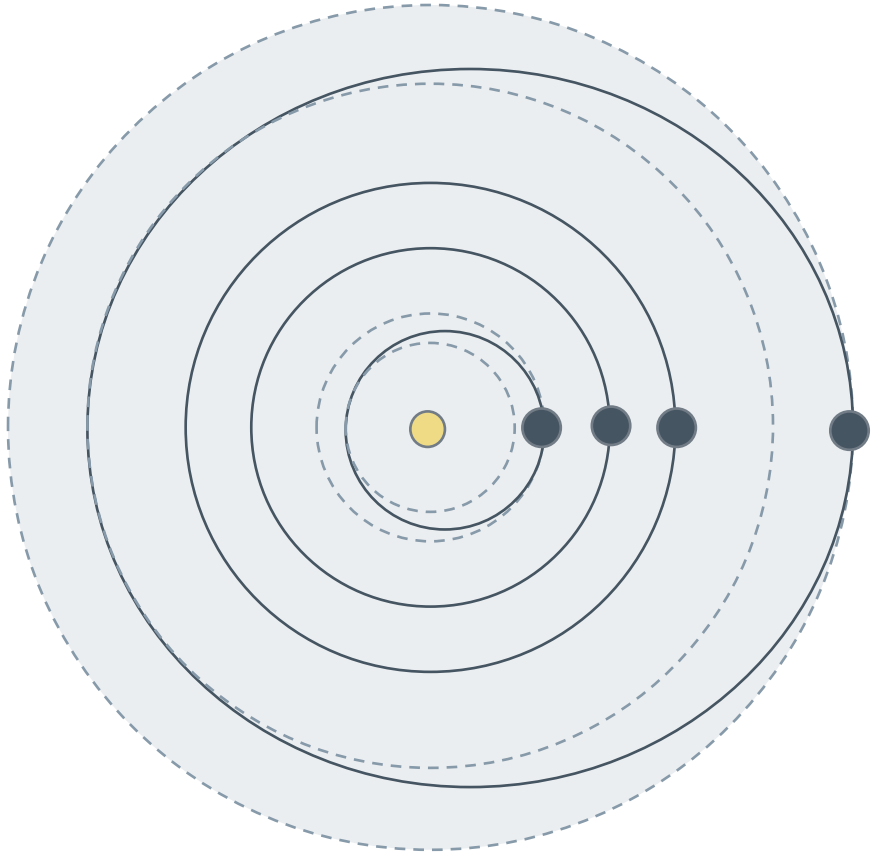
Zone	Breadth	Boundary Radius	Boundary Diameter
Center Island	$5\ Stadia$	$2.5\ Stadia$	$5\ Stadia$
Zone 1 (Water)	$1\ Stadion$	$3.5\ Stadia$	$7\ Stadia$
Zone 2 (Land)	$2\ Stadia$	$5.5\ Stadia$	$11\ Stadia$
Zone 3 (Water)	$2\ Stadia$	$7.5\ Stadia$	$15\ Stadia$
Zone 4 (Land)	$3\ Stadia$	$10.5\ Stadia$	$21\ Stadia$
Zone 5 (Water)	$3\ Stadia$	$13.5\ Stadia$	$27\ Stadia$
Sea Wall	$50\ Stadia$	$\geq 63.5\ Stadia$	$\geq 127\ Stadia$

Atlantis & Plato's Ratio

Plato's Description of Atlantis



Atlantis



The orbital layout of the inner planets of the solar system

Atlantis & Plato's Ratio

Atlantis represents a scale model of the solar system

The radius of each zone represents a ratio calculated using a formula derived from the inverse of $\boldsymbol{\pi \times 1,000}$.

Each ratio represents the orbital radius of a planet in the solar system. In order to calculate this ratio, the minimum and maximum orbital radius of each planet is needed as well as the equatorial circumference of the Earth.

$$\pi = \frac{C}{D} \underset{inv}{\Longrightarrow} \frac{D}{C} * 1{,}000 = \frac{1}{\pi} * 1{,}000$$

Atlantis & Plato's Ratio

Atlantis represents a scale model of the solar system

For D, use the orbital radius (times two) of the target planet. And for C, use the circumference of the Earth multiplied times $\mathbf{1,000}$. Alternatively, use the orbital radius (R) of the target planet divided by the circumference of the Earth times $\mathbf{500}$. The exact formulae are as follows:

$$Plato's\ Ratio\ (P-Ratio) = \frac{D_{orbit\ of\ target\ planet}}{1{,}000 * C_{Earth}}$$

or

$$Plato's\ Ratio\ (P-Ratio) = \frac{R_{orbit\ of\ target\ planet}}{500 * C_{Earth}}$$

Note that P-Ratio's do not have units, because they are a ratio. Therefore, a P-Ratio can be calculated using any unit of length, ensuring the same units are used for each component of the formula.

Atlantis & Plato's Ratio

Using this formula, the P-Ratio for each of the inner planets can be calculated. Use the following value for the circumference of the Earth:

$$C_{Earth=4.0075\times10^4\ km}$$

Planet	Orbital Radius	Calculation	P-Ratio
Mercury (Min Orbit)	$R^{min} = 4.5927 \times 10^7\ km$	$= \frac{4.5927\times10^7}{500*(4.0075\times10^4)}$	**2.5** (2.3)
Mercury (Max Orbit)	$R^{max} = 6.9862 \times 10^7\ km$	$= \frac{6.9862\times10^7}{500*(4.0075\times10^4)}$	**3.5** (3.5)
Venus (Min Orbit)	$R^{min} = 1.0741 \times 10^8\ km$	$= \frac{1.0741\times10^8}{500*(4.0075\times10^4)}$	**5.5** (5.4)
Venus (Max Orbit)	$R^{max} = 1.0891 \times 10^8\ km$	$= \frac{1.0891\times10^8}{500*(4.0075\times10^4)}$	**5.5** (5.4)
Earth (Min Orbit)	$R^{min} = 1.47055 \times 10^8\ km$	$= \frac{1.47055\times10^8}{500*(4.0075\times10^4)}$	**7.5** (7.4)
Earth (Max Orbit)	$R^{max} = 1.52141 \times 10^8\ km$	$= \frac{1.52141\times10^8}{500*(4.0075\times10^4)}$	**7.5** (7.6)
Mars (Min Orbit)	$R^{min} = 2.06744 \times 10^8\ km$	$= \frac{2.06744\times10^8}{500*(4.0075\times10^4)}$	**10.5** (10.3)
Mars (Max Orbit)	$R^{max} = 4.593 \times 10^8\ km$	$= \frac{2.4923\times10^8}{500*(4.0075\times10^4)}$	**12.5** (12.5)

P-Ratio fraction values are rounded to the nearest half (rounds the diameter).

Atlantis & Plato's Ratio

The table below ties the boundary radius of each zone of Atlantis to an orbital radius of a planet in the solar system. Note that Zone **5** and the maximum orbit of Mars deviate by a value of **1**. The sea wall's zone radius is indeterminate, so it cannot be directly tied to the minimum orbit of Saturn without more information.

Zone	Planet Orbit	Zone Radius	Orbit P-Ratio
Center Island	Mercury (Min)	2.5 *Stadia*	**2.5** ✓
Zone 1 (Water)	Mercury (Max)	3.5 *Stadia*	**3.5** ✓
Zone 2 (Land)	Venus (Min/Max)	5.5 *Stadia*	**5.5** ✓
Zone 3 (Water)	Earth (Min/Max)	7.5 *Stadia*	**7.5** ✓
Zone 4 (Land)	Mars (Min)	10.5 *Stadia*	**10.5** ✓
Zone 5 (Water)	Mars (Max)	13.5 *Stadia*	**12.5** !
Sea Wall	Saturn (Min)	≥ 63.5 *Stadia*	**67.5**

Planet	P-Ratio
Mercury	2.5 – 3.5
Venus	5.5 – 5.5
Earth	7.5 – 7.5
Mars	10.5 – 12.5
Jupiter	37.0 – 41.0
Saturn	67.5 – 75.0
Uranus	137.0 – 150.0
Neptune	**222**.5 – 227.0

The table above lists the P-Ratio's for all the planets in the solar system.

Dwarf Planet	P-Ratio
Pluto	**222** – 368.5

P-Ratio (radius ratio) fraction values are rounded to the nearest half (rounds the diameter).

Section II:

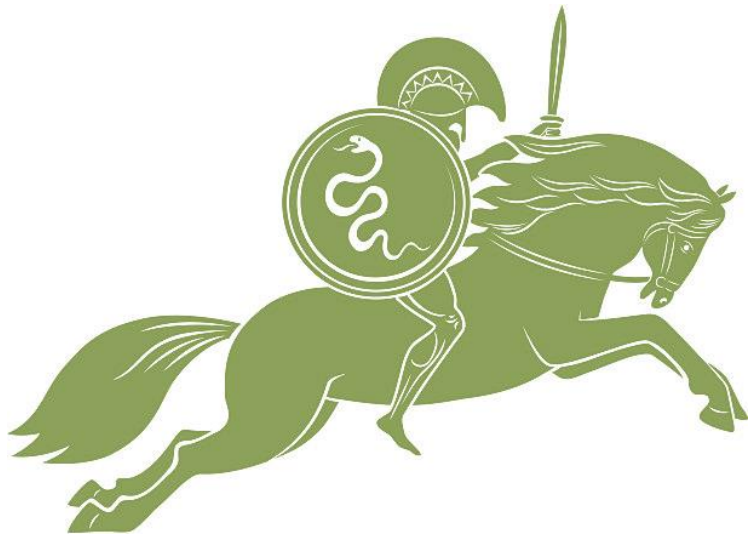
Deriving the Ant

The following section uses Plato's description of Atlantis and natural physical constants to infer the unit of length used in Atlantis. The purpose is to establish the "true" measurements of Atlantis, which can subsequently be compared with the known measurements of archaeological sites.

Deriving the Ant

The Stadion

As previously stated, it is unlikely that Atlantis would have been designed/built using a Greek unit of measure, such as the stadion. So, the unit of length used by the designers/builders of Atlantis was not the stadion, and its name and relative length are unknown. Or are at least not directly stated by Plato.



https://en.wikipedia.org/wiki/Stadion_(unit)

Deriving the Ant

Antediluvian

Based on the age of Atlantis given by Plato, it would be considered from the “antediluvian” period. The antediluvian (alternatively pre-diluvian or pre-flood) period is the time period chronicled in the Bible between the fall of man and the Genesis flood narrative in biblical cosmology.

The term was coined by Thomas Browne. The narrative takes up chapters **1–6** (excluding the flood narrative) of the Book of Genesis. The term found its way into early geology and science until the late Victorian era.

Colloquially, the term is used to refer to *any ancient and murky period*.

https://en.wikipedia.org/wiki/Antediluvian

Deriving the Ant

The Ant

Going forward, the unit of length used in Atlantis will be referred to as the **Antediluvian Common Unit of Length** (**Ant** for short). Its capitalization rules will follow that of the meter. Meaning it is not a proper noun (except within its definition). Its abbreviation will be a lower case "a". It will scale in the same manner as the meter, and with the same prefixes as well. For example, a kiloant (kilo-ant) is equal to 1,000 ants, the same way a kilometer is equal to 1,000 meters.

https://en.wikipedia.org/wiki/Antediluvian

Deriving the Ant

Relative Length

When defining the size of a unit, its value is usually expressed as a ratio to another unit (of the same measurement type). For example, the ratio of feet-to-meters is:

$$1\ foot = .3048\ meters = 3.048 \times 10^{-1}\ meters$$

$$1\ meter = 3.208\ feet = 3.208 \times 10^{-0}\ feet$$

Without any source that specifies the length of the ant (in absolute terms), its size will have to be derived as it relates proportionally to a unit of length whose size ***is*** defined in absolute terms, such as the meter.

Deriving the Ant

Division

In the dialogues Critias and Timaeus, Plato gives details on how the island/country of Atlantis was divided amongst the landowners (rulers). He states:

> "The entire country was divided into *sixty thousand* $(\mathbf{60,000})$ lots…"

> "As to the population, each of the lots in the plain had an appointed chief…and the total number of all the lots was **sixty thousand**".

In this statement, Plato is not actually describing how Atlantis was divided, but the how entire Earth was divided; i.e., with the sexadecimal system ($\boldsymbol{base\ 60}$). In other words, Plato is referring to the circumference of the Earth. The rest of the section will be dedicated to verifying that this is the case.

Deriving the Ant

Division

For the purpose of deriving the size of the ant, the ***equatorial*** circumference of the Earth will be used. The polar circumference and how it relates to the ant will be covered in ***Part II***.

Recall that the equatorial circumference of the Earth is:

$$C_{equatorial} = 40{,}075\ km$$

Using this information, derive the size of the ant by setting its ratio of the equatorial circumference of the Earth to $\mathbf{1{:}\,60{,}0000}$ a (ants).

$$C_{equatorial} = 60{,}000\ ants$$

Deriving the Ant

Scaling

In order to keep the size of the ant close to the size of the meter, the ant will scale in factors of 10 (the way the meter does). So, the Earth circumference ratio is now $\mathbf{1}:\mathbf{60,000}\ ka\ (kiloants)\ or\ \mathbf{1}:\mathbf{60,000,000}\ a\ (ants)$. This makes the ants-to-meters ratio equal to:

$$1\ a\ = \frac{40{,}075{,}017}{60{,}000{,}000}\ m = .667917\ m = \mathbf{6.67917} \times 10^{-1}\ m$$

$$1\ m\ =\ 1.497192\ a = \mathbf{1.497192} \times 10^{0}\ a$$

Deriving the Ant

Scaling

Note that since the ant was scaled down by a factor of $\mathbf{1,000}$ and the ant is replacing the stadion as the actual units used in Atlantis, the “Atlantis Stadion” is equal to the kiloant (ka).

$$1 \text{ "Atlantis Stadion"} = 1\ ka\ (kiloant) = \mathbf{6.67917} \times 10^{-1}\ km$$

Deriving the Ant

The Gravitational Constant

The gravitational constant, denoted by the capital letter **G**, is an empirical physical constant involved in the calculation of gravitational effects in Sir Isaac Newton's law of universal gravitation and in Albert Einstein's general theory of relativity. It is defined as follows:

$$Gravitational\ Constant\ (\boldsymbol{G}) = \mathbf{6.67430} \times 10^{-11}\ N \cdot {}^{m^2}/_{kg^2}$$

$$N = Newton\ = 1\ {}^{kg \cdot m}/_{s^2}$$

https://en.wikipedia.org/wiki/Gravitational_constant

Deriving the Ant

The Gravitational Constant

Rearranging the units of **G**, it can be determined that the value is the product of a ratio of distance (volume)-to-time and a reducible ratio of mass:

$$\boldsymbol{G} = \left(\frac{kg \cdot m}{s^2}\right) \cdot \left(\frac{m^2}{kg^2}\right) = \left(\frac{m^3}{s^2}\right) \cdot \left(\frac{kg}{kg^2}\right) = \left(\frac{m^3}{s^2}\right) \cdot \left(\frac{1}{kg}\right)$$

Therefore, **G** can be viewed as the product of the acceleration of volume (a change in the rate of *expansion/contraction* of three-dimensional space) and the *inverse* of mass.

https://en.wikipedia.org/wiki/Gravitational_constant

Deriving the Ant

The Gravitational Constant

Comparing the ants-to-meters ratio derived thus far to the value of G shows that they are almost the same value.

$$\boldsymbol{G = 6.67430 \times 10^{-11}}$$

$$\boldsymbol{Ratio_{meter}^{ant} = 6.67917 \times 10^{-1}}$$

$$\boldsymbol{Ratio_{ant}^{meter} = 1.497192 \times 10^{0}}$$

Adjust the ants-to-meters ratio by setting the decimal value to the decimal value of G:

$$\boldsymbol{Ratio_{meter}^{ant} = 6.67430 \times 10^{-1}}$$

$$\boldsymbol{Ratio_{ant}^{meter} = 1.49828 \times 10^{0}}$$

https://en.wikipedia.org/wiki/Gravitational_constant

Deriving the Ant

The Gravitational Constant

The units for distance in G are in meters (m^3), so convert from meters to ants. The result is a value of exactly one ($\mathbf{1^3 = 1}$). This indicates that the length of the ant was chosen so that the gravitational constant (in ants) would be a non-arbitrary and "non-fractional" value.

$$\boldsymbol{G_{ants}} = \mathbf{1.00 \times 10^{-10}} \left(\frac{ants^3}{seconds^2}\right) \cdot \left(\frac{\mathbf{1}}{mass\ unit}\right)$$

This value is the inverse of $\mathbf{100,000^2}$ (inverse-square law).

$$\boldsymbol{G_{ants}} = \mathbf{1.00 \times 10^{-10}} = \left(\frac{\mathbf{1}}{\mathbf{1.00 \times 10^{10}}}\right) = \left(\frac{\mathbf{1}}{\mathbf{100,000^2}}\right) \underset{inv}{\Longrightarrow} \mathbf{100,000^2}$$

https://en.wikipedia.org/wiki/Inverse-square_law

Deriving the Ant

The Gravitational Constant

It is noteworthy that the inverse of **G** is approximately equal to the average orbital radius of the Earth (in decameters); with a difference of **0.15%**. This means that twice a year, the distance from the Earth to the Sun is ***exactly*** equal to the inverse of **G**.

$$\frac{\boldsymbol{G}}{1} \underset{inv}{\Longrightarrow} \frac{1}{\boldsymbol{G}} = \frac{1}{6.67430 \times 10^{-11}} = \mathbf{1.4982} \times 10^{10}$$

$$Average\ Radius_{Earth}^{Orbit} = \mathbf{1.4960} \times 10^{10}$$

https://en.wikipedia.org/wiki/Gravitational_constant

Deriving the Ant

Ant Mass

In 2019, the official size of the kilogram was tied directly to the meter and the second. Therefore, mass and distance participate in a ***proportional*** relationship with time. And because **G** is the product of a ratio of mass, a ***complimentary*** unit of mass for the ant needs to be derived. This unit will represent the unit of mass used in Atlantis.

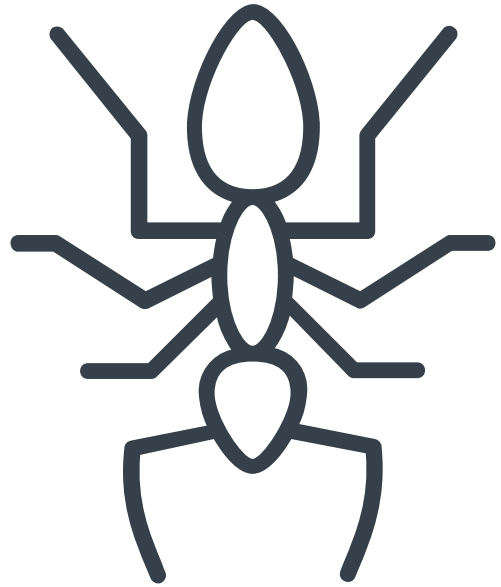
$$\boldsymbol{G_{ants}} = \mathbf{1.00} \times 10^{-10} \left(\frac{ants^3}{seconds^2}\right) \cdot \left(\frac{1}{\boldsymbol{Atlantis\ mass\ unit}}\right)$$

https://en.wikipedia.org/wiki/Kilogram

Deriving the Ant

The Tenna (Ant Mass)

Going forward, the units of mass used in Atlantis will be called the **Tenna** (plural **Tennae**). The name is a derivative of the word **antenna** (as in ant-tenna). Its capitalization rules will follow that of the gram. Meaning it is not a proper noun (except within its definition). Its abbreviation will be a lower case “t”. It will scale in the same manner as the gram, and with the same prefixes as well. For example, a kilotenna (kilo-tenna) is equal to 1,000 tennae, the same way a kilogram is equal to 1,000 grams.



Deriving the Ant

The Tenna

The ratio of kilotennae-to-kilograms can be derived by calculating the gravitational acceleration (small g) of a known mass, such as the Earth.

$$\boldsymbol{g} = \frac{(G_m) \cdot (Mass_{Earth}^{kg})}{(Radius_{Earth}^{m})^2}$$

$$\boldsymbol{g} = \frac{(6.67430 \times 10^{-11}) \times (5.97240 \times 10^{24})}{(4.068063 \times 10^{13})} = 9.798665 \ {}^{m}/_{s^2}$$

Deriving the Ant

The Tenna

Convert $\boldsymbol{g}$ to ants and then calculate the mass of the Earth in kilotennae.

$$9.798665\ {}^{m}/_{s^2} = \mathbf{14.681205}\ {}^{a}/_{s^2}$$

$$\mathbf{14.681205} = \frac{(1.00 \times 10^{-10}) \times (Mass_{Earth}^{kt})}{(9.13223925 \times 10^{13}\ a^2)}$$

$$Mass_{Earth}^{kt} = \frac{(14.681205) \times (9.13223925 \times 10^{13})}{(1.00 \times 10^{-10})} = \mathbf{1.340723} \times 10^{25}\ kt$$

$$Ratio_{kilotenna}^{kilograms} = \frac{\mathbf{5.97240} \times 10^{24}\ kg}{\mathbf{1.340723} \times 10^{25}\ kt}$$

Deriving the Ant

The Tenna

The resulting ratio is:

$$Ratio_{kilotenna}^{kilograms} = \mathbf{4.454617} \times 10^{-1}$$

$$Ratio_{kilograms}^{kilotenna} = \mathbf{2.244862} \times 10^{0}$$

And the ratio of ants-to-meters is:

$$Ratio_{meters}^{ants} = \mathbf{6.67430} \times 10^{-1}$$

$$Ratio_{ants}^{meters} = \mathbf{1.49828} \times 10^{0}$$

Deriving the Ant

Antediluvian Circumference of the Earth

The current equatorial circumference of the Earth is:

$$\frac{4.0075 \times 10^4\ km}{\mathbf{6.67430} \times 10^{-1}} = 6.0044 \times 10^4\ ka = \mathbf{60,044\ kiloants}$$

This indicates that the circumference of the Earth has increased since length of the ant was defined (with a ratio of 1:60,000). This is because sea levels have increased since the end of the last ice age (around 10,000 BCE). The increase in water is from the melting of polar ice sheets.

https://en.wikipedia.org/wiki/Climate_change

Deriving the Ant

Antediluvian Circumference of the Earth

Using this information, the equatorial circumference of the Earth during the last ice age can be inferred:

$$6.00 \times 10^4\ ka * \mathbf{6.67430} \times 10^{-1} = 4.0045754 \times 10^4\ km = \mathbf{40,045.8\ kilometers}$$

And from this, it should be possible to approximate the sea levels during or towards the end of the last ice age. This information can be useful when compiling climate data and building global climate models.

https://en.wikipedia.org/wiki/Climate_change

Deriving the Ant

Verify the Ant with the Sacred Cubit

To verify that the ratio of ants-to-meters is accurate, compare it to a known unit of measure (of ancient origin). The size of the "Sacred Cubit" is known, so this can be used to verify the size of the ant.

The **sacred cubit** and the **pyramid inch** are units of measure that were defined in ancient Egypt. The pyramid inch is equal to one twenty-fifth ($\frac{\mathbf{1}}{\mathbf{25}}$) of the sacred cubit.

The size of the **pyramid inch** is defined as $\mathbf{1.00106}$ imperial inches, or $\mathbf{2.5426924}$ centimeters. Given this, the sacred cubit-to-meter ratio is as follows:

$$Sacred\ Cubit = \mathbf{6.35647} \times 10^{-1}\ meters$$

https://en.wikipedia.org/wiki/Pyramid_inch

Deriving the Ant

Verify the Ant with the Sacred Cubit

With this ratio, the current size of the Earth (in sacred cubits) is:

$$Circumference_{Earth}^{equatorial} = 6.3046036 \times 10^7\ sacred\ cubits = 63{,}046{,}036$$

$$Circumference_{Earth}^{polar} = 6.2831852 \times 10^7\ sacred\ cubits = 62{,}831{,}852$$

$$Radius_{Earth}^{equatorial} = 1.0034088\ \times 10^7\ sacred\ cubits = 10{,}034{,}088$$

$$Radius_{Earth}^{polar} = \mathbf{1.00000}\ \times 10^7\ sacred\ cubits = \mathbf{10{,}000{,}000}$$

Note that the polar radius of the Earth is exactly $\mathbf{10{,}000{,}000}$ sacred cubits.

https://en.wikipedia.org/wiki/Pyramid_inch

Deriving the Ant

Verify the Ant with the Sacred Cubit

Recall that the antediluvian equatorial circumference (AEC) of the Earth is:

$$AEC = 4.00458 \times 10^7\ meters = 40{,}045{,}754\ m$$

Using this value for the AEC, the antediluvian size of the Earth (in sacred cubits) is:

$$Circumference_{Earth}^{equatorial} = \mathbf{6.300000} \times 10^7\ sacred\ cubits = \mathbf{63{,}000{,}000}$$

$$Circumference_{Earth}^{polar} = 6.2831852 \times 10^7\ sacred\ cubits = 62{,}831{,}852$$

$$Radius_{Earth}^{equatorial} = 1.0026761\ \times 10^7\ sacred\ cubits = 10{,}026{,}761$$

$$Radius_{Earth}^{polar} = \mathbf{1.00000}\ \times 10^7\ sacred\ cubits = \mathbf{10{,}000{,}000}$$

Note that the equatorial circumference of the Earth is exactly $\mathbf{63{,}000{,}000}$ sacred cubits. This is a mathematical indicator that the derived ants-to-meters ratio is accurate. This is also a mathematical indicator that the sacred cubit unit was derived during the antediluvian time period.

https://en.wikipedia.org/wiki/Pyramid_inch

Deriving the Ant

Verify the Ant with the Olympic Stadion

The ant-to-meter ratio can also be verified using the Olympic stadion. Recall the stadion is defined as follows:

$$1\ Olympic\ stadion\ (OS)\ = 1.76576 \times 10^2\ m = 176.576\ m$$

With this ratio, the current size of the Earth (in Olympic stadion) is:

$$Circumference_{Earth}^{equatorial} = 2.26965730 \times 10^5\ Olympic\ Stadia = 226{,}966$$

$$Circumference_{Earth}^{polar} = 2.26194668 \times 10^5\ Olympic\ Stadia = 226{,}195$$

$$Radius_{Earth}^{equatorial} = 3.6122718\ \times 10^4\ Olympic\ Stadia = 36{,}123$$

$$Radius_{Earth}^{polar} = \mathbf{3.60000}\ \times 10^4\ Olympic\ Stadia = \mathbf{36{,}000}$$

Note that the polar radius of the Earth is exactly $\mathbf{36,000}$ Olympic stadia.

https://en.wikipedia.org/wiki/Stadion_(unit)

Deriving the Ant

Verify the Ant with the Olympic Stadion

Recall that the antediluvian equatorial circumference (AEC) of the Earth is:

$$AEC = 4.00458 \times 10^7\ meters = 40{,}045{,}754\ m$$

Using this value for the AEC, the antediluvian size of the Earth (in Olympic stadion) is:

$$Circumference_{Earth}^{equatorial} = \mathbf{2.2680000} \times 10^5\ Olympic\ Stadia = \mathbf{226{,}800}$$

$$Circumference_{Earth}^{polar} = 2.26194668 \times 10^5\ Olympic\ Stadia = 226{,}195$$

$$Radius_{Earth}^{equatorial} = 3.6096341\ \times 10^4\ Olympic\ Stadia = 36{,}096$$

$$Radius_{Earth}^{polar} = \mathbf{3.60000}\ \times 10^4\ Olympic\ Stadia = \mathbf{36{,}000}$$

Note that the equatorial circumference of the Earth is exactly $\mathbf{226{,}800}$ Olympic stadia. This is another mathematical indicator that the derived ants-to-meters ratio is accurate. This is also another mathematical indicator of an ancient unit of measure (the Olympic stadion) being derived during the antediluvian time period.

https://en.wikipedia.org/wiki/Stadion_(unit)

Deriving the Ant

Verify the Ant with the Olympic Stadion

Note the relationship of the Antediluvian Equatorial Circumference (AEC) of the Earth in Olympic Stadion ($\mathbf{226,800}$) and sacred cubits ($\mathbf{63,000,000}$):

$$\mathbf{63}^\circ\ (degrees) = \mathbf{226,800}''\ (arcseconds)$$

https://en.wikipedia.org/wiki/Stadion_(unit)

Deriving the Ant

Plato’s Number

The value of $\mathbf{226,800}$ is of additional significance because it appears to be Plato’s Number:

Plato's number is a number enigmatically referred to by Plato in his dialogue the Republic. The text is notoriously difficult to understand, and its corresponding translations do not allow an unambiguous interpretation. There is no real agreement either about the meaning or the value of the number. It also has been called the "geometrical number" or the "nuptial number" (the "number of the bride").

Great lexical and syntactical differences are easily noted between the many translations of the Republic. Below is a typical text from a relatively recent translation of Republic 546b–c:

> “Now for divine begettings there is a period comprehended by a perfect number, and for mortal by the first in which augmentations dominating and dominated when they have attained to three distances and four limits of the assimilating and the dissimilating, the waxing and the waning, render all things conversable and commensurable with one another, whereof a basal four-thirds wedded to the pempad yields two harmonies at the third augmentation, the one the product of equal factors taken one hundred times, the other of equal length one way but oblong,-one dimension of a hundred numbers determined by the rational diameters of the pempad lacking one in each case, or of the irrational lacking two; the other dimension of a hundred cubes of the triad. And this entire geometrical number is determinative of this thing, of better and inferior births”.

https://en.wikipedia.org/wiki/Plato%27s_number

Deriving the Ant

Plato's Number

The passage in which Plato introduced the number has been discussed ever since it was written, with no consensus in the debate. Since the text is so ambiguous, its interpretation can produce more than one value. In addition, the same value can be produced from different interpretations.

However, the value derived for the Antediluvian Equatorial Circumference (AEC) of the Earth in Olympic Stadion appears to be Plato's number.

$$AEC = \mathbf{226,800}\ Olympic\ Stadia$$

$$Plato's\ Number = \mathbf{226,800,000} = 9! \times 5^4$$

The number is significant because when the P-Ratio for the Earth is set to **7.56**, the orbital radius of the Earth is exactly **226,800,000** kiloants. This P-Ratio is slightly below the current maximum orbital radius of Earth, which is **7.6**, and represents the ***antediluvian maximum orbital radius of the Earth***. This will be discussed in ***Part III***.

This is an indicator of why Plato chose to give the measurements of Atlantis in units of stadia, but the values in ants.

https://en.wikipedia.org/wiki/Plato%27s_number

Deriving the Ant

Plato's War-Chariot

In his dialogue, Timaeus, Plato states that the leader of each of the $\mathbf{60,000}$ "lots" of Atlantis are bound to provide the $\boldsymbol{sixth}$ part of a war-chariot. His description of the war-chariot is as follows:

> "…two horses and riders upon them, a pair of chariot-horses without a seat, and an attendant and charioteer, two hoplites, two archers, two slingers, three stone-shooters, three javelin-men, and four sailors…"

https://en.wikipedia.org/wiki/Critias

Deriving the Ant

Plato's War-Chariot

Plato is revealing a number with the components of the war-chariot. The table below shows this number and the table to the right illustrates how it is derived.

Derived Number	222,011,222,334
Earth Min. Orbit (ants)	~220,000,000,000
Earth Avg. Orbit (ants)	~224,000,000,000
Earth Max. Orbit (ants)	~228,000,000,000

This number represents the average orbital radius of the Earth in ants ($\sim 1.49598 \times 10^{11}\ meters$)*.

This is confirmation that the division of Atlantis (of $\mathbf{60,000}$ lots) is indeed referring to the circumference of the Earth.

https://en.wikipedia.org/wiki/Checkmate

War-Chariot Component	Derived Number
Two **(2)** horses	**2**
and **(2)** riders upon them,	**2**
a **pair of (2)** chariot-horses	**2**
without **(0)** a seat,	**0**
and **(1)** an attendant	**1**
and **(1)** charioteer;	**1**
two (2) hoplites,	**2**
two (2) archers,	**2**
two (2) slingers,	**2**
three (3) stone-shooters,	**3**
three (3) javelin-men,	**3**
and **four (4)** sailors.	**4**

*The derived number would create an orbital period of ***exactly*** 360 *days*. This will be discussed in ***Part III***.

Deriving the Ant

The Precision of the Sacred Cubit

Having the value for the antediluvian circumference of the Earth in sacred cubits ($\mathbf{63,000,000}$) *and* the ratio of sacred cubits to meters allows for an even more precise calculation of the ants-to-meters ratio. The calculations below show how the more precise ratio is derived.

$$\mathbf{1}\ pyramid\ inch\ =\ \mathbf{2.5426924}\ centimeters$$

$$\mathbf{1}\ sacred\ cubit\ =\ \mathbf{25}\ pyramid\ inches$$

$$\mathbf{1}\ sacred\ cubit\ =\ \mathbf{63.56731}\ centimeters\ =\mathbf{.6356731}\ meters$$

$$\mathbf{63,000,000}\ sacred\ cubits\ =\mathbf{40,047,405.3}\ meters$$

$$AEC = \mathbf{4.00474053} \times 10^{7}\ meters\ =\mathbf{40,047,405.3}\ meters$$

$$\mathbf{60,000,000}\ ants\ =\mathbf{40,047,405.3}\ meters$$

https://en.wikipedia.org/wiki/Pyramid_inch

Deriving the Ant

The Precision of the Sacred Cubit

The resulting ratio is:

$$1\ ant = \mathbf{6.67456755} \times 10^{-1}\ meters$$

$$1\ meter = \mathbf{1.4982244} \times 10^{0}\ ants$$

This ratio can be used to derive a more precise value of the gravitational constant (G).

$$\boldsymbol{G = 6.67456755 \times 10^{-11}}$$

Note that the above value for $\boldsymbol{G}$ is a ***calculated*** value, as opposed to a ***measured*** (observed) value.

Deriving the Ant

The Precision of the Tenna

Since a parameter value used to calculate the ratio of the tenna has changed, it will need to be re-calculated.

$$\boldsymbol{g} = \frac{(G_m) \cdot (Mass_{Earth}^{kg})}{(Radius_{Earth}^{m})^2}$$

$$\boldsymbol{g} = \frac{(6.67456755 \times 10^{-11}) \times (5.97240 \times 10^{24})}{(4.068063 \times 10^{13})} = \mathbf{9.7990585}\ {}^{m}/_{s^2}$$

$$\mathbf{9.7990585}\ {}^{m}/_{s^2} = \mathbf{14.6811886}\ {}^{a}/_{s^2}$$

Deriving the Ant

The Precision of the Tenna

Since a parameter value used to calculate the ratio of the tenna has changed, it will need to be re-calculated.

$$\mathbf{9.7990585}\ {}^{m}/_{s^2} = \mathbf{14.6811886}\ {}^{a}/_{s^2}$$

$$\mathbf{14.6811886} = \frac{(1.00 \times 10^{-10}) \times\ (Mass_{Earth}^{kt})}{(9.1314848855\ \times\ 10^{13}\ a^2)}$$

$$Mass_{Earth}^{kt} = \frac{(14.6811886) \times (9.1314848855 \times 10^{13})}{(1.00 \times 10^{-10})} = \mathbf{1.3406105}\ \times\ 10^{25}\ kt$$

$$Ratio_{kilotenna}^{kilograms} = \frac{\mathbf{5.97240}\ \times\ 10^{24}\ kg}{\mathbf{1.3406105} \times\ 10^{25}\ kt}$$

Deriving the Ant

The Precision of the Tenna

Since a parameter value used to calculate the ratio of the tenna has changed, it will need to be re-calculated.

$$Ratio_{kilotenna}^{kilograms} = \frac{\mathbf{5.97240} \times 10^{24}\ kg}{\mathbf{1.3406105} \times 10^{25}\ kt}$$

$$Ratio_{kilotenna}^{kilograms} = \mathbf{4.4549851979513002} \times 10^{-1}$$

$$Ratio_{kilograms}^{kilotenna} = \mathbf{2.244676369429612} \times 10^{0}$$

Deriving the Ant

The Shortcut to the Tenna

An alternative (and faster) method of calculating the ratio of the tenna to the kilogram can be accomplished by squaring the ratio of the ant to the meter.

$$Ratio_{meters}^{ants} = \mathbf{6.67456755 \times 10^{-1}}$$

$$Ratio_{kilograms}^{kilotenna} = (0.667456755)^2 = \mathbf{4.4549851 \times 10^{-1}}$$

Deriving the Ant

The Ant is Derived and Verified

The precision of the unit comparisons indicate that the derived ants-to-meters is accurate. The ratio is as follows:

$$1\ ant = \mathbf{6.67456755} \times 10^{-1}\ meters$$

$$1\ meter = \mathbf{1.49822440} \times 10^{0}\ ants$$

The precision of the unit comparisons also indicate that both the sacred cubit and the Olympic stadion are of antediluvian origin. Their ratios are as follows:

$$1\ sacred\ cubit = \mathbf{6.356731} \times 10^{-1}\ meters$$

$$1\ meter = \mathbf{1.57313562} \times 10^{0}\ sacred\ cubits$$

$$1\ Olympic\ stadion\ = \mathbf{1.76575861} \times 10^{-1}\ meters$$

$$1\ meter = \mathbf{5.6632882530} \times 10^{0}\ Olympic\ stadia$$

Deriving the Ant

The Ant Defined

The unit of length used in Atlantis is referred to as the **Antediluvian Common Unit of Length** (**Ant** for short).

Its capitalization rules follow that of the meter; meaning it is not a proper noun (except within its definition). Its abbreviation is a lower case "a".

The ant scales in the same manner as the meter, and with the same prefixes as well.

The size of the ant (as a ratio to the meter) is defined as follows:

$$1\ ant = \mathbf{6.67456755} \times 10^{-1}\ meters$$

$$1\ meter = \mathbf{1.49822440} \times 10^{0}\ ants$$

Prefix	Symbol	Factor	Power
tera	T	1000000000000	10^{12}
giga	G	1000000000	10^{9}
mega	M	1000000	10^{6}
kilo	k	1000	10^{3}
hecto	h	100	10^{2}
deca	da	10	10^{1}
(none)	(none)	1	10^{0}
deci	d	0.1	10^{-1}
centi	c	0.01	10^{-2}
milli	m	0.001	10^{-3}
micro	µ	0.000001	10^{-6}
nano	n	0.000000001	10^{-9}
pico	p	0.000000000001	10^{-12}

The table above lists the prefixes and factor values used when scaling the ant.

Deriving the Ant

The Tenna Defined

The unit of mass used in Atlantis is referred to as the **Tenna** (plural **Tennae**). The name is a derivative of the word **antenna** (as in ant-tenna).

Its capitalization rules follow that of the gram; meaning it is not a proper noun (except within its definition). Its abbreviation is a lower case "t".

The tenna scales in the same manner as the gram, and with the same prefixes as well.

The size of the tenna (as a ratio to the gram) is defined as follows:

$$1\ tenna = \mathbf{4.4549851979513} \times 10^{-1}\ grams$$

$$1\ gram = \mathbf{2.2446763694296} \times 10^{0}\ tennae$$

Prefix	Symbol	Factor	Power
tera	T	1000000000000	10^{12}
giga	G	1000000000	10^{9}
mega	M	1000000	10^{6}
kilo	k	1000	10^{3}
hecto	h	100	10^{2}
deca	da	10	10^{1}
(none)	(none)	1	10^{0}
deci	d	0.1	10^{-1}
centi	c	0.01	10^{-2}
milli	m	0.001	10^{-3}
micro	µ	0.000001	10^{-6}
nano	n	0.000000001	10^{-9}
pico	p	0.000000000001	10^{-12}

The table above lists the prefixes and factor values used when scaling the tenna.

Deriving the Ant: Notes

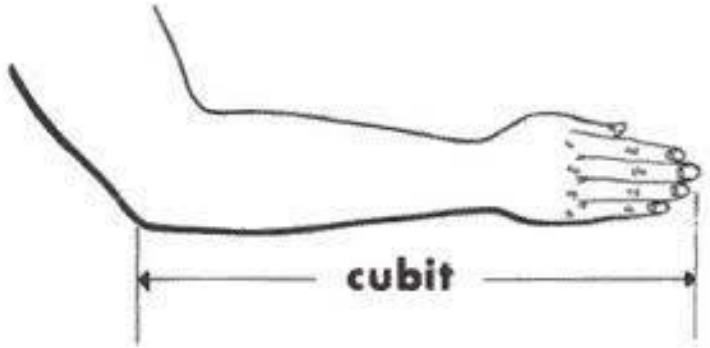
The Measure of a Human: The Cubit

As the name implies, the **sacred cubit** is related to the "common" cubit used primarily by the Sumerians, Egyptians and Israelites.

The cubit is based on the distance from the elbow to the middle finger (of a human). This measurement was usually taken directly from a Pharoah or a King.

The ratio of this distance (from the elbow to the middle finger) on a person to their height is $\mathbf{3.7}$.

So, if the length from the elbow to the middle finger on a person (or a group of people) is known, the height of that person (or persons) can be inferred/calculated by multiplying the subject cubit size by $\mathbf{3.7}$.



https://en.wikipedia.org/wiki/Cubit

Deriving the Ant: Notes

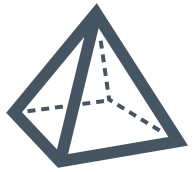
On the Shoulders of Giants

The ratio of the distance “from the elbow to the middle finger” and the “height” of a human is $\mathbf{3.7 - 3.78}$.

So, if the length from the elbow to the middle finger on a person (or a group of people) is known, the height of that person (or persons) can be calculated by multiplying the subject cubit size by $\mathbf{3.7}$.

Recall that the size of the **sacred cubit** is exactly $\mathbf{25}$ pyramid inches. And the pyramid inch is equal to $\mathbf{1.00106}$ imperial inches.

Therefore, a human with measurements close to that of the sacred cubit would be approximately $\mathbf{7.5 - 8\ ft}$ $(\mathbf{2.286 - 2.31\ m})$ in height.



$$\mathbf{1\ Sacred\ Cubit = \sim 25“}$$

$$\mathbf{25“ \times 3.7 = \sim 92.5" = \sim 7' 8" = \sim 2.35\ m}$$

https://en.wikipedia.org/wiki/Cubit

Section III:

The Scale of Atlantis

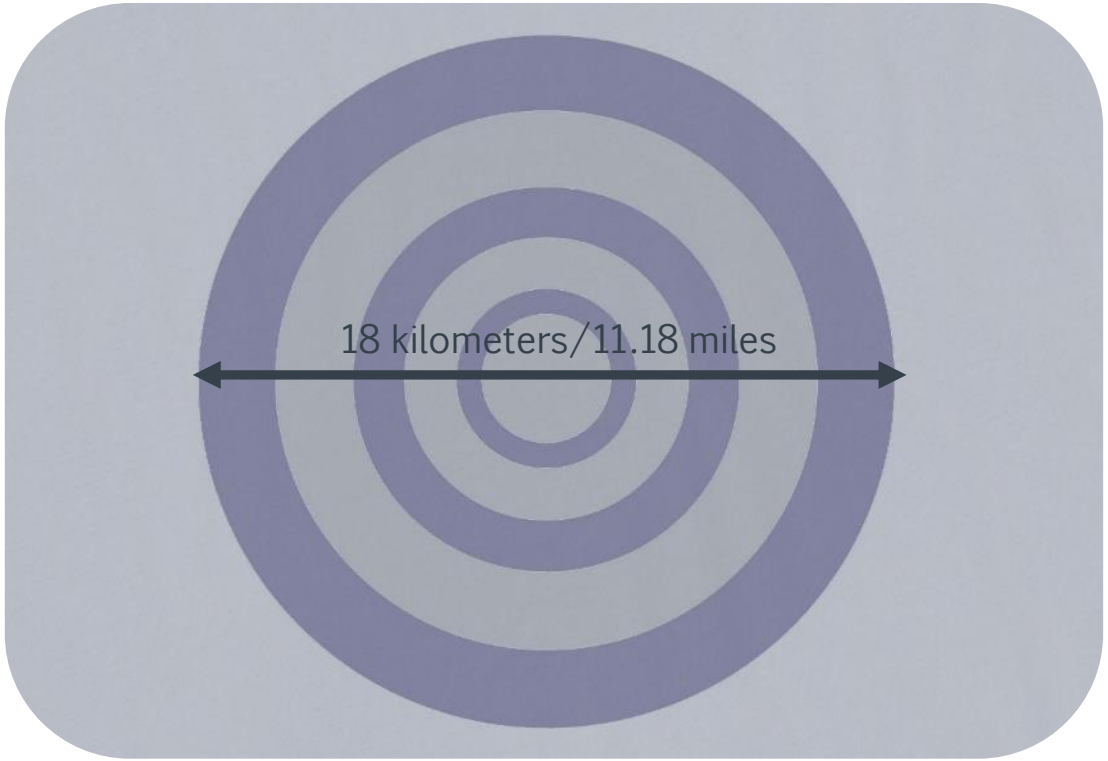
The following section examines the size and scale of Atlantis by visually comparing its layout overlay with existing cities. The purpose is to demonstrate the relative size of Atlantis.

The Scale of Atlantis

The table below lists the derived dimensions of Atlantis. The last zone has a diameter of $\mathbf{18\ km}$ ($11.18\ miles$), while the sea wall has an estimated diameter of $\mathbf{84.7\ km}$ ($52.4\ miles$).

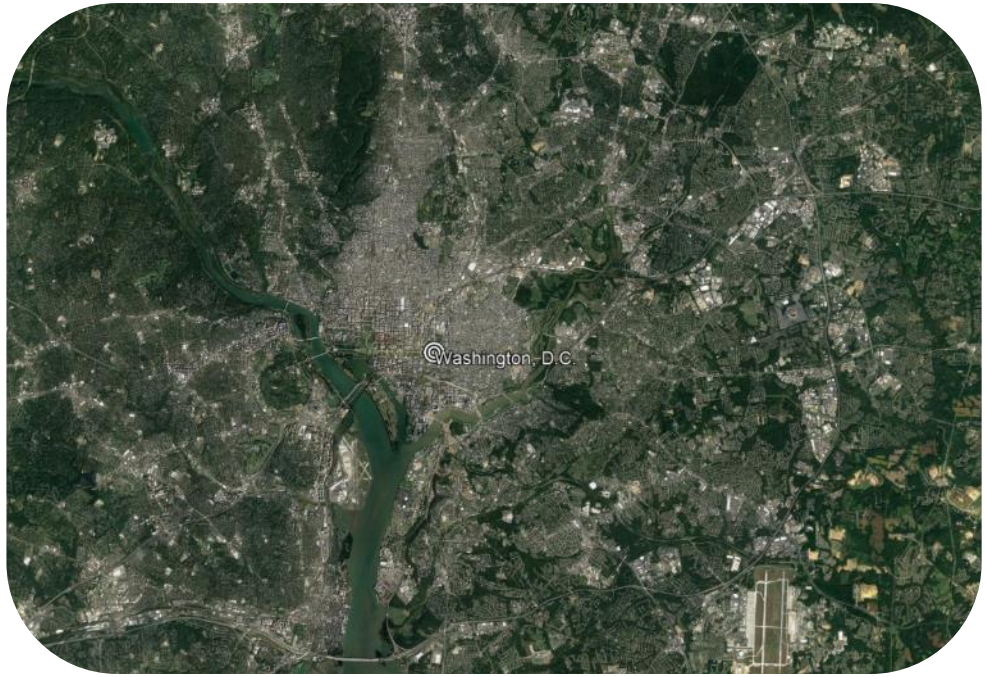
Zone/Area	Radius/Diameter Kiloants (ka)	Radius/Diameter Kilometers (km)	Radius/Diameter Miles
Center Island	$2.5/5.0\ ka$	$1.66/3.33\ km$	$1.03/2.06\ miles$
Zone 1 (Water)	$3.5/7.0\ ka$	$2.33/4.66\ km$	$1.48/2.96\ miles$
Zone 2 (Land)	$5.5/11.0\ ka$	$3.66/7.33\ km$	$2.27/4.55\ miles$
Zone 3 (Water)	$7.5/15.0\ ka$	$5.0/10.0\ km$	$3.12/6.24\ miles$
Zone 4 (Land)	$10.5/21.0\ ka$	$7.0/14.0\ km$	$4.35/8.70\ miles$
Zone 5 (Water)	$13.5/\mathbf{27.0\ ka}$	$9.0/\mathbf{18.0\ km}$	$5.59/\mathbf{11.18\ miles}$
Sea Wall	$\geq 63.5/\mathbf{127.0\ ka}$	$\geq 42.3/\mathbf{84.7\ km}$	$\geq 26.2/\mathbf{52.4\ miles}$

The Scale of Atlantis

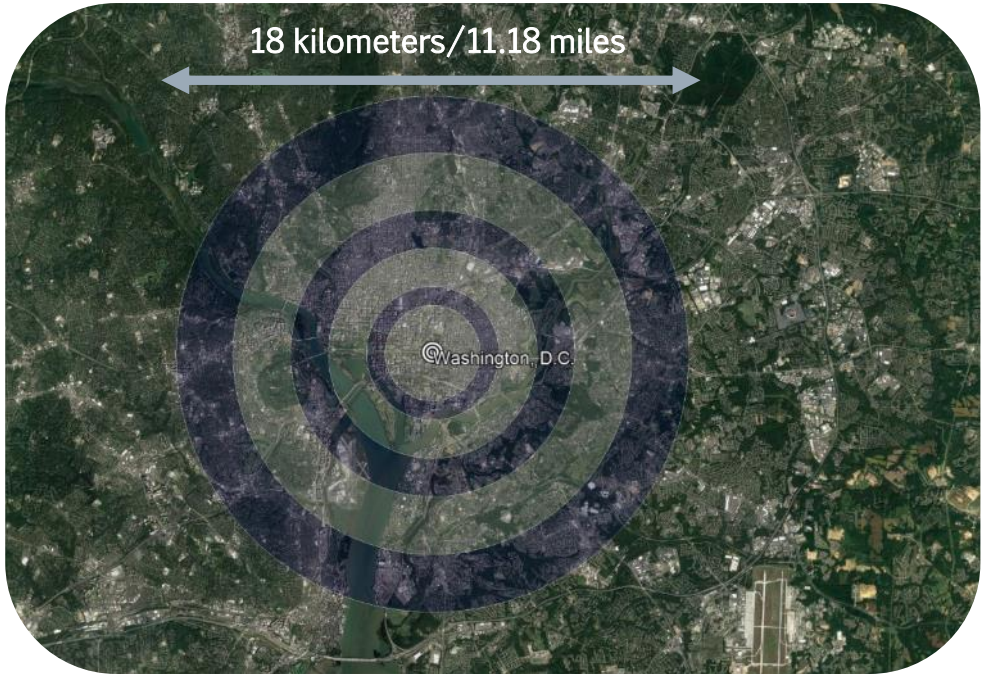


Atlantis Layout Overlay

The Scale of Atlantis



Washington D.C., USA



Washington D.C., USA

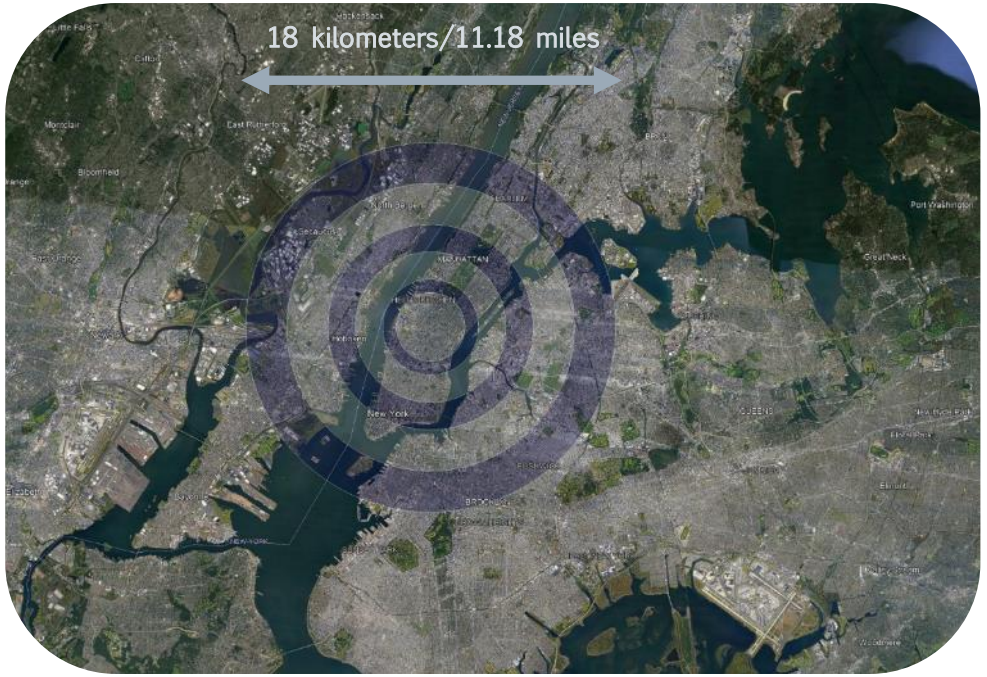
The Scale of Atlantis

Athens, Greece

Athens, Greece

The Scale of Atlantis

New York, USA



New York, USA

Section IV:

Corpus Delicti

The following section examines the ruins of Atlantis located at the **Richat Structure** (Mauritania, Northwest Africa). The purpose is to determine if the structure is the physical location of Atlantis (ruins of Atlantis).

The Richat Structure

The Richat Structure (also called **Guelb er Richât**, the **Eye of the Sahara**, or the **Eye of Africa**) is a prominent circular geological feature in the Sahara's Adrar Plateau, near Ouadane, west–central Mauritania, Northwest Africa.

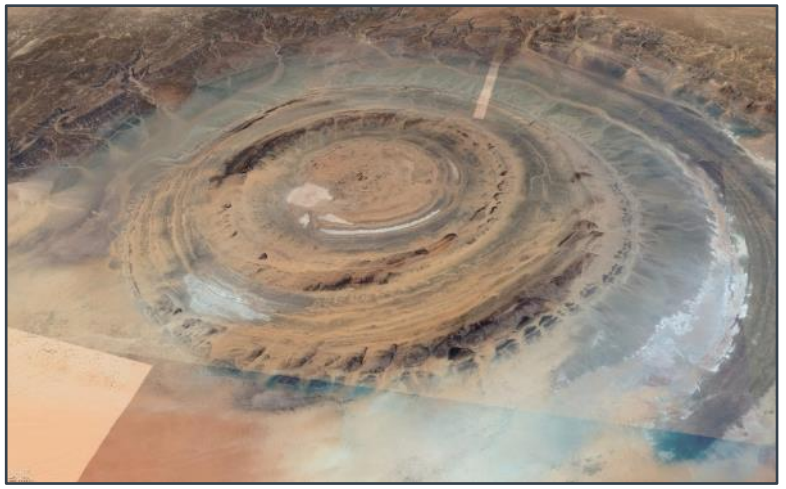
In the local dialect, Richat means **feather** and it also is known locally in Arabic as tagense. Tagense refers to the circular opening of the leather pouch used to draw water from local wells.

The structure is located at:

$21.125644° N, -11.398714° W$

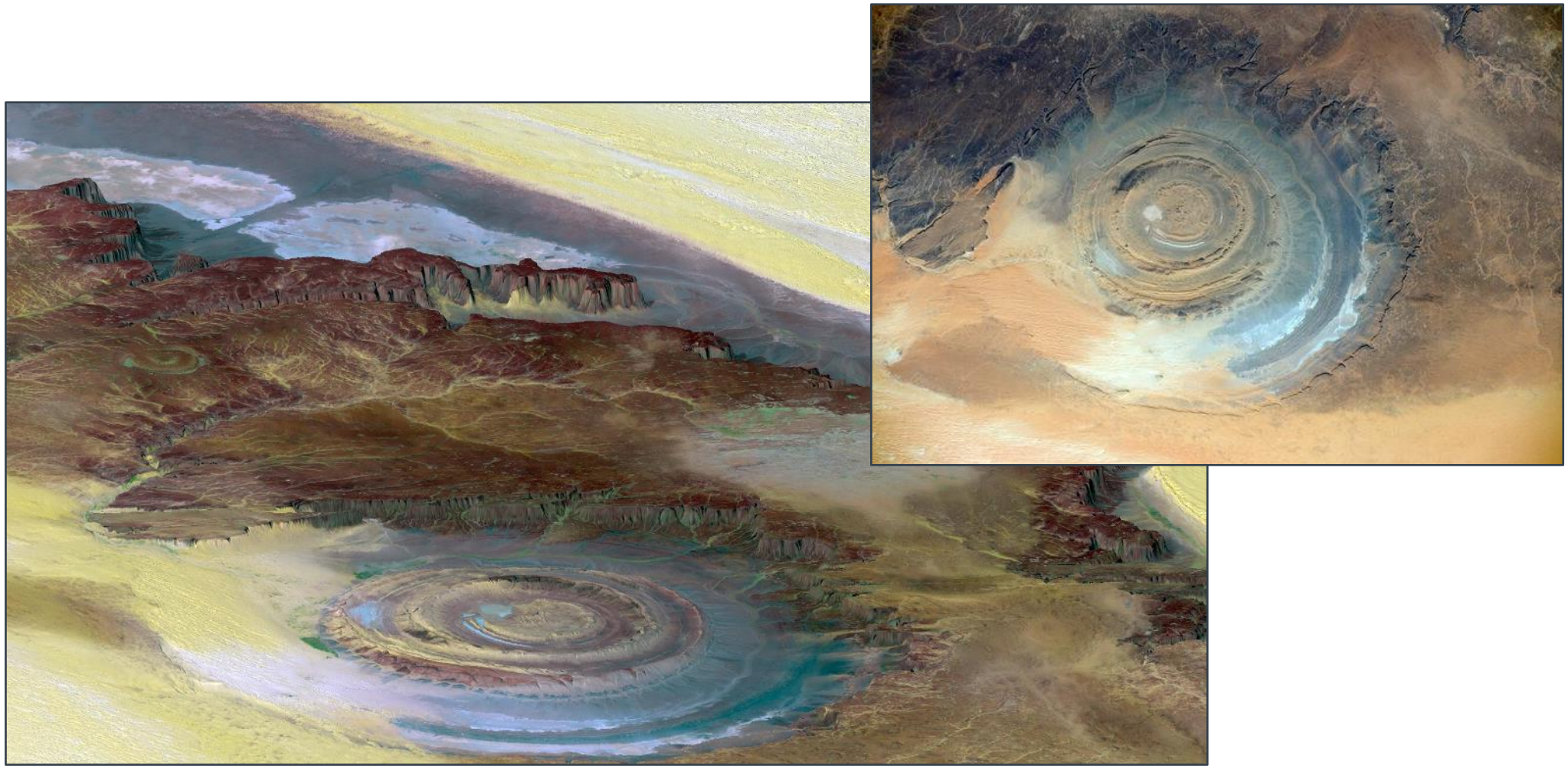
https://en.wikipedia.org/wiki/Richat_Structure

The Richat Structure



https://en.wikipedia.org/wiki/Richat_Structure

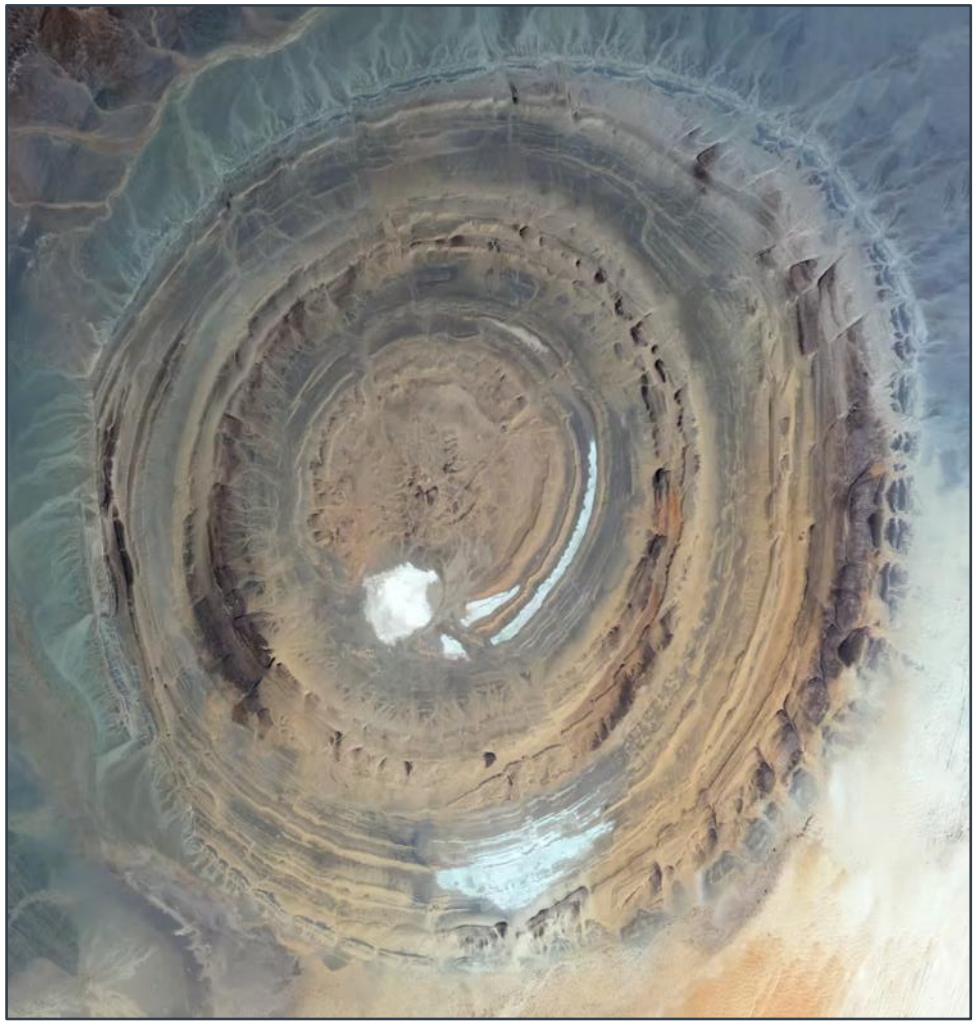
The Richat Structure



https://en.wikipedia.org/wiki/Richat_Structure

The Richat Structure: Geology

- The Richat Structure, also called Guelb er Richât, is a prominent circular geological feature in the Sahara's Adrar Plateau, near Ouadane, west–central Mauritania, Northwest Africa. In the local dialect, Richat means feather and it also is known locally in Arabic as tagense. Tagense refers to the circular opening of the leather pouch used to draw water from local wells.
- According to geologists, it is an eroded geological dome, 40 km (25 mi) in diameter, exposing sedimentary rock in layers which appear as concentric rings. Igneous rock is exposed inside and there are rhyolites and gabbros which have undergone hydrothermal alteration, and a central megabreccia. The structure is also the location of exceptional accumulations of Acheulean archaeological artifacts.
- Artifacts found at the site are typically redeposited, deflated, or both, in Late Pleistocene to early Holocene gravelly mud, muddy gravel, clayey sand, and silty sand. These sediments are often cemented into either concretionary masses or beds by calcrete.
- Numerous concordant radiocarbon dates indicate that the bulk of sediments found accumulated between 15,000 and 8,000 BCE during the African humid period. These deposits lie directly upon deeply eroded and weathered bedrock.

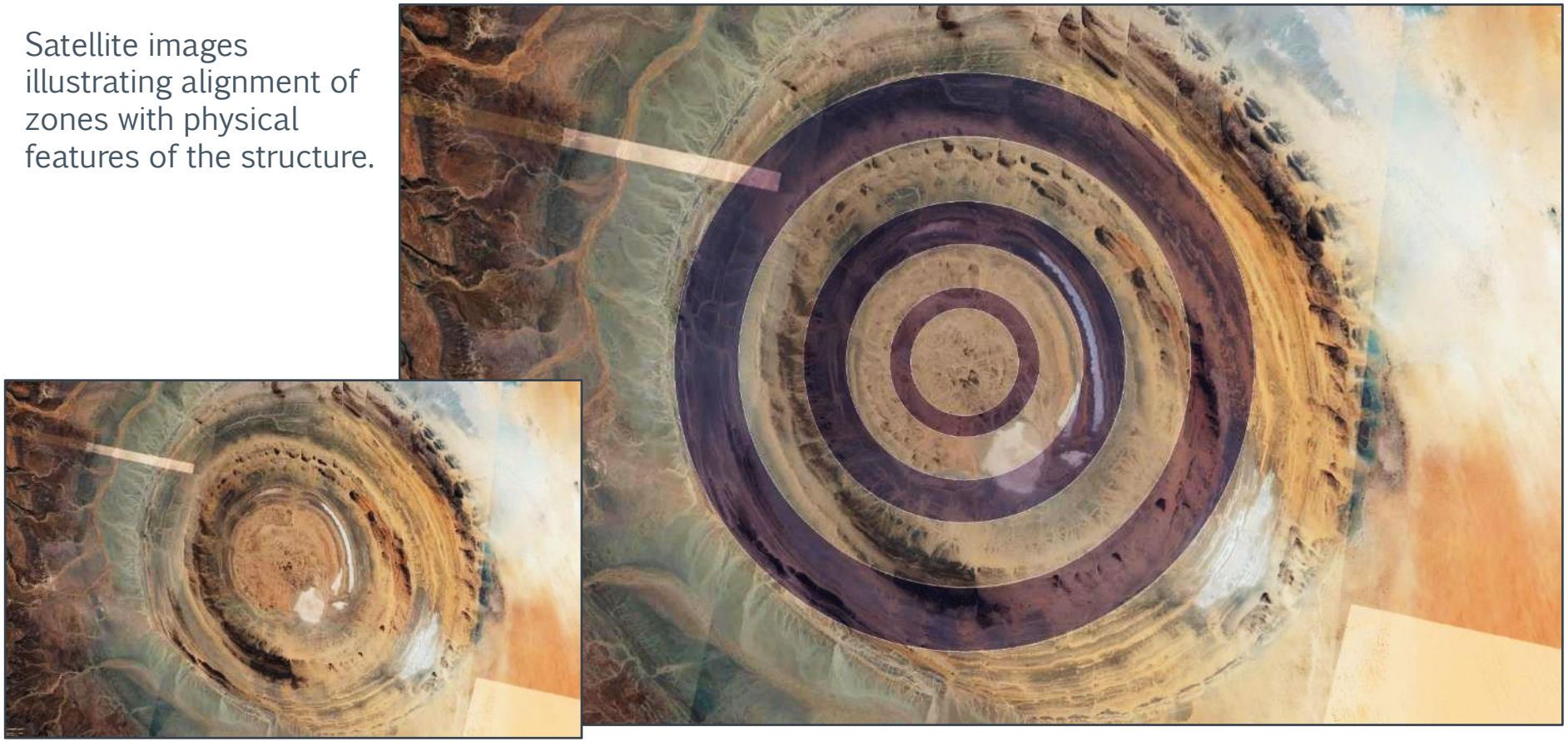


https://en.wikipedia.org/wiki/Richat_Structure

The Richat Structure

Zones

Satellite images illustrating alignment of zones with physical features of the structure.



https://en.wikipedia.org/wiki/Richat_Structure

The Richat Structure

Zones

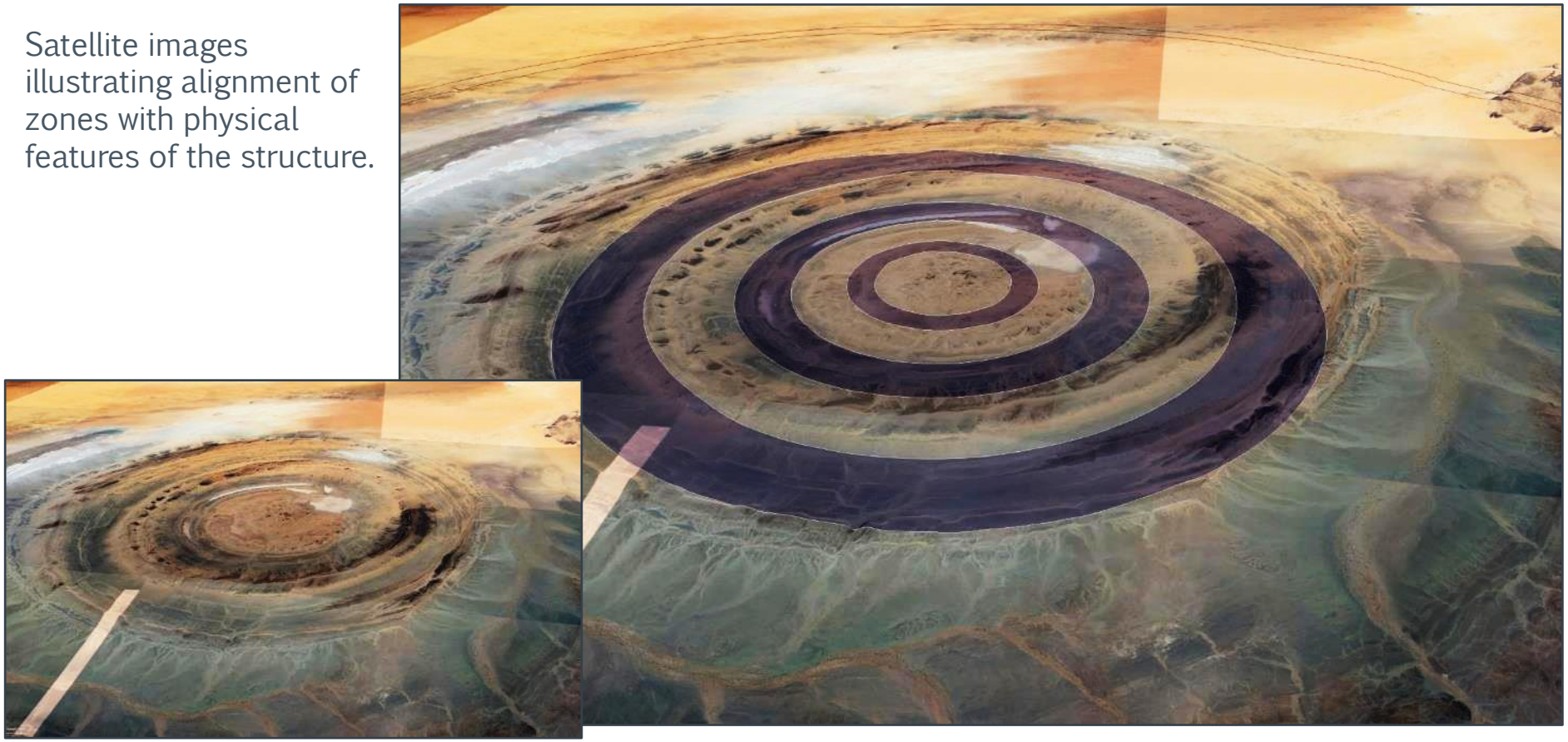
Satellite images illustrating alignment of zones with physical features of the structure.

https://en.wikipedia.org/wiki/Richat_Structure

The Richat Structure

Zones

Satellite images illustrating alignment of zones with physical features of the structure.

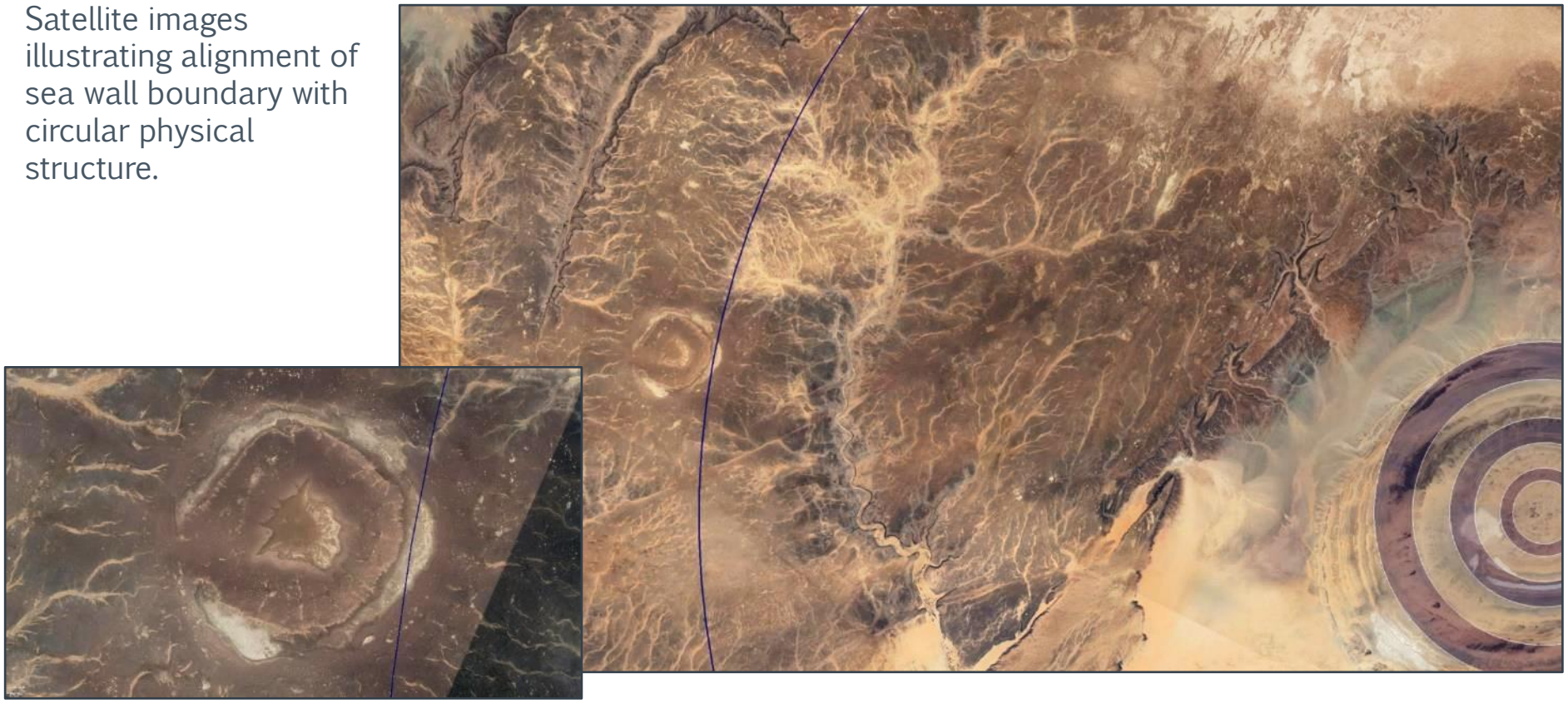


https://en.wikipedia.org/wiki/Richat_Structure

The Richat Structure

Sea Wall

Satellite images illustrating alignment of sea wall boundary with circular physical structure.



https://en.wikipedia.org/wiki/Richat_Structure

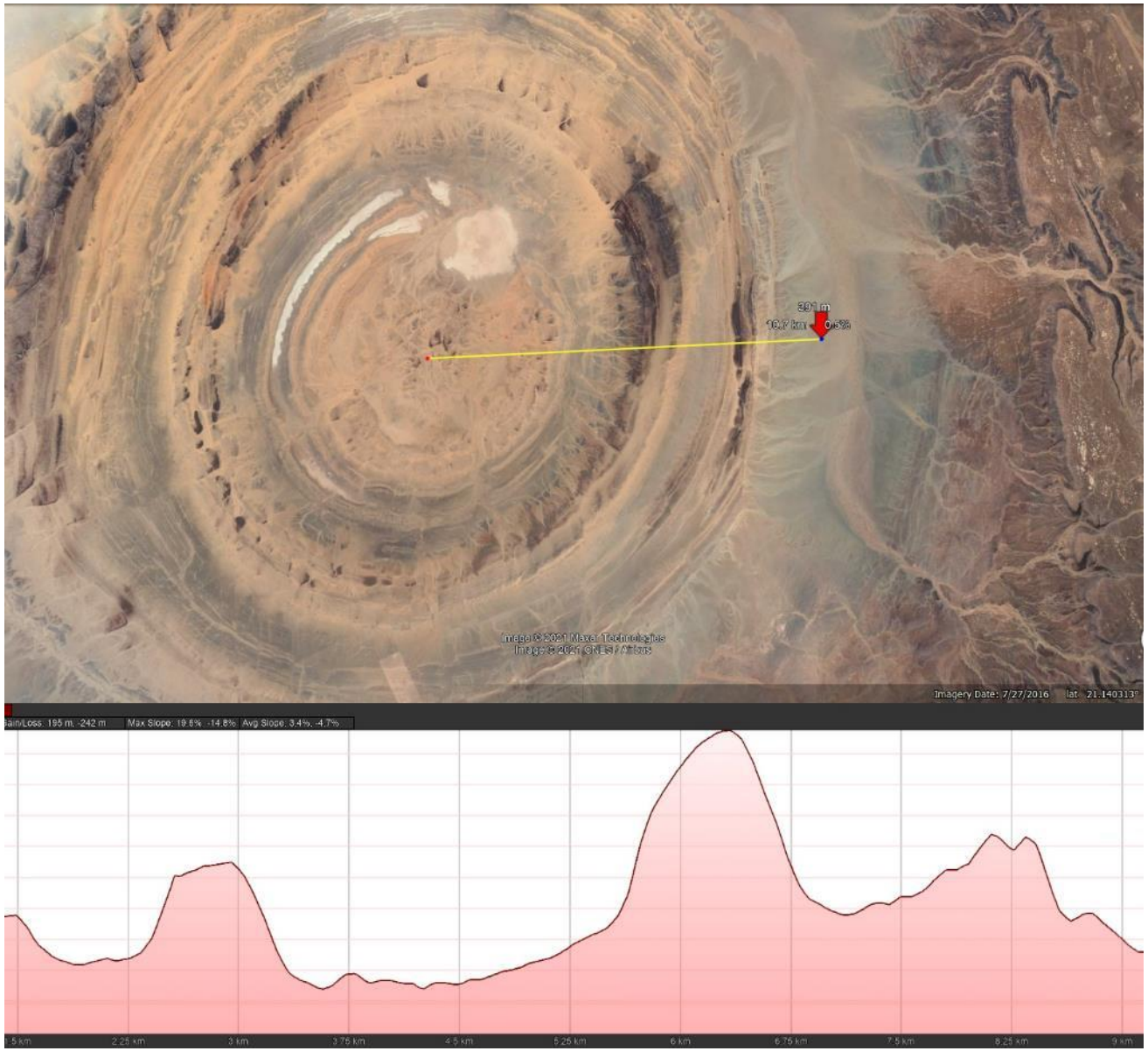
THE RICHAT STRUCTURE: ELEVATION PROFILE

The following pages display a cross-sectional elevation profile of the area illustrated to the right.

The purpose of the elevation profile is to demonstrate that the Richat Structure's dimensions match the dimensions derived for Atlantis in the previous sections.

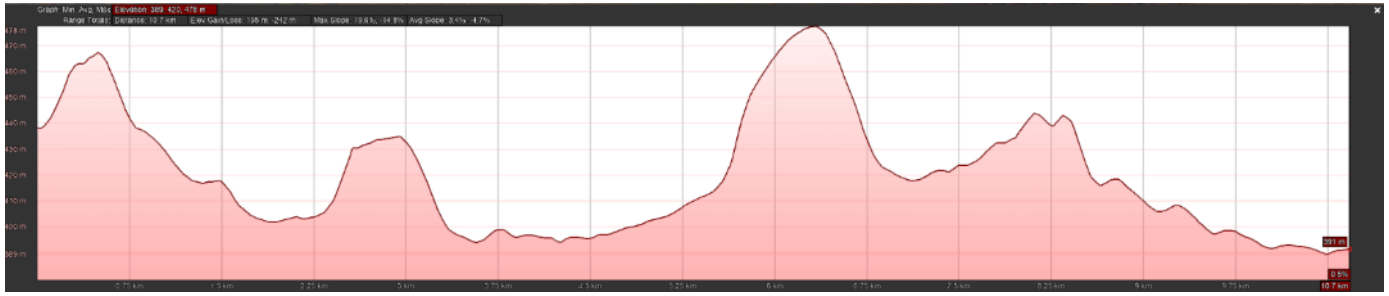
The profile begins at the calculated center of the structure and extends outwards approximately 10.5 km. Therefore, it is a profile of the **radius** of Atlantis's circular layout.

Each zone or area of Atlantis is highlighted along with its dimensions.

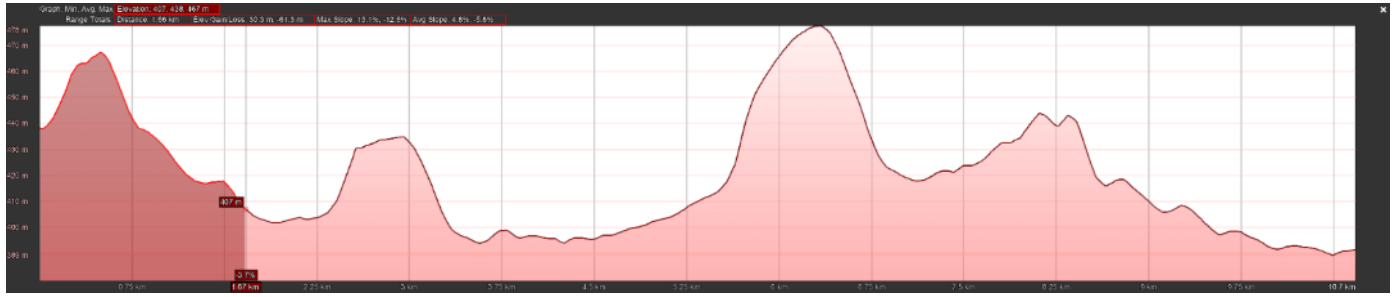


The Richat Structure: Elevation Profile

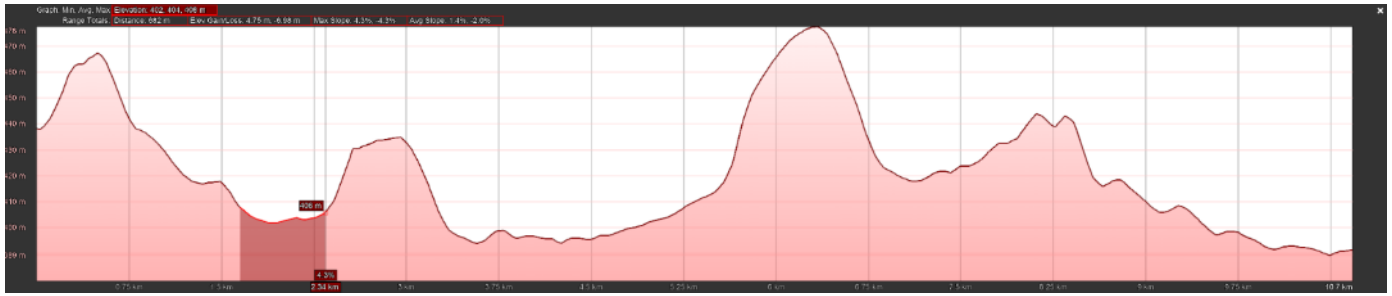
All Zones and Harbors	
Type	All
Breadth	~15.5 ka *(10.33 km)*
Radius	~15.5 ka *(10.33 km)*



Center Island	
Type	Land
Breadth	**5 ka** *(3.33 km)*
Radius	**2.5 ka** *(1.66 km)*

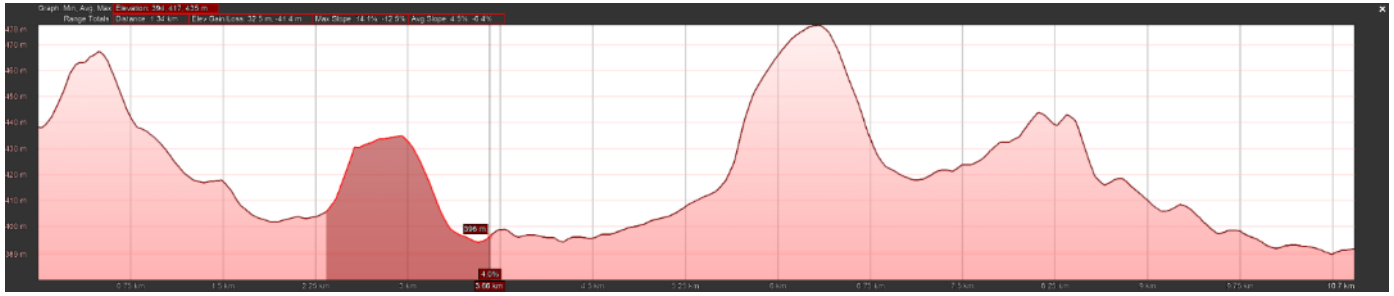


Zone 1	
Type	Water
Breadth	**1 ka** *(.667 km)*
Radius	**3.5 ka** *(2.33 km)*

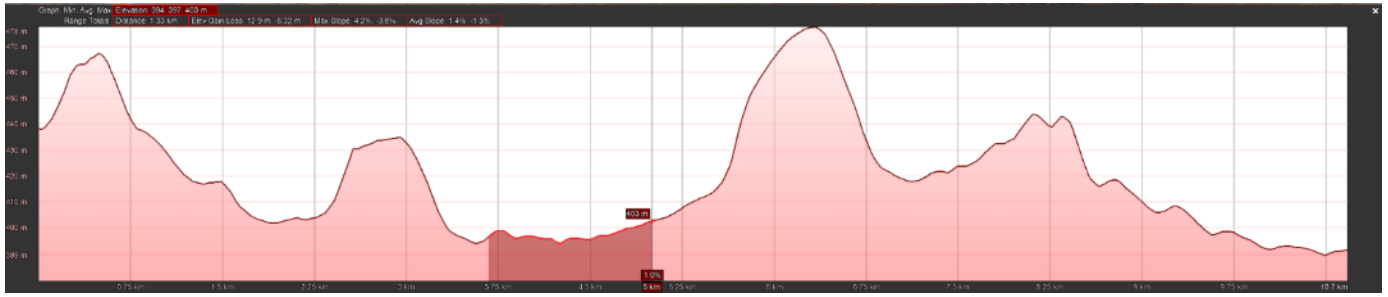


The Richat Structure: Elevation Profile

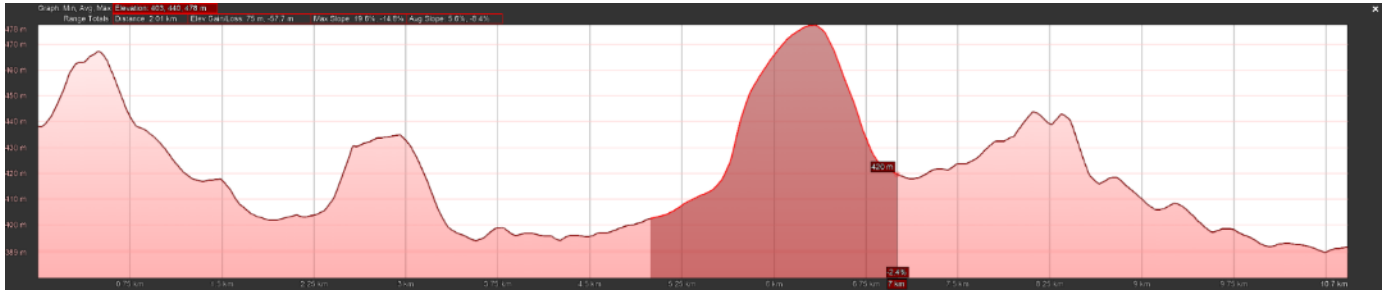
Zone 2	
Type	Land
Breadth	**2 ka** *(1.33 km)*
Radius	**5.5 ka** *(3.66 km)*



Zone 3	
Type	Water
Breadth	**2 ka** *(1.33 km)*
Radius	**7.5 ka** *(5 km)*

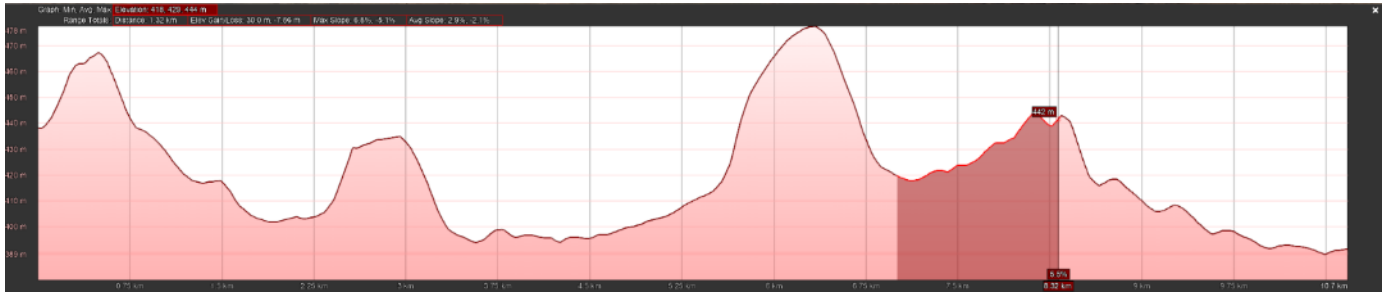


Zone 4	
Type	Land
Breadth	**3 ka** *(2 km)*
Radius	**10.5 ka** *(7 km)*

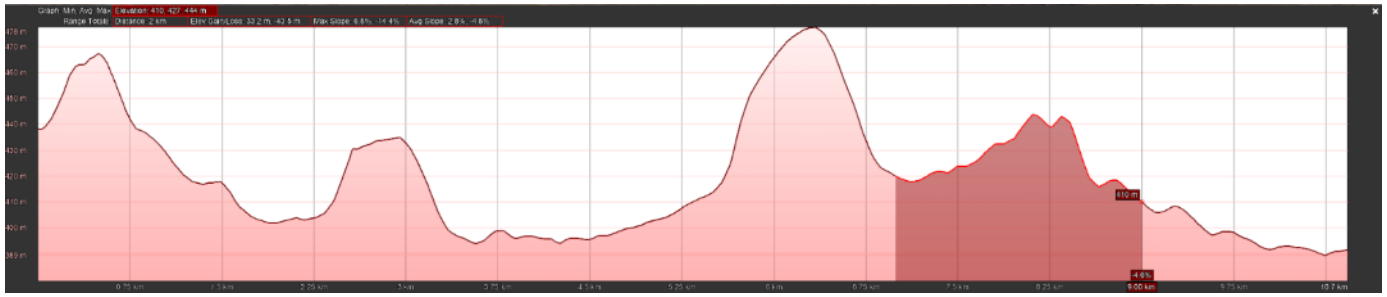


The Richat Structure: Elevation Profile

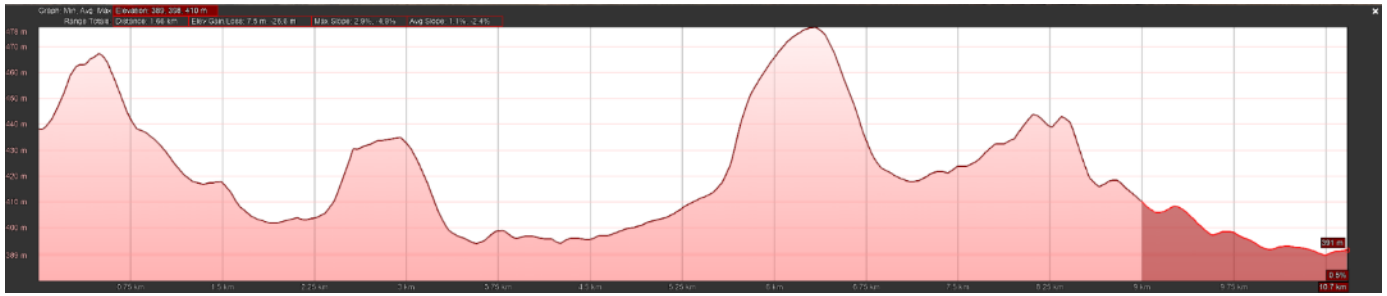
Zone 5a	
Type	Water
Breadth	2 ka *(1.33 km)*
Radius	12.5 ka *(8.33 km)*



Zone 5b	
Type	Water
Breadth	3 ka *(2 km)*
Radius	13.5 ka *(9 km)*



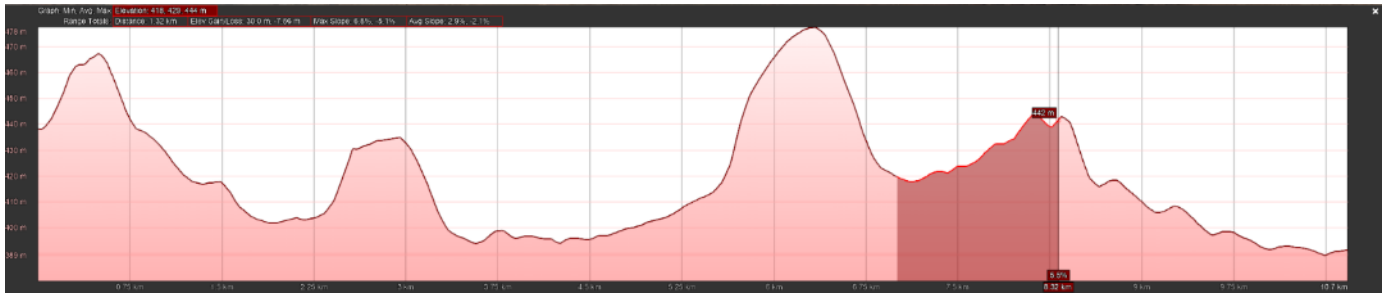
Harbor	
Type	Water
Breadth	> 2 ka *(1.33 km)*
Radius	> 15.5 ka *(10.33 km)*

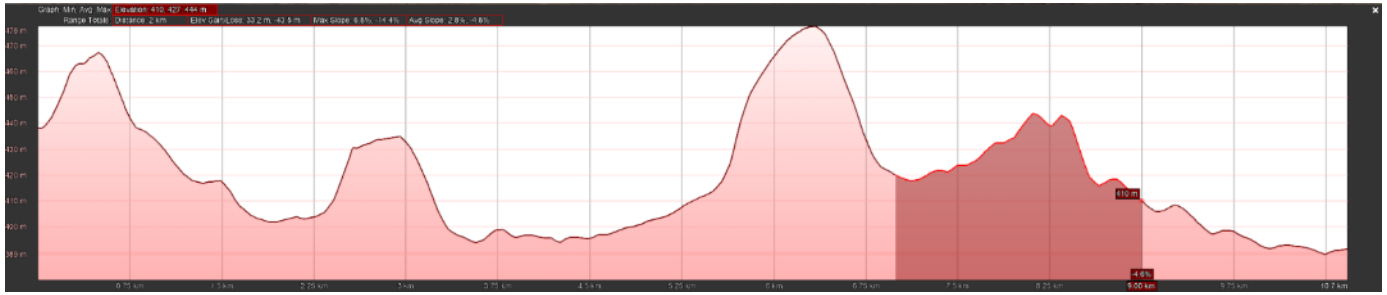


The Richat Structure: Elevation Profile

Zone 5a	
Type	Water
Breadth	2 ka *(1.33 km)*
Radius	12.5 ka *(8.33 km)*

Zone 5b	
Type	Water
Breadth	3 ka *(2 km)*
Radius	13.5 ka *(9 km)*





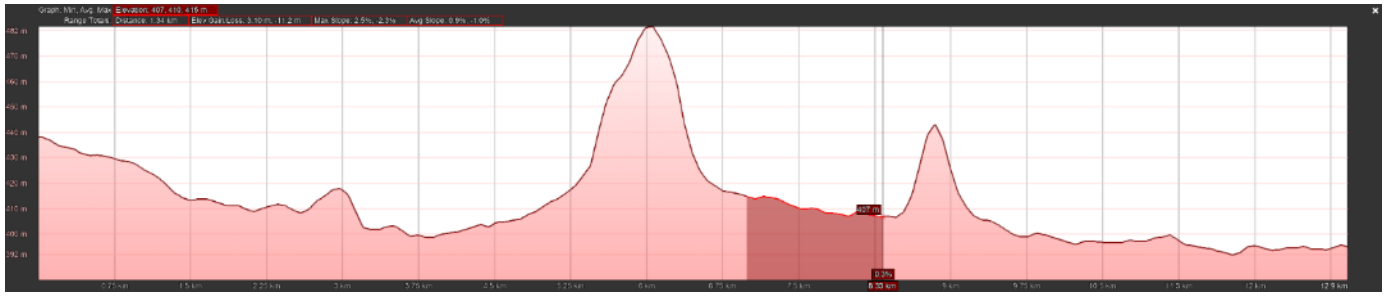
Planet Orbit	Zone Radius	Orbit P-Ratio
Mars (Min)	10.5 *ka*	10.5 ✓
Mars (Max)	13.5 *ka*	12.5 !

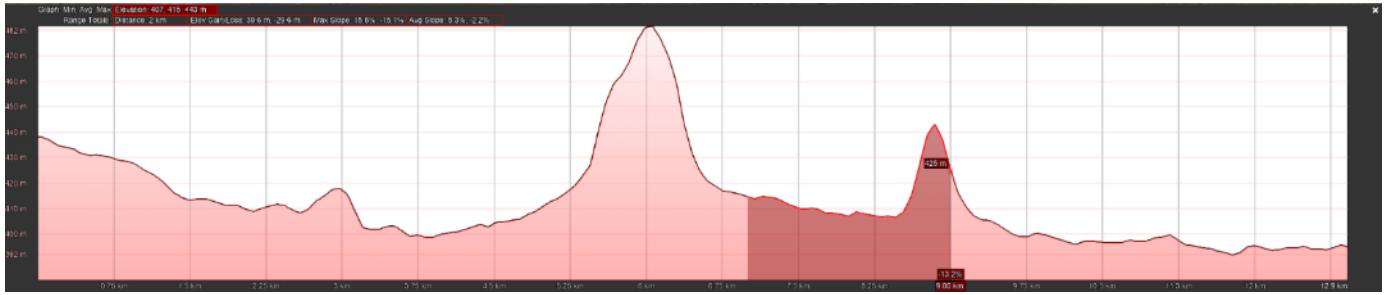
- Recall that the P-Ratio for the maximum orbital radius of Mars varied from the value given by Plato by 1 ka.
- The area covered by this elevation profile aligns more closely with the calculated P-Ratio radius of **12.5**, rather than the value of **13.5** given by Plato.

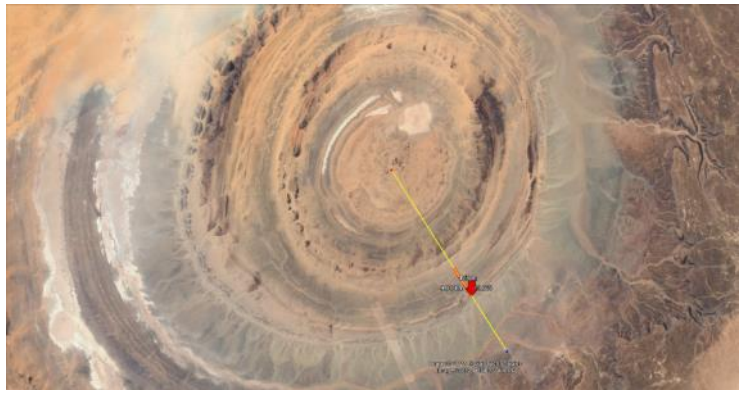
The Richat Structure: Elevation Profile

Zone 5a	
Type	Water
Breadth	2 ka *(1.33 km)*
Radius	12.5 ka *(8.33 km)*

Zone 5b	
Type	Water
Breadth	3 ka *(2 km)*
Radius	13.5 ka *(9 km)*







- An alternate elevation profile taken at a different angle aligns more closely with the radius of **13.5** given by Plato. Other profiles (at varying angles) show inconsistent distances to the boundary of the last zone, which is identified by a spike in elevation.
- Continental land deformation (via plate tectonics) can account for some of the inconsistencies. Also, Plato stated that the last zone was cut open in order to create a harbor. So, the altering of the last zone could account for some of the varying distances as well.

Section V:

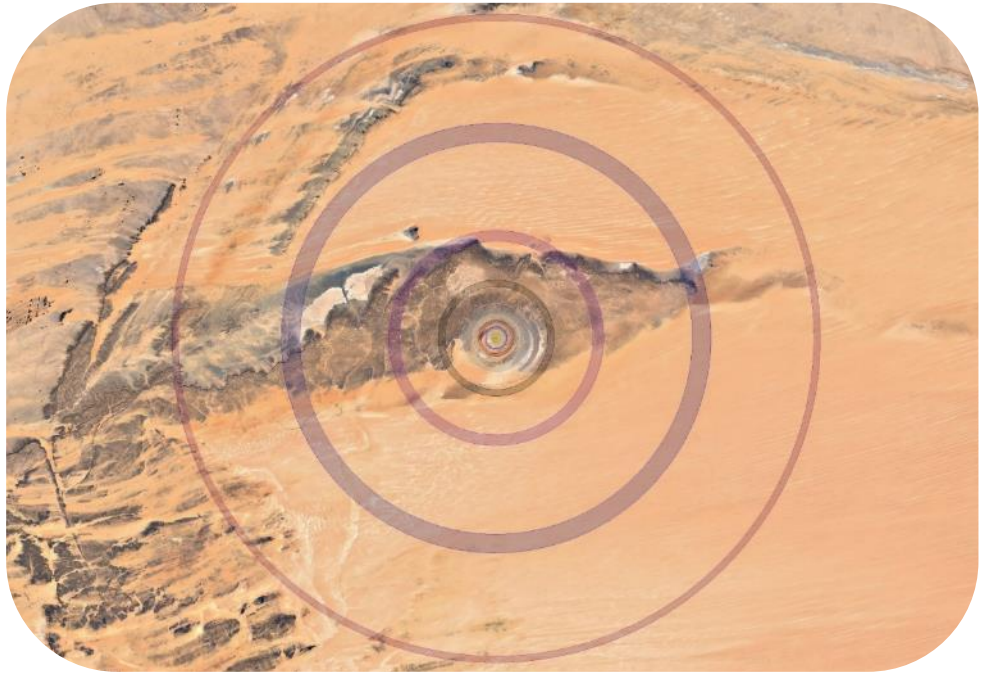
The Solar System (current)

Atlantis represents a scale model of the solar system. The following section examines the orbital layout of the planets and their alignments with the zones and structures of Atlantis. The purpose is to demonstrate how the orbits of the planets (of the solar system) are represented in the design/geography of Atlantis.

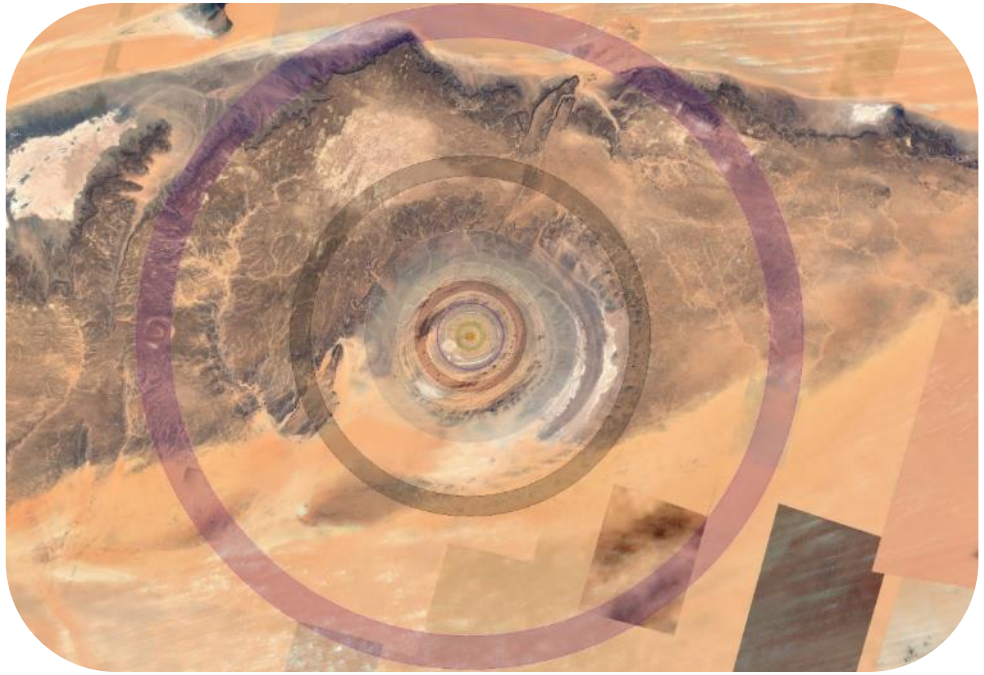
The Solar System

Orbital Alignments

Satellite images illustrating orbital alignment of the solar system with the zones and structures of Atlantis. The breadth of the highlighted orbit represents the minimum and maximum boundary of the orbit.



All Planets

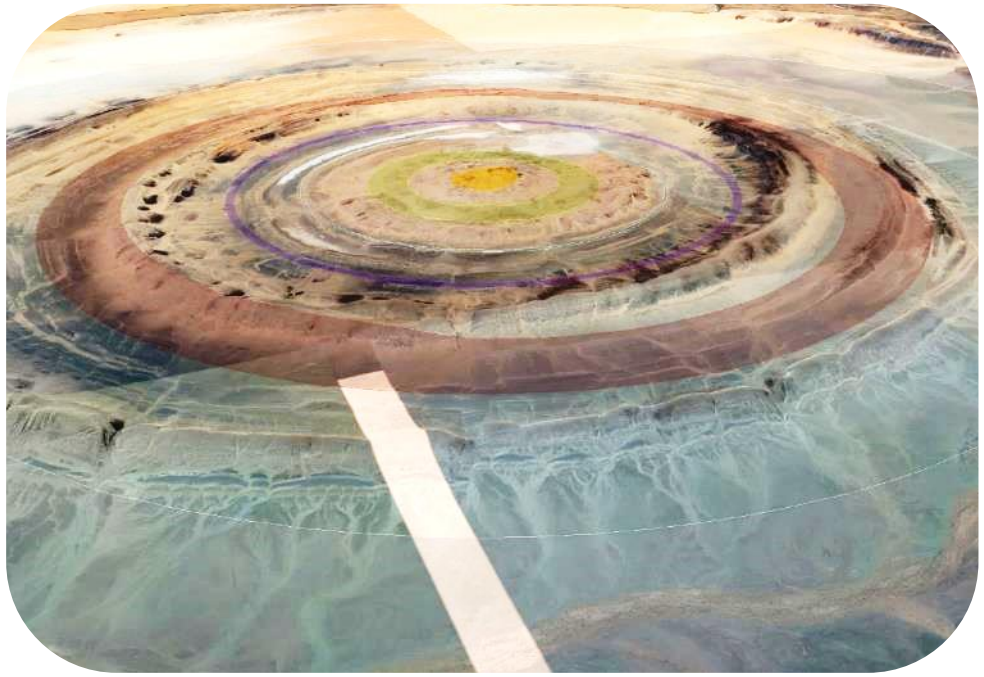


Inner Planets thru Saturn

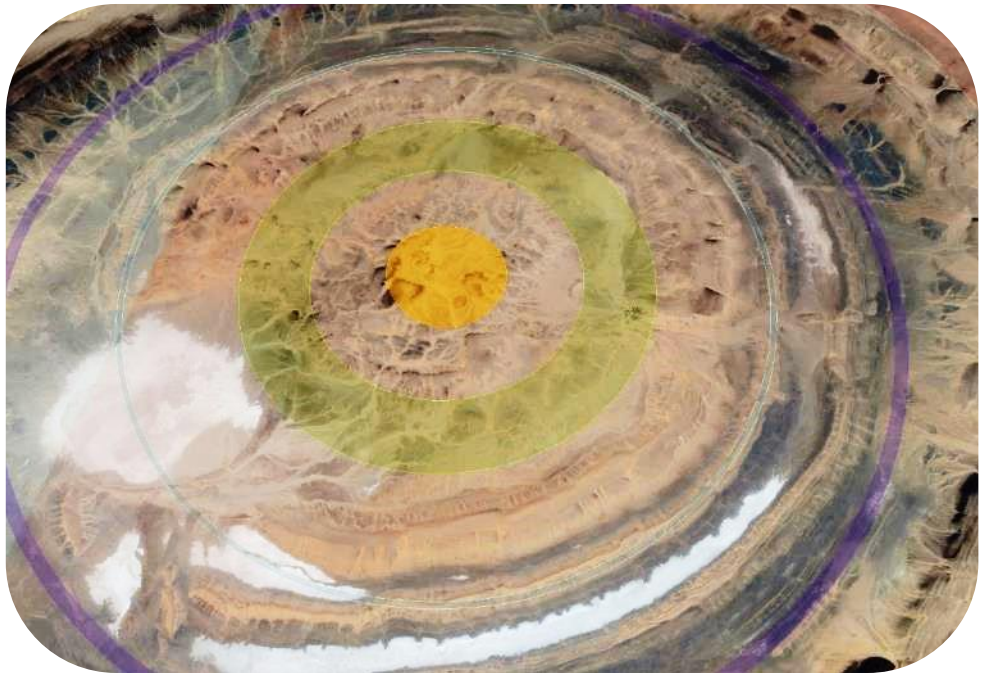
The Solar System

Orbital Alignments

Satellite images illustrating orbital alignment of the solar system with the zones and structures of Atlantis. The breadth of the highlighted orbit represents the minimum and maximum boundary of the orbit.



Inner Planet Orbits

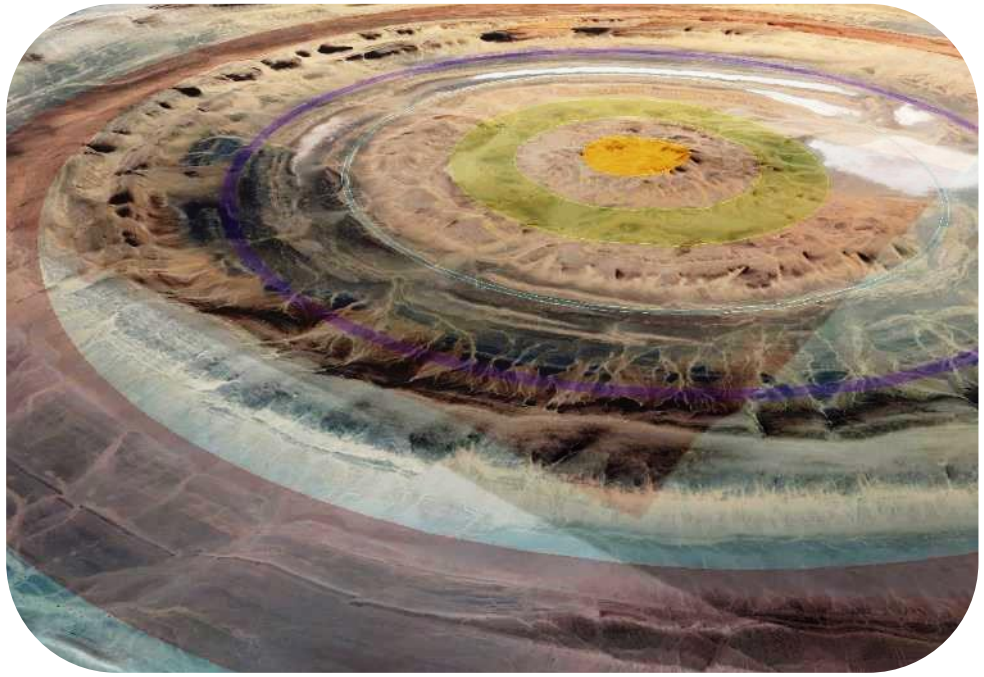


Mercury, Venus, and Earth Orbits (Sun in center)

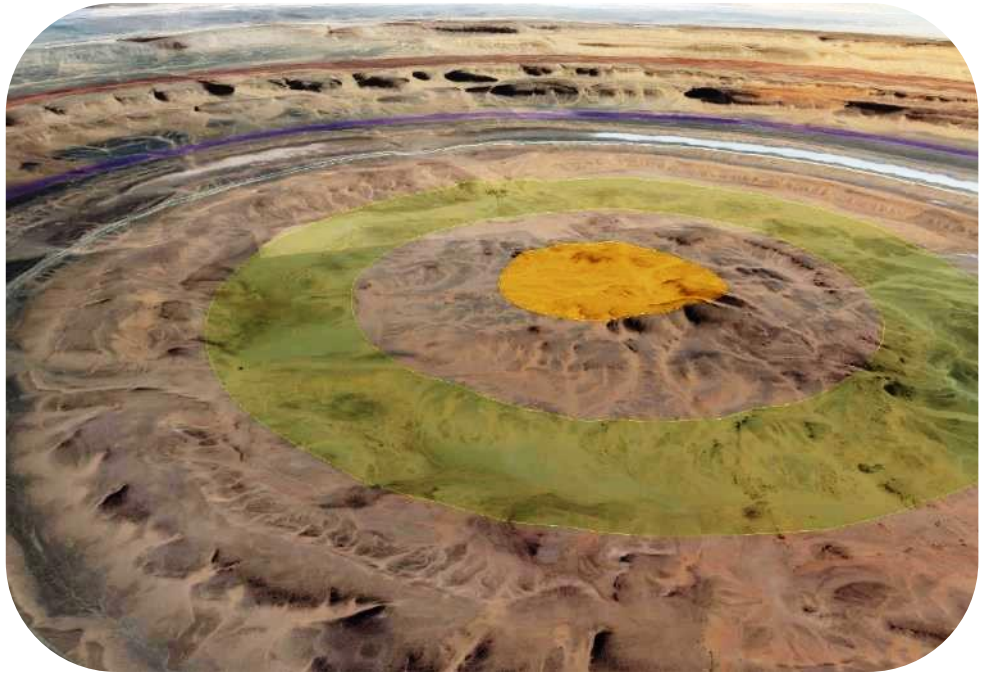
The Solar System

Orbital Alignments

Satellite images illustrating orbital alignment of the solar system with the zones and structures of Atlantis. The breadth of the highlighted orbit represents the minimum and maximum boundary of the orbit.



Inner Planet Orbits



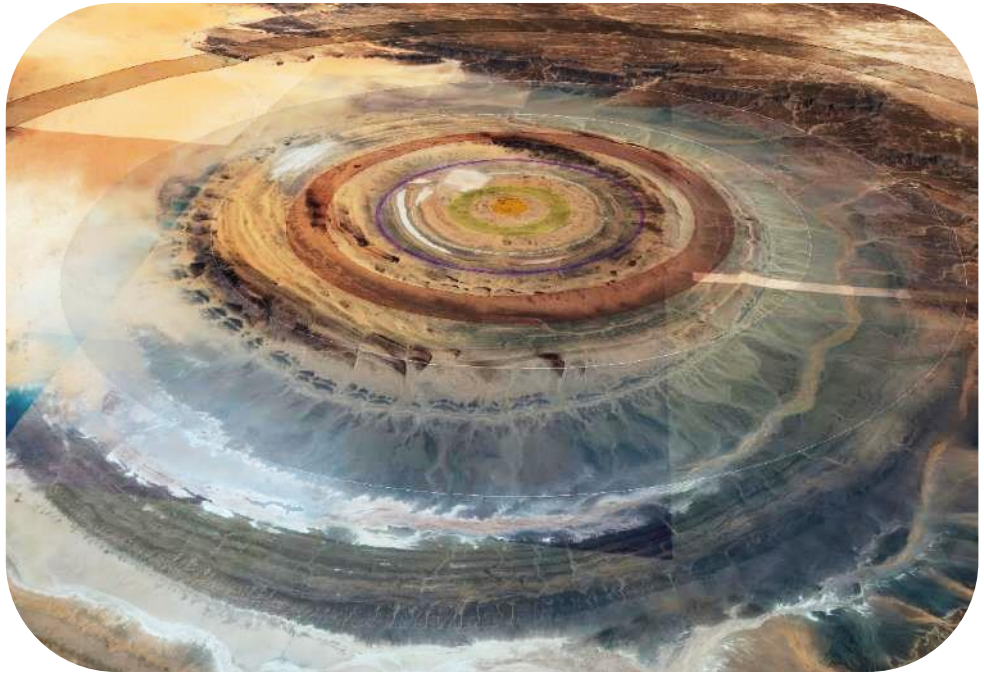
Inner Planet Orbits

The Solar System

Orbital Alignments

Satellite images illustrating orbital alignment of the solar system with the zones and structures of Atlantis. The breadth of the highlighted orbit represents the minimum and maximum boundary of the orbit.

Inner Planet Orbits and Asteroid Belt



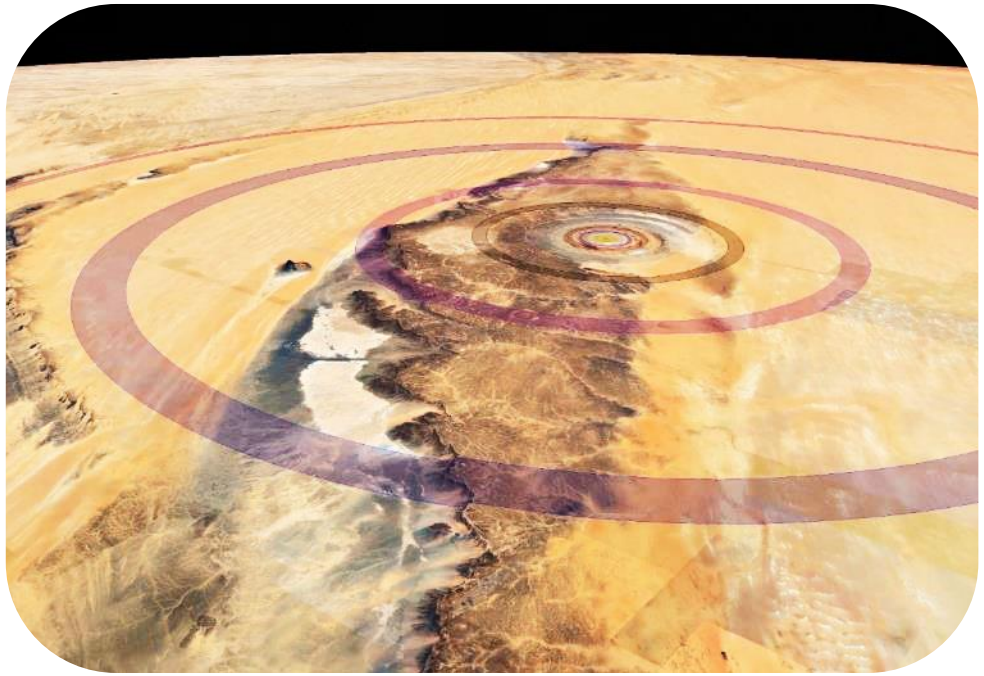
Inner Planet Orbits and Asteroid Belt

The Solar System

Orbital Alignments

Satellite images illustrating orbital alignment of the solar system with the zones and structures of Atlantis. The breadth of the highlighted orbit represents the minimum and maximum boundary of the orbit.

Inner Planet Orbits and Asteroid Belt



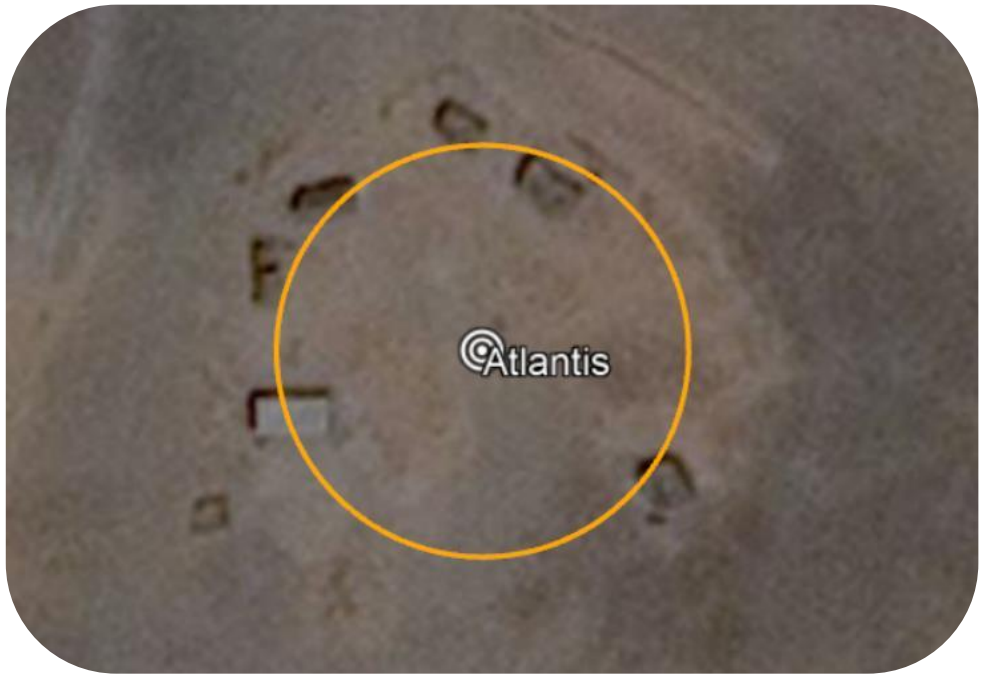
All Planet Orbits

The Solar System

The Sun: Atlantis

Satellite images illustrating the alignment of the Sun in the center of Atlantis. Since the Sun does not have an orbit, its radius is used in the P-Ratio calculation. Therefore, the "orbit" of the Sun represents its size. Note the small structures in the center of Atlantis and how they closely reflect the size of the Sun.

The Center of Atlantis

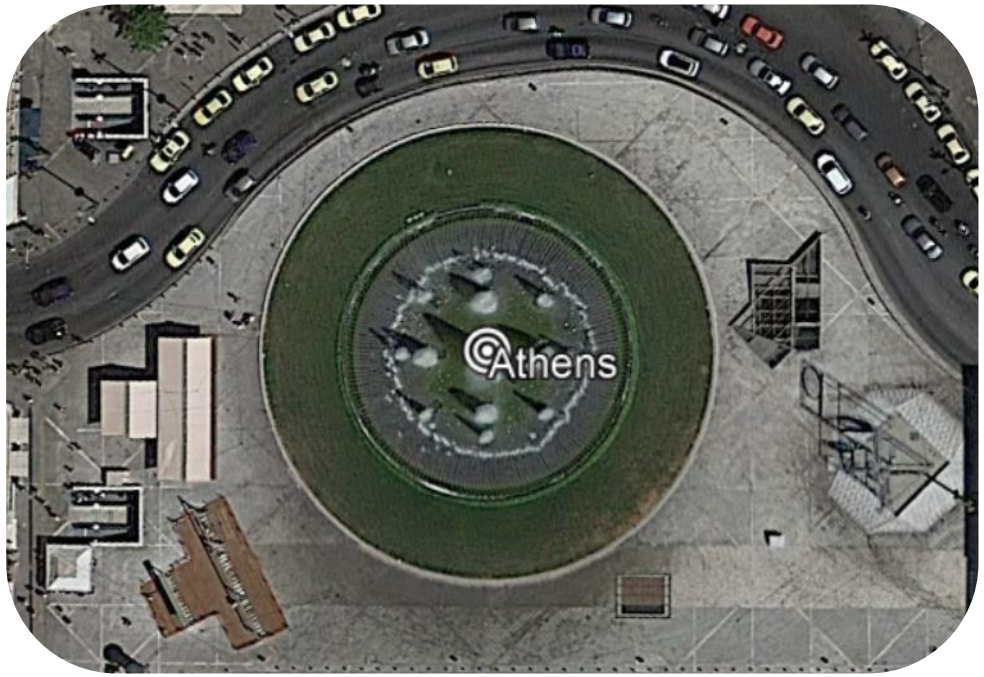


The Center of Atlantis with the overlay of the Sun

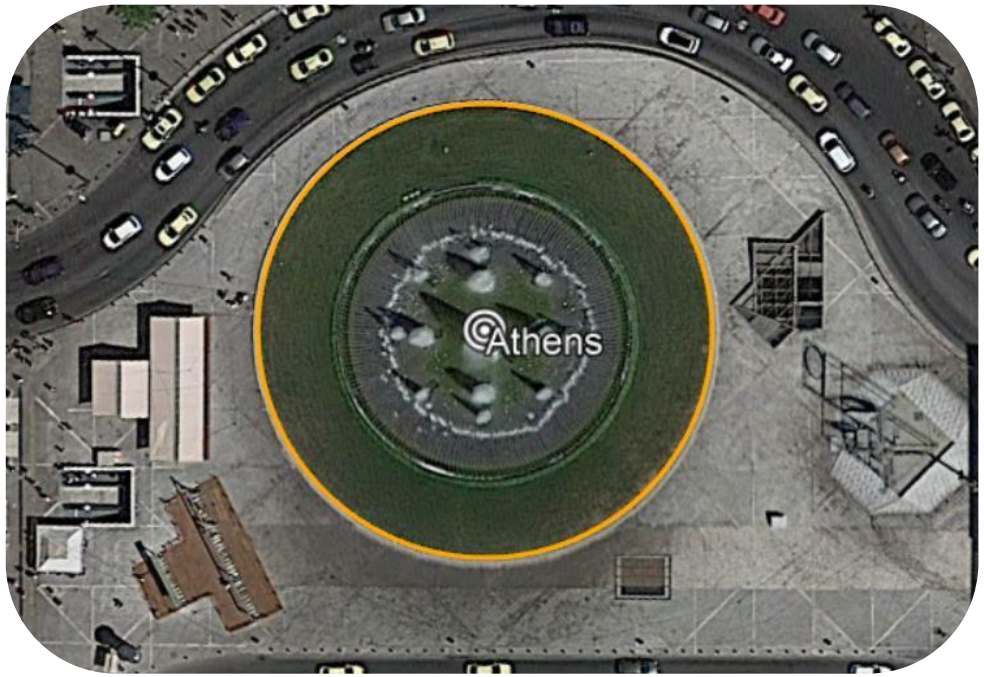
The Solar System

The Sun: Athens

Satellite images illustrating the alignment of the Sun in the center of Athens. Since the Sun does not have an orbit, its radius is used in the P-Ratio calculation. Therefore, the "orbit" of the Sun represents its size. Note how the overlay of the Sun aligns ***precisely*** with the fountain at the center of Athens.



The Center of Athens

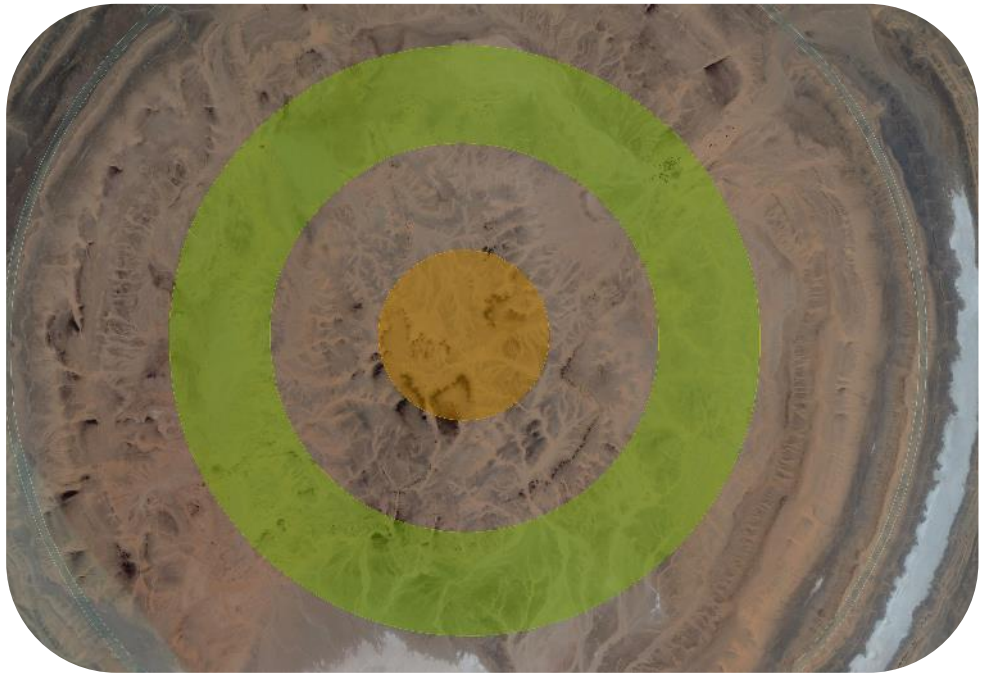


The Center of Athens with the overlay of the Sun

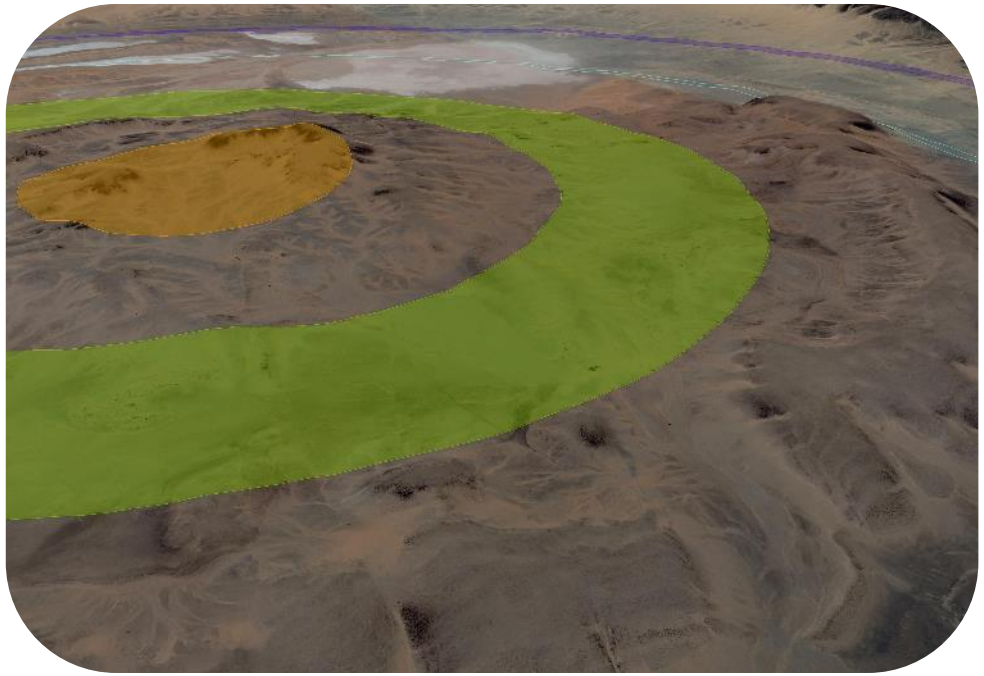
The Solar System

Mercury

Satellite images illustrating the alignment of Mercury's orbit. The breadth of the green highlighted orbit represents the minimum and maximum boundary of the orbit. The center of the island (highlighted in yellow) is the location of the Temple of Poseidon (as stated by Plato).



Orbital Zone of Mercury Enclosing the Center Island



Orbital Zone of Mercury Enclosing the Center Island

The Solar System

Mercury

Satellite images illustrating a geoglyph located just beyond the orbital zone of Mercury.

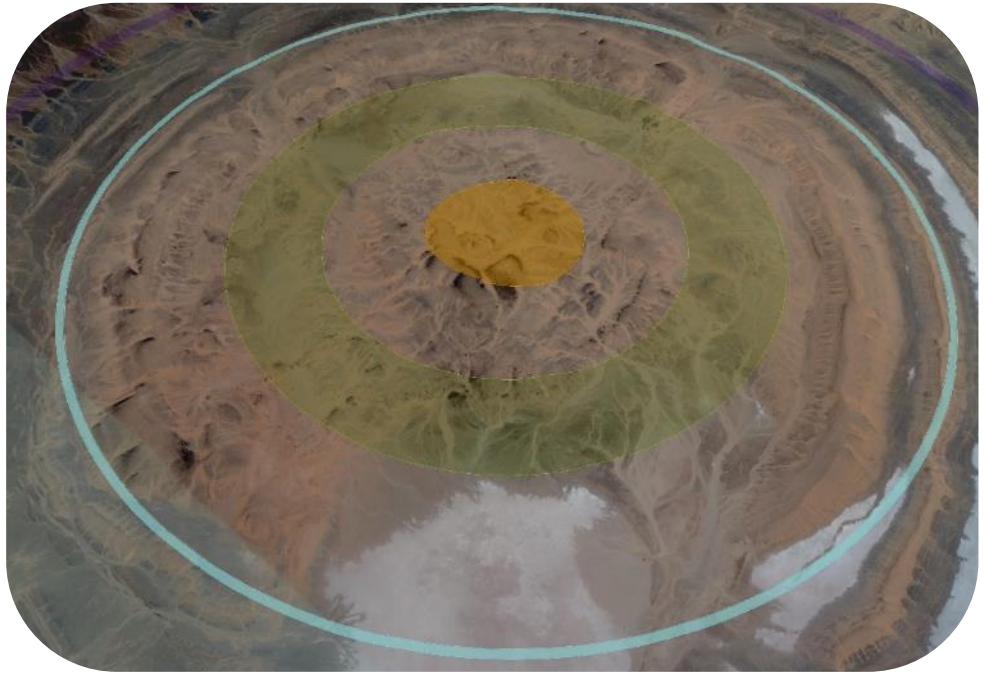
Geoglyph Outside the Orbital Zone of Mercury

Geoglyph Outside the Orbital Zone of Mercury

The Solar System

Venus

Satellite images illustrating the alignment of Venus's orbit. The breadth of the teal highlighted orbit represents the minimum and maximum boundary of the orbit.



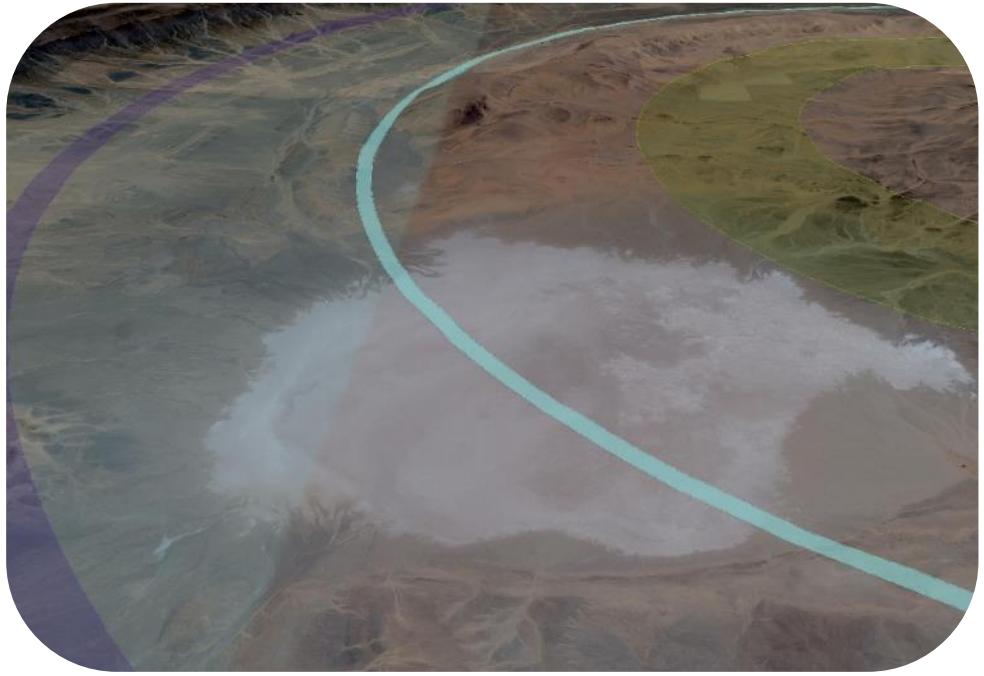
Orbital Zone of Venus

Orbital Zone of Venus

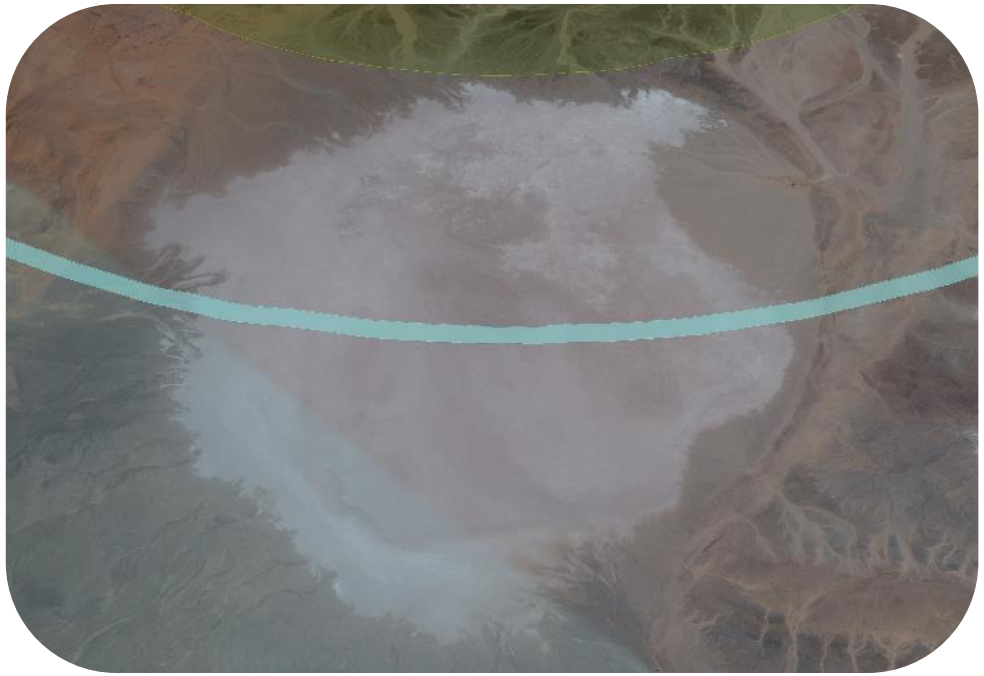
The Solar System

Venus – Arrayed with the Sun with the Moon Under Her Feet

Satellite images illustrating the alignment of Venus's orbit. The breadth of the teal highlighted orbit represents the minimum and maximum boundary of the orbit. Note the *egg*-shaped anomaly located *under* the orbital zone of *Venus* and its resemblance to the face of the *moon* (its mirror image).



Orbital Zone of Venus



Orbital Zone of Venus

The Solar System

Venus - The Mirror of the Moon

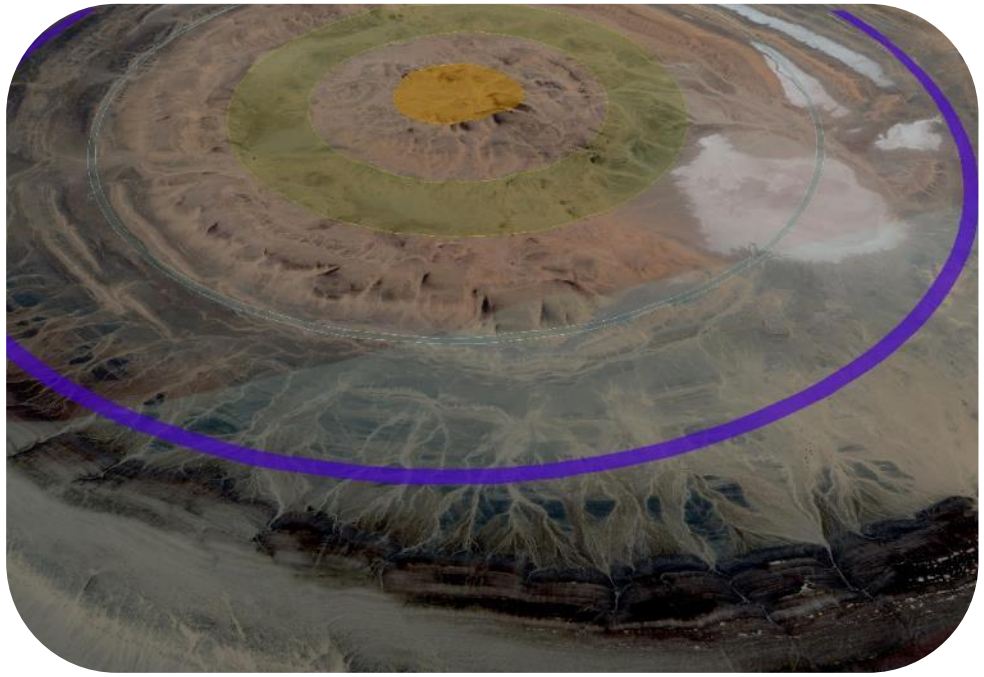
Note that the values for the max orbital radius and object circumference of Venus and the Moon are "*mirrors*" of each other.

Object	Max Orbital Radius	Object Circumference
Venus	$\mathbf{1.63} \cdot 10^{11}\ ants$	$\mathbf{5.7} \cdot 10^{7}\ ants$
Moon	$\mathbf{5.7} \cdot 10^{8}\ ants$	$\mathbf{1.63} \cdot 10^{7}\ ants$

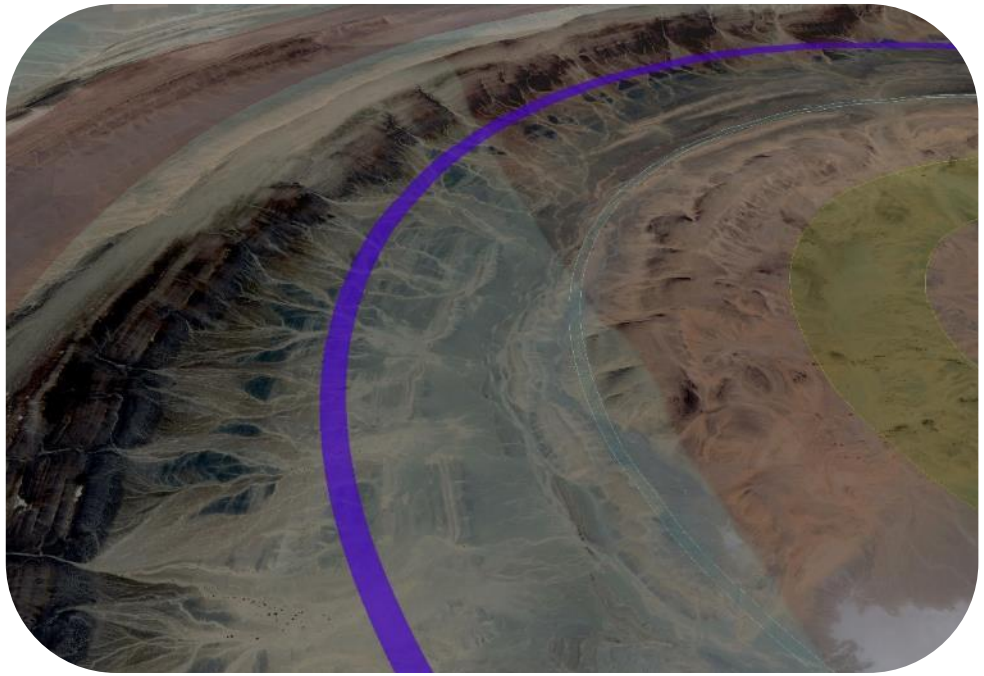
The Solar System

Earth

Satellite images illustrating the alignment of Earth's orbit. The breadth of the blue highlighted orbit represents the minimum and maximum boundary of the orbit.



Orbital Zone of Earth



Orbital Zone of Earth

The Solar System

Earth

Satellite images illustrating the alignment of Earth's orbit. The breadth of the blue highlighted orbit represents the minimum and maximum boundary of the orbit.

Orbital Zone of Earth

Orbital Zone of Earth

The Solar System

Earth – The Speed of Light

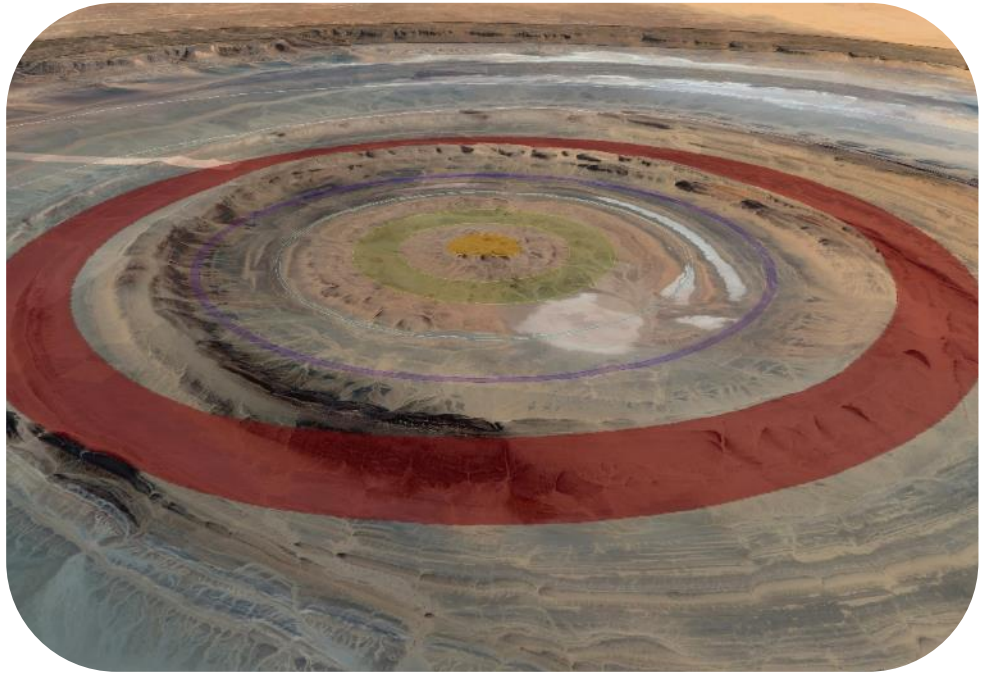
Note that the ratio of the speed of light to the equatorial circumference of the Earth is $\sim \mathbf{7.5}$ (7.48), which is the P-Ratio for the average orbital radius of Earth. This ratio can be calculated using any measurement system.

Measurement System	Calculation	Result
Ants	$\frac{\mathbf{4.4916} \cdot 10^8\ a/s}{\mathbf{6.0} \cdot 10^7\ a}$	$\mathbf{7.48}$
Meters	$\frac{\mathbf{2.9979} \cdot 10^8\ m/s}{\mathbf{4.00}75 \cdot 10^7\ m}$	$\mathbf{7.48}$
Miles	$\frac{\mathbf{1.8628} \cdot 10^5\ mi/s}{\mathbf{2.4901} \cdot 10^4\ mi}$	$\mathbf{7.48}$

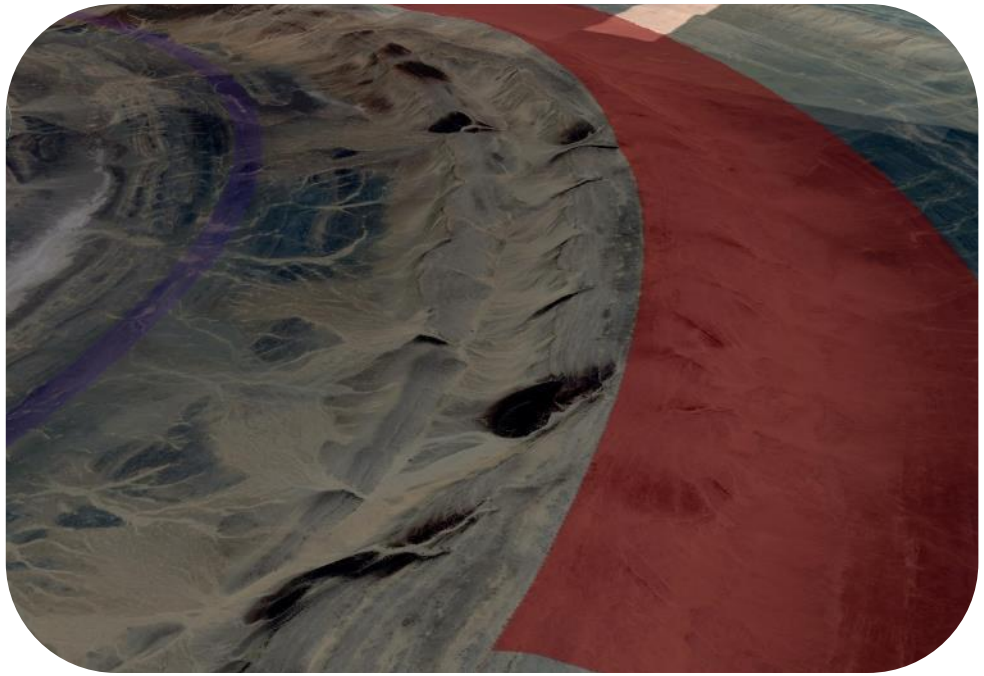
The Solar System

Mars

Satellite images illustrating the alignment of Mar's orbit. The breadth of the red highlighted orbit represents the minimum and maximum boundary of the orbit. Note the inconsistency of the alignment with the outer land zone.



Orbital Zone of Mars

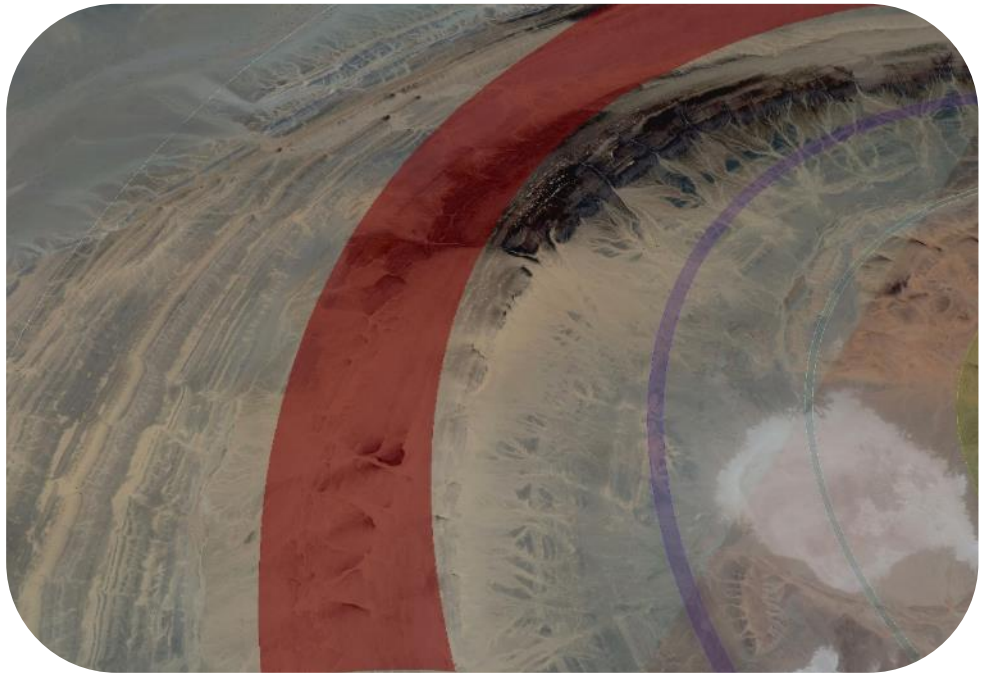


Orbital Zone of Mars

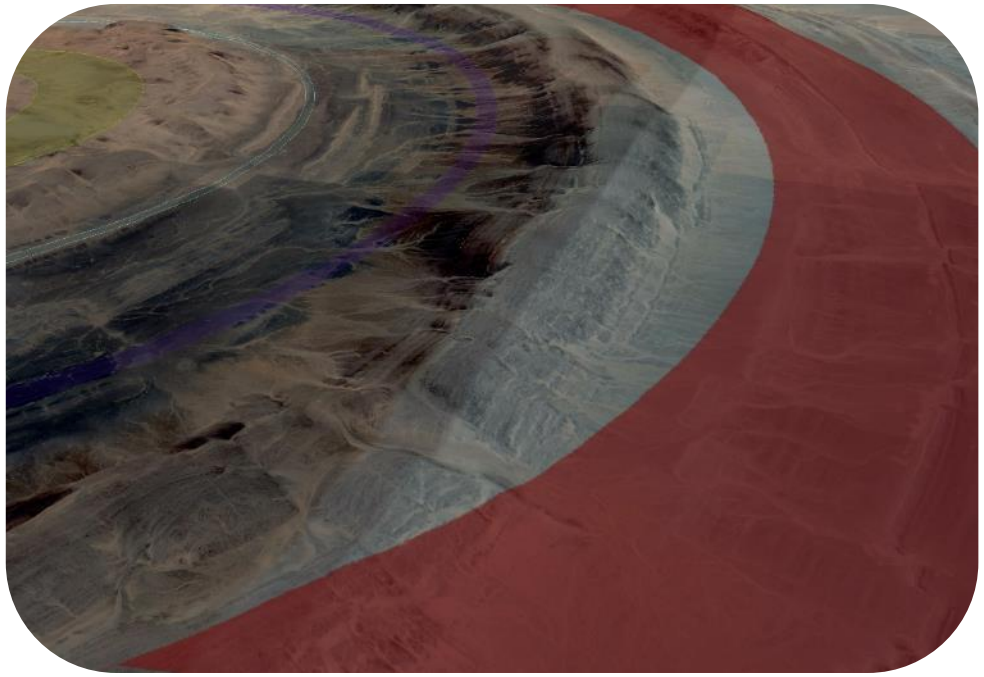
The Solar System

Mars

Satellite images illustrating the alignment of Mar's orbit. The breadth of the red highlighted orbit represents the minimum and maximum boundary of the orbit. Note the inconsistency of the alignment with the outer land zone.



Orbital Zone of Mars

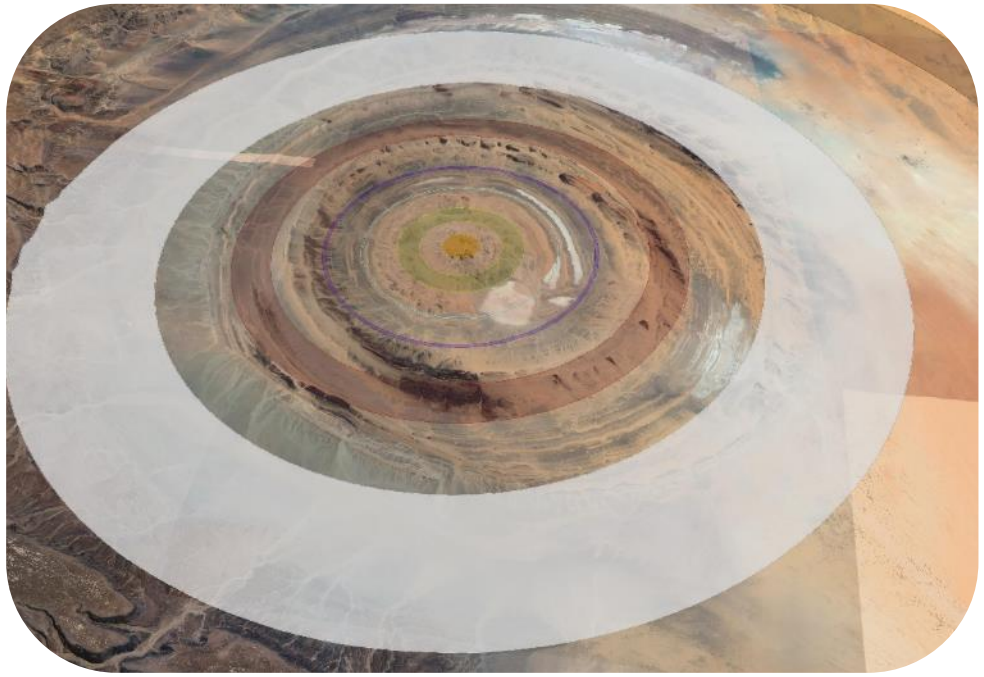


Orbital Zone of Mars

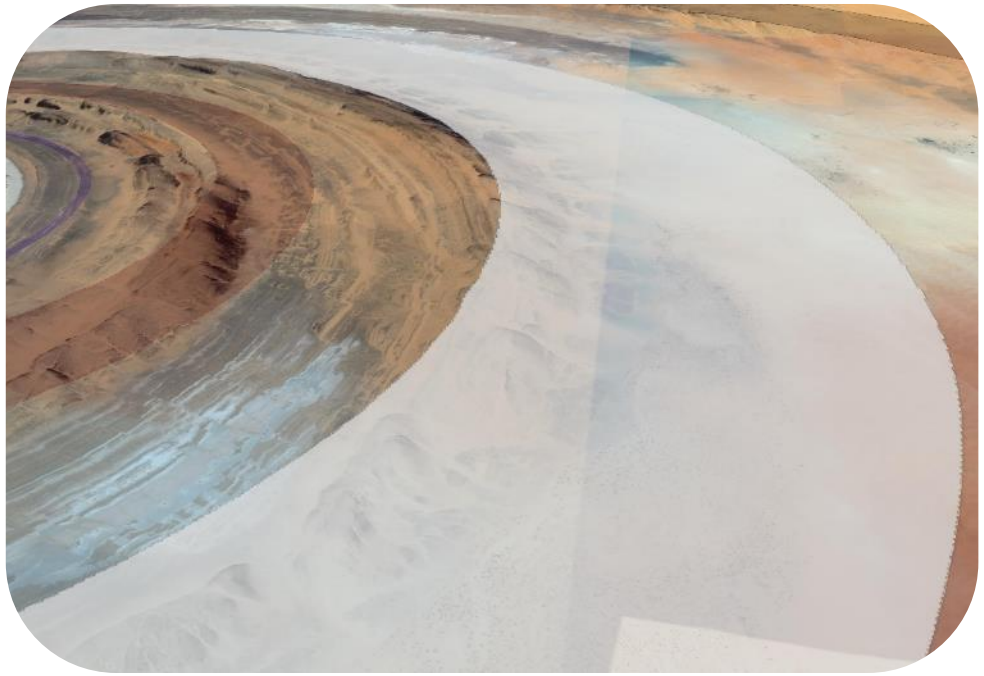
The Solar System

Asteroid Belt

Satellite images illustrating the alignment of the Asteroid Belt. The breadth of the white highlighted orbit represents the minimum and maximum boundary of the orbit. Note the close alignment of the inner boundary with the outer water zone.



Asteroid Belt Zone

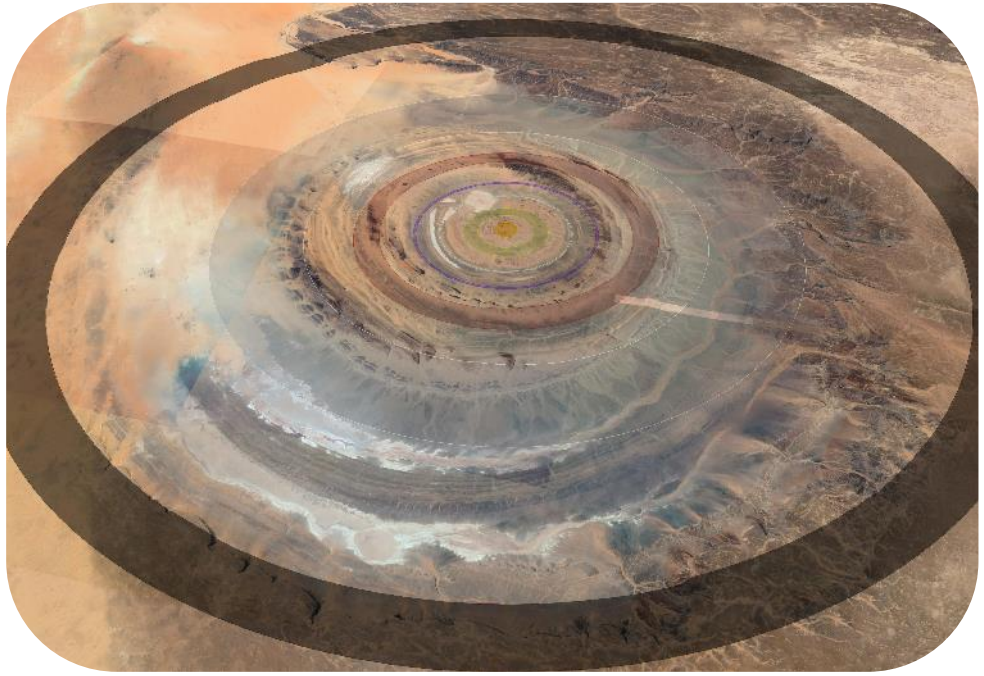


Asteroid Belt Zone

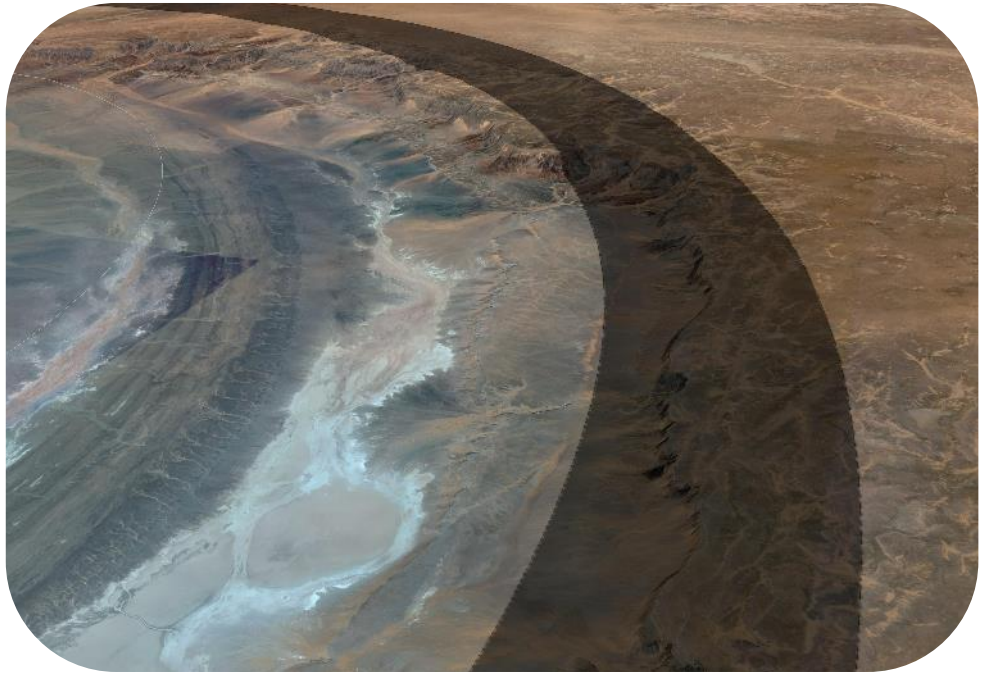
The Solar System

Jupiter

Satellite images illustrating the alignment of Jupiter's orbit. The breadth of the black highlighted orbit represents the minimum and maximum boundary of the orbit.



Orbital Zone of Jupiter



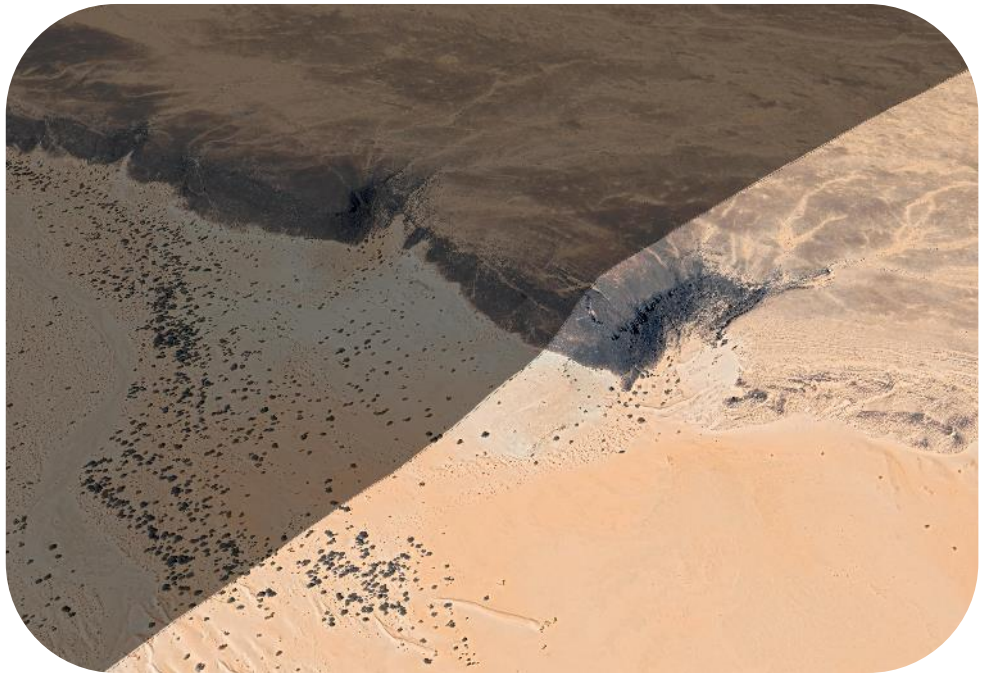
Orbital Zone of Jupiter

The Solar System

Jupiter

Satellite images illustrating the alignment of Jupiter's orbit. The breadth of the black highlighted orbit represents the minimum and maximum boundary of the orbit. Note the scars/notches along the edge of the plateau.

Orbital Zone of Jupiter

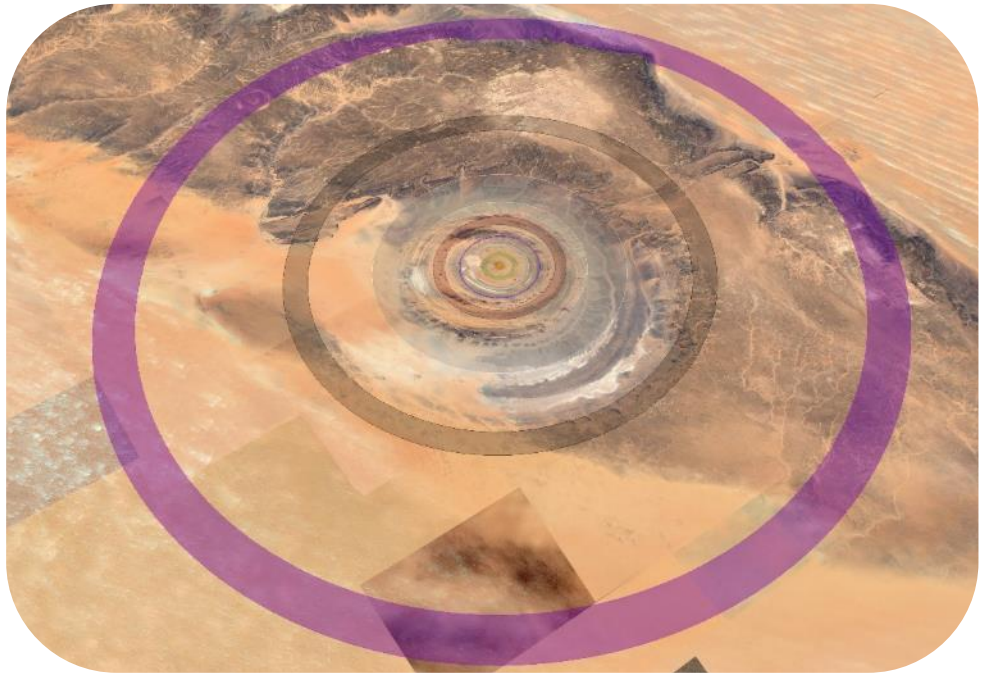


Orbital Zone of Jupiter

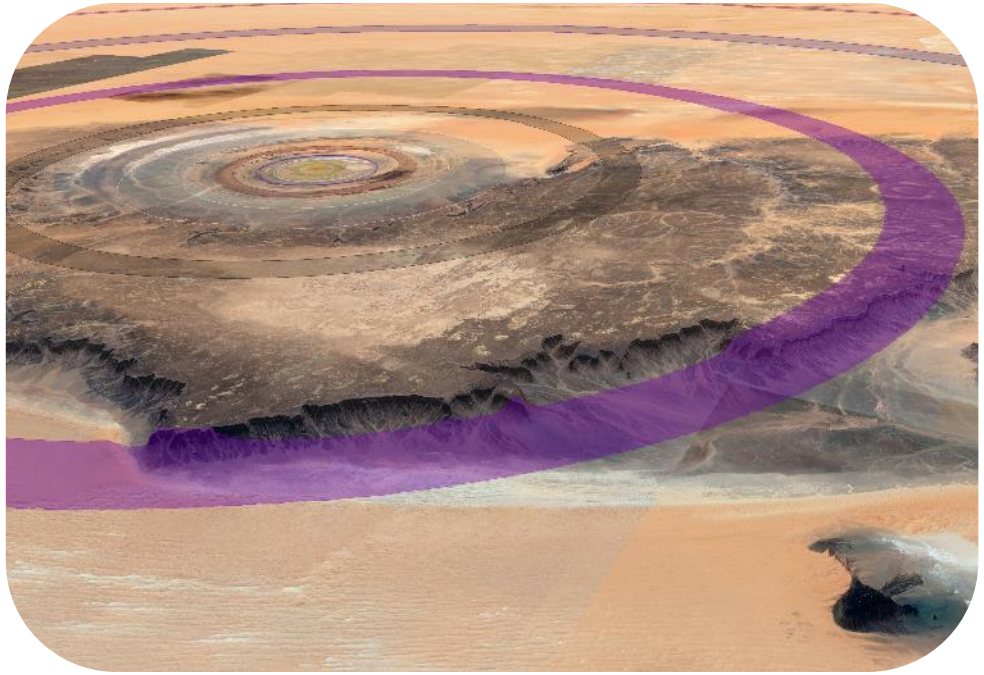
The Solar System

Saturn

Satellite images illustrating the alignment of Saturn's orbit. The breadth of the purple highlighted orbit represents the minimum and maximum boundary of the orbit.



Orbital Zone of Saturn

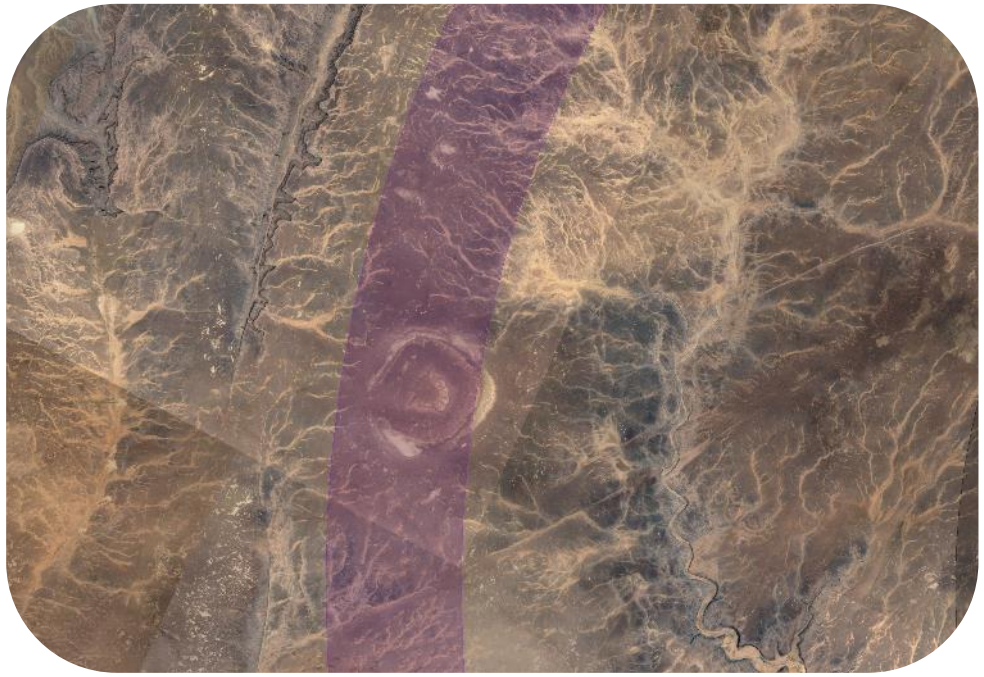


Orbital Zone of Saturn

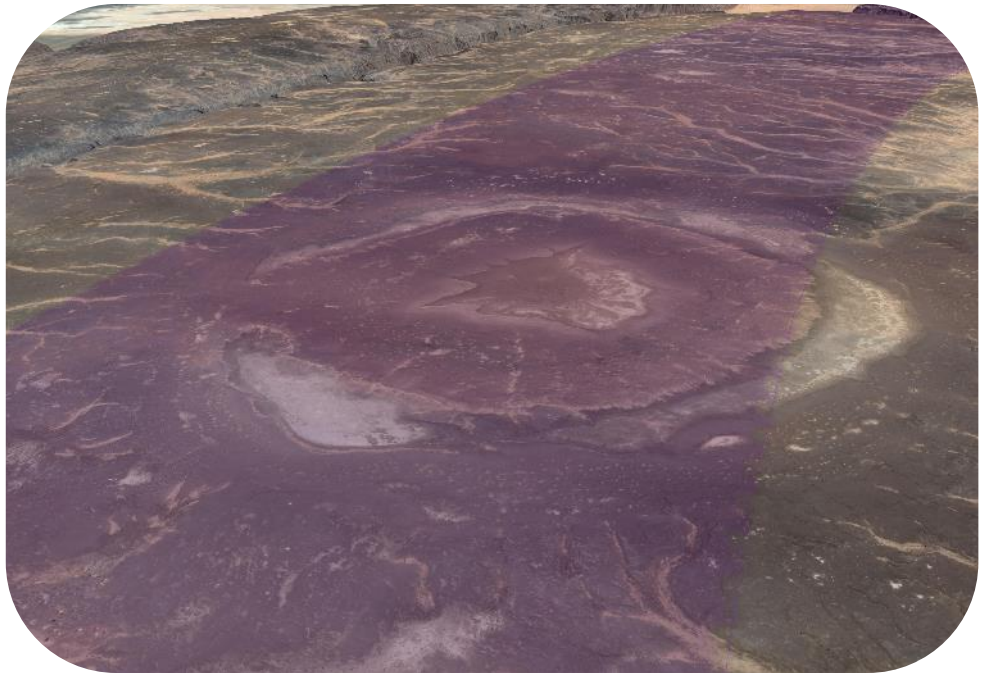
The Solar System

Saturn

Satellite images illustrating the alignment of Saturn's orbit. The breadth of the purple highlighted orbit represents the minimum and maximum boundary of the orbit. Note the circular structure located within the orbit zone (between the min and max orbit).



Orbital Zone of Saturn

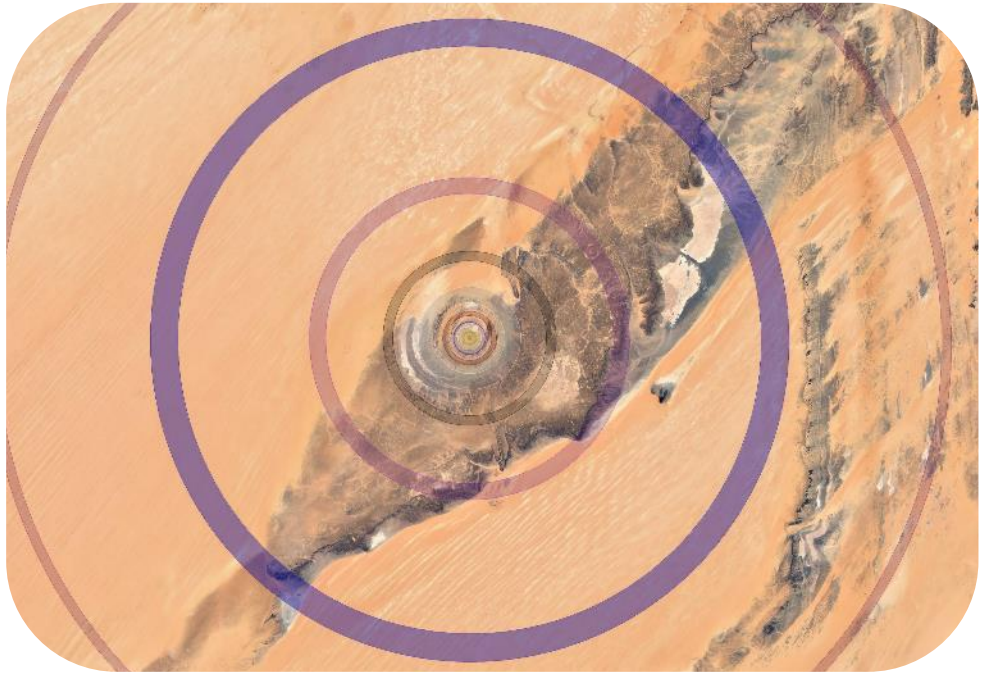


Orbital Zone of Saturn

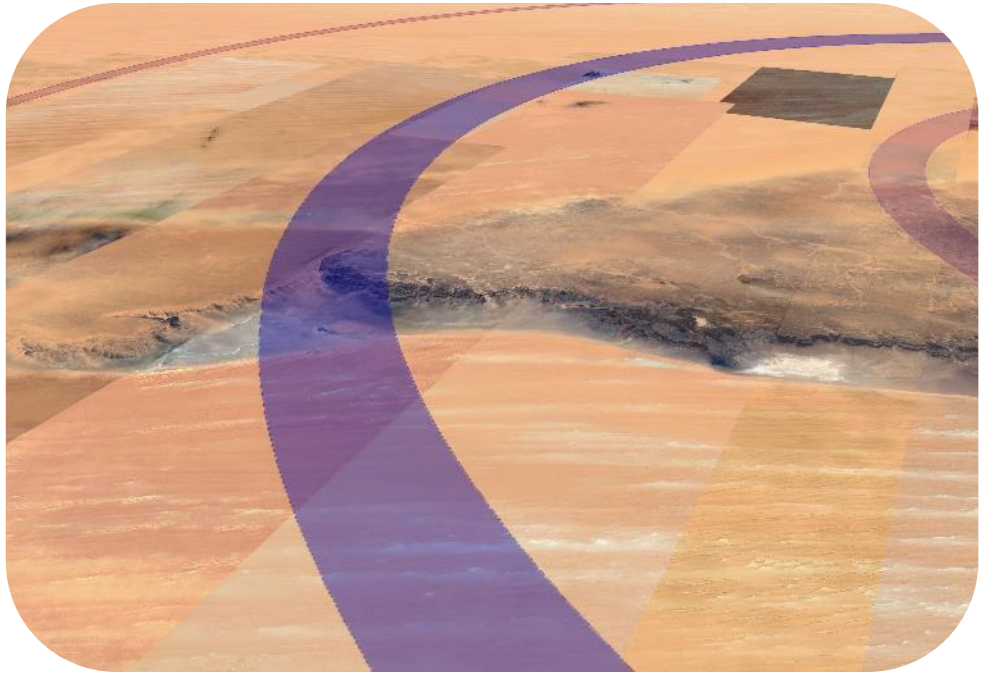
The Solar System

Uranus

Satellite images illustrating the alignment of Uranus's orbit. The breadth of the blue highlighted orbit represents the minimum and maximum boundary of the orbit.



Orbital Zone of Uranus

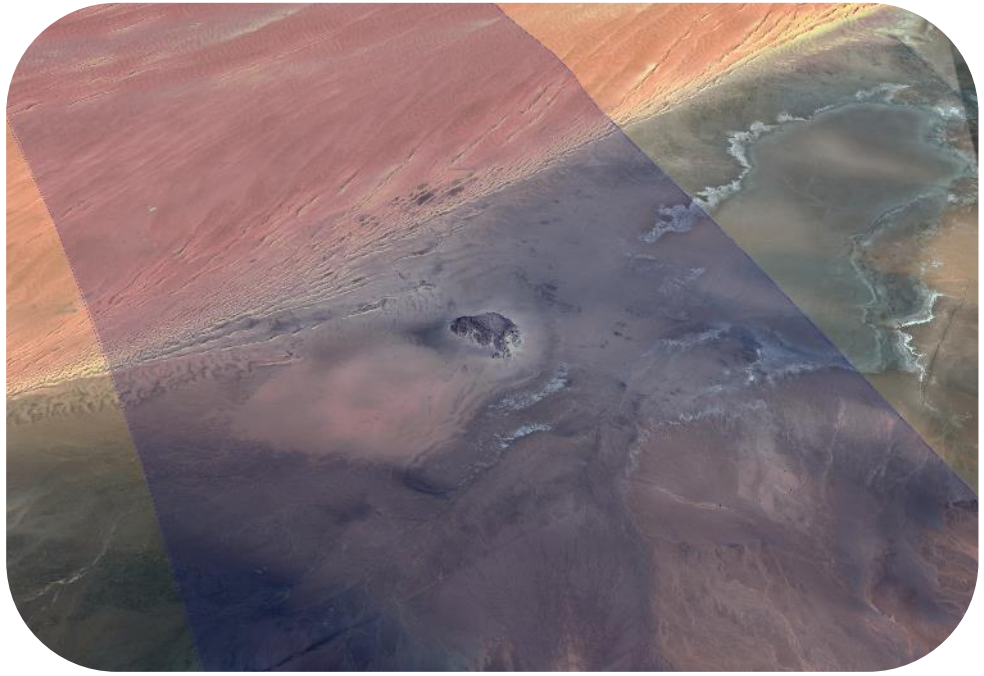


Orbital Zone of Uranus

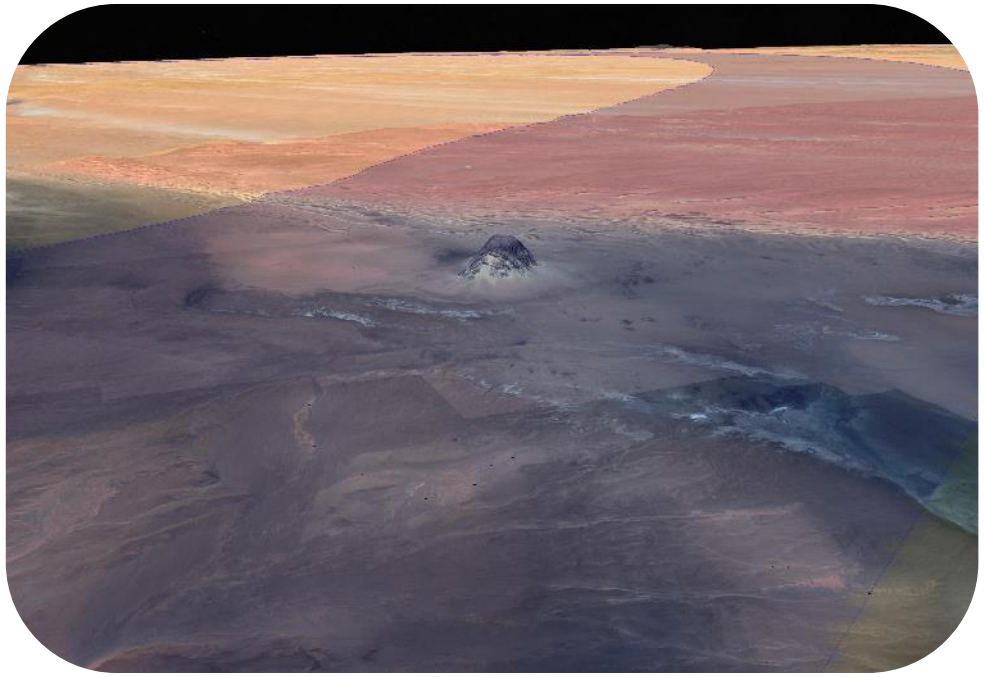
The Solar System

Uranus

Satellite images illustrating the alignment of Uranus's orbit. The breadth of the blue highlighted orbit represents the minimum and maximum boundary of the orbit. Note the horseshoe-like structure located within the orbit zone (between the min and max orbit).



Orbital Zone of Uranus

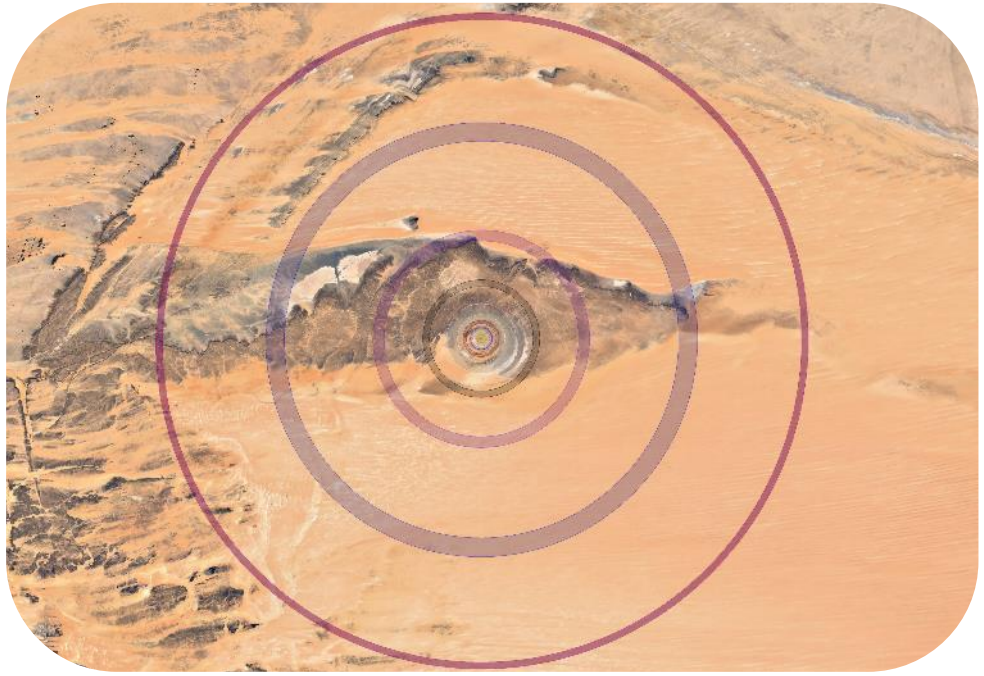


Orbital Zone of Uranus

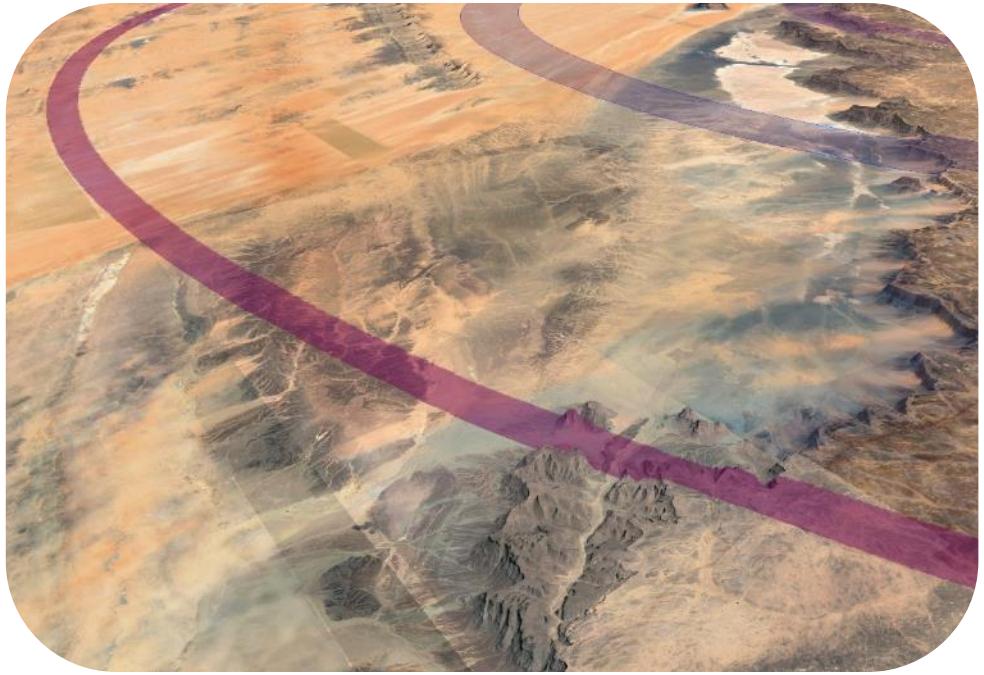
The Solar System

Neptune

Satellite images illustrating the alignment of Neptune's orbit. The breadth of the violet highlighted orbit represents the minimum and maximum boundary of the orbit.



Orbital Zone of Neptune

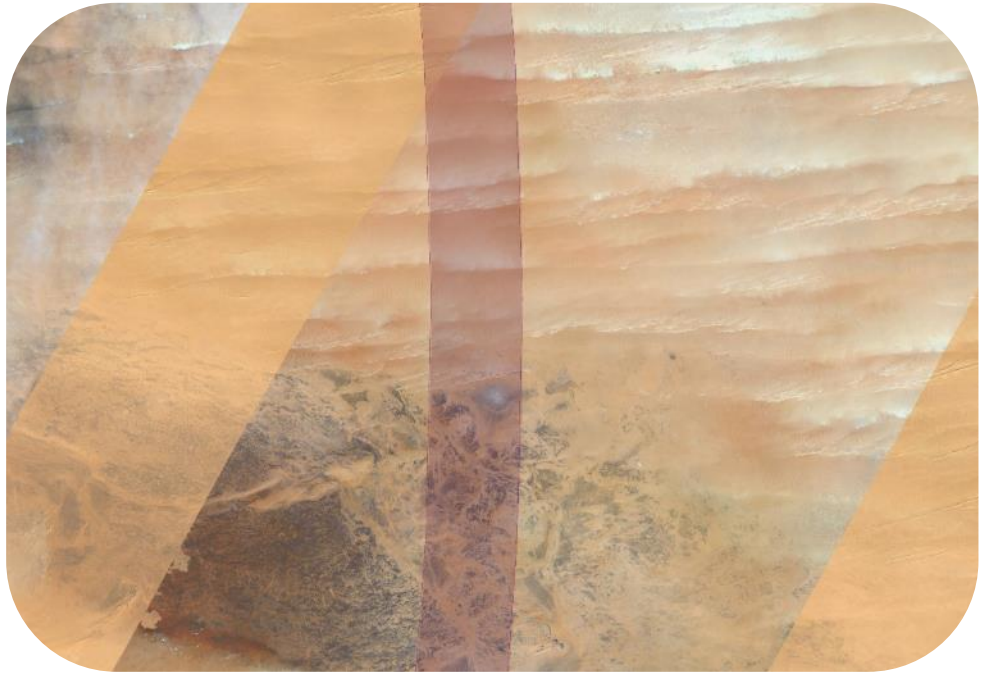


Orbital Zone of Neptune

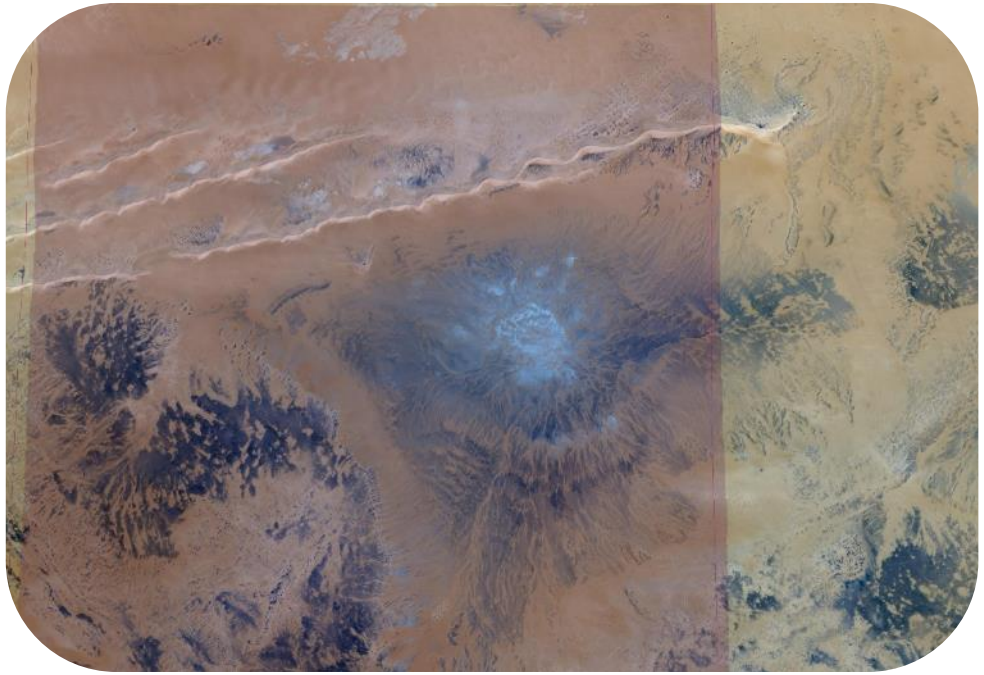
The Solar System

Neptune

Satellite images illustrating the alignment of Neptune's orbit. The breadth of the violet highlighted orbit represents the minimum and maximum boundary of the orbit. Note the bluish anomaly located within the orbit zone (between the min and max orbit).



Orbital Zone of Neptune



Orbital Zone of Neptune

The Solar System

The Martian Dilemma

Examining the orbital alignment of Mars, it appears its zone does indeed have a breadth of $\boldsymbol{3\ ka}$ (stadia), as Plato stated. However, the current orbit of Mars only represents a breadth of $\boldsymbol{2\ ka}$ (stadia). There are several scenarios that can account for this discrepancy.

1. For whatever reason, the builders of Atlantis purposely made the zone larger than the maximum orbit of Mars. This seems unlikely, as the rest of the planets' orbits appear to align perfectly.

2. The maximum orbit of Mars has changed (decreased) since the construction of Atlantis. However, it would be difficult to account for how only the maximum orbital distance changed, while the minimum distance stayed effectively the same.

3. Each zone boundary represents the orbit of a planet ***exclusively***, and only the minimum, maximum, ***or*** average orbit of each planet is used. This would mean there is a missing planet either before or after the ordinal position of ***both*** Mercury and Mars. Only a major cataclysm could cause the disappearance of one or more planets in the solar system. However, this could account for all the "debris" orbiting in the asteroid belt (and in the LaGrange points of Jupiter's orbit as well) that seemed to be immune from the coalescing of matter that formed the planets of the solar system.

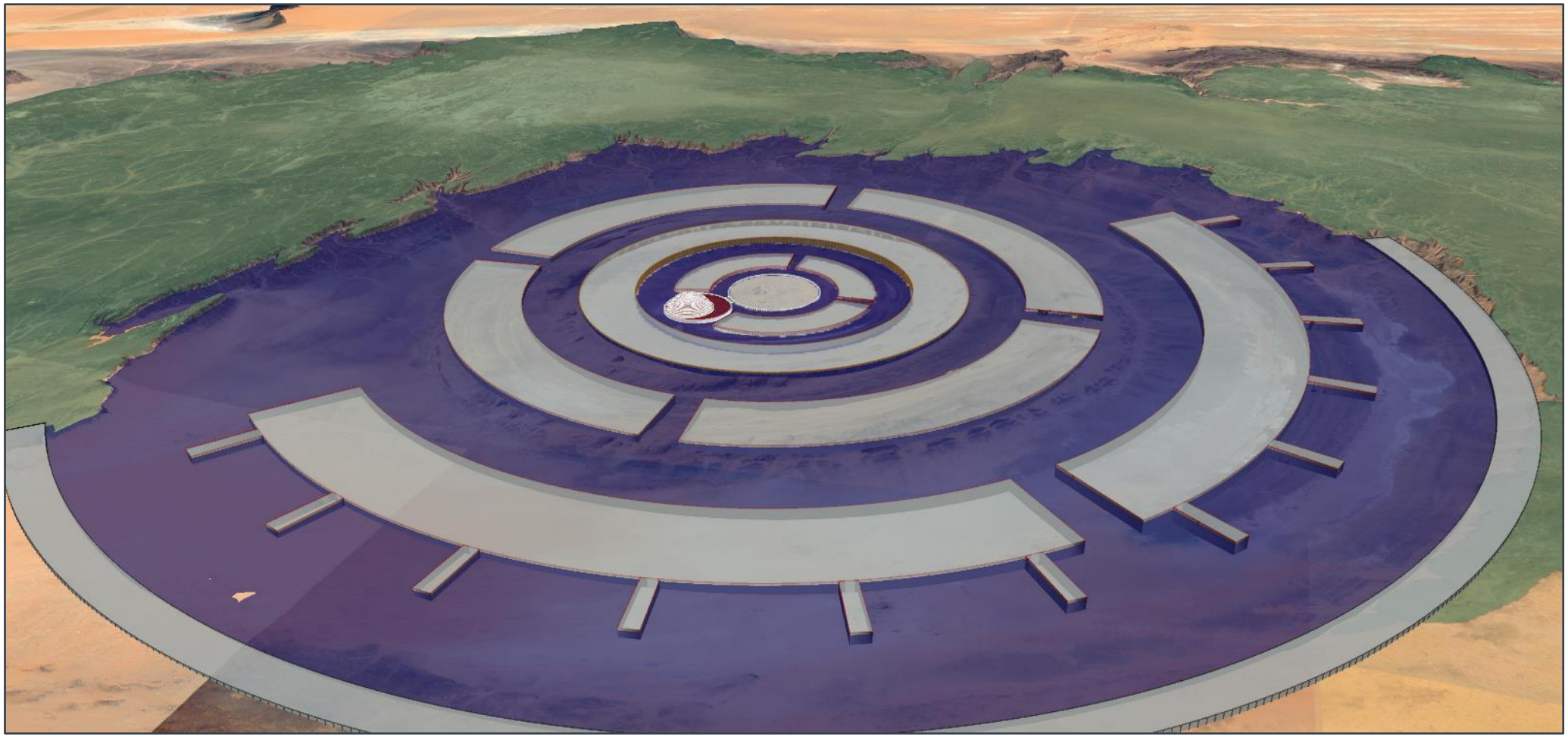
This will be discussed in further detail in ***Part III***.

Section VI:

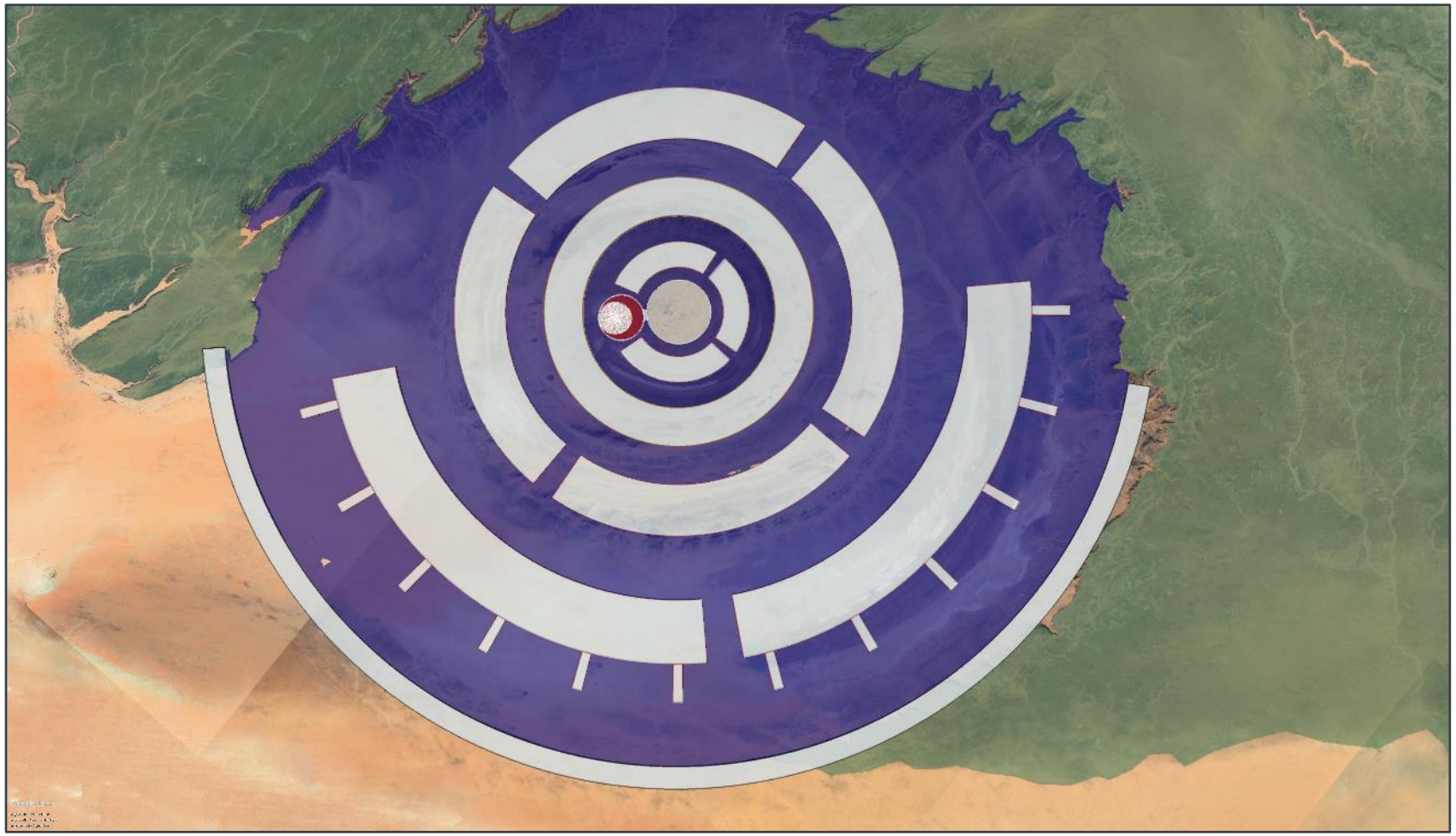
Reconstruction

The following section presents a very basic structural reconstruction of Atlantis. The design of this reconstruction is **hypothetical** and is based on Plato's dialogues, the geography of the Richat Structure, and ancient mythology. The purpose is to provide a visual model of what the city of Atlantis may have looked like.

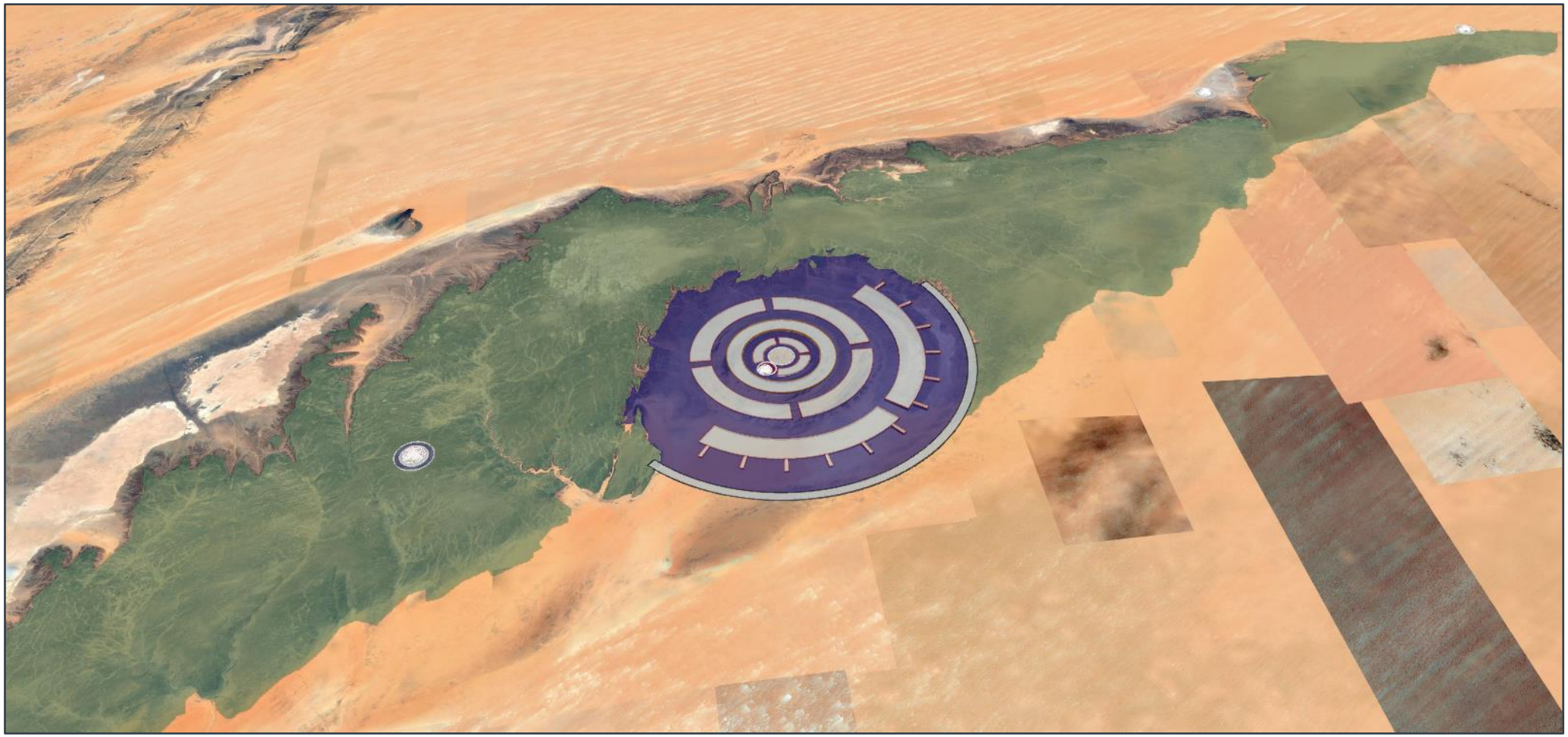
Reconstruction



Reconstruction



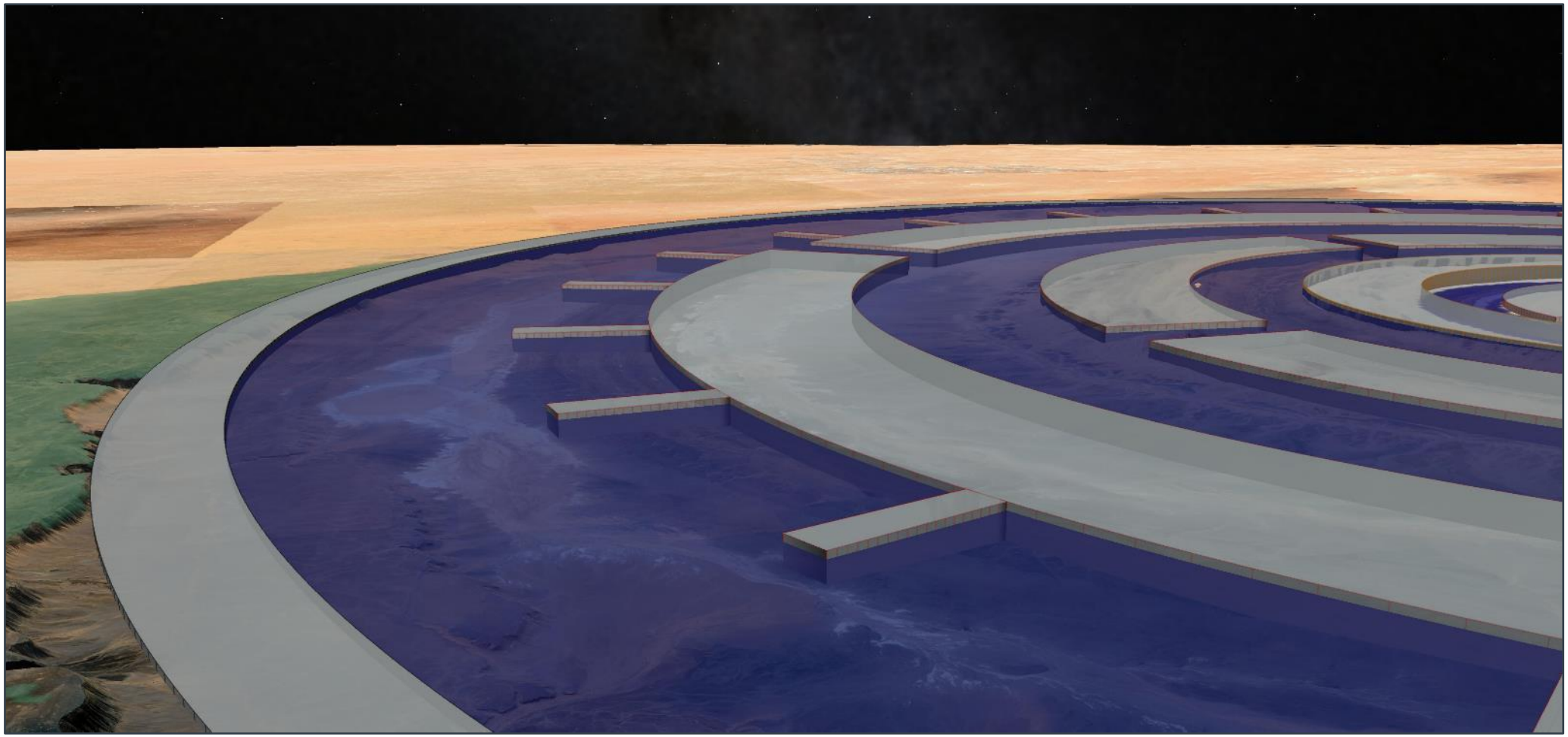
Reconstruction



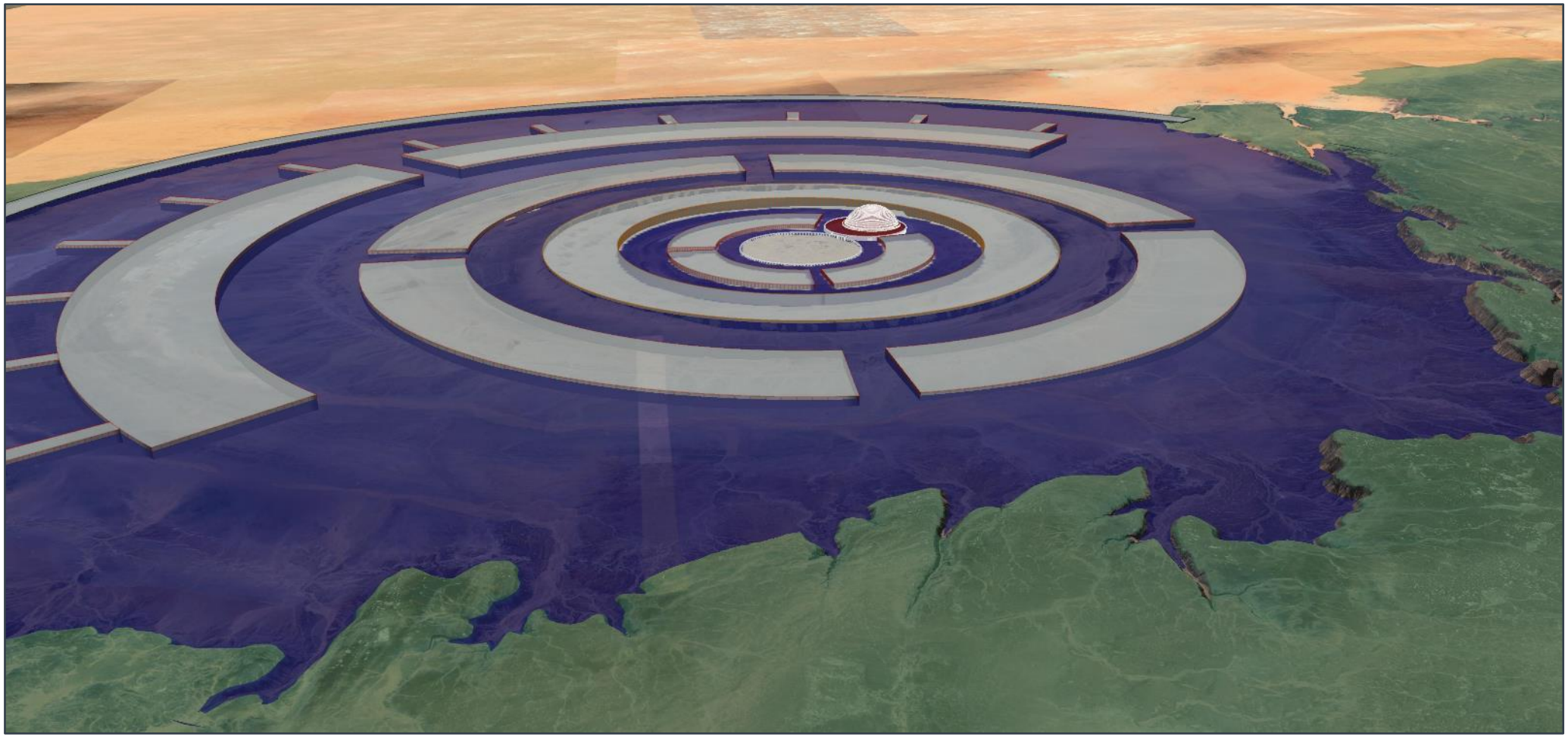
Reconstruction

Reconstruction

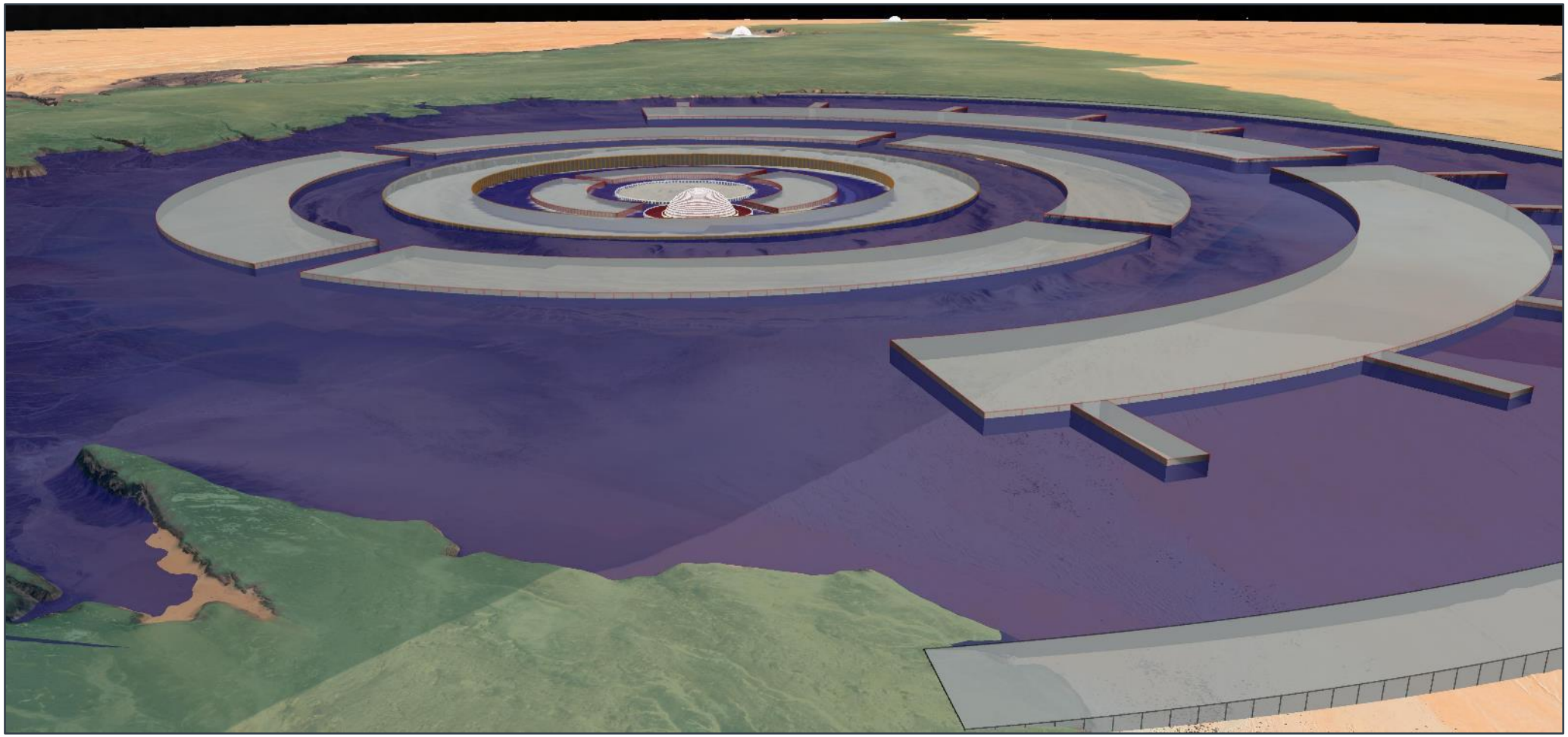
Reconstruction



Reconstruction



Reconstruction

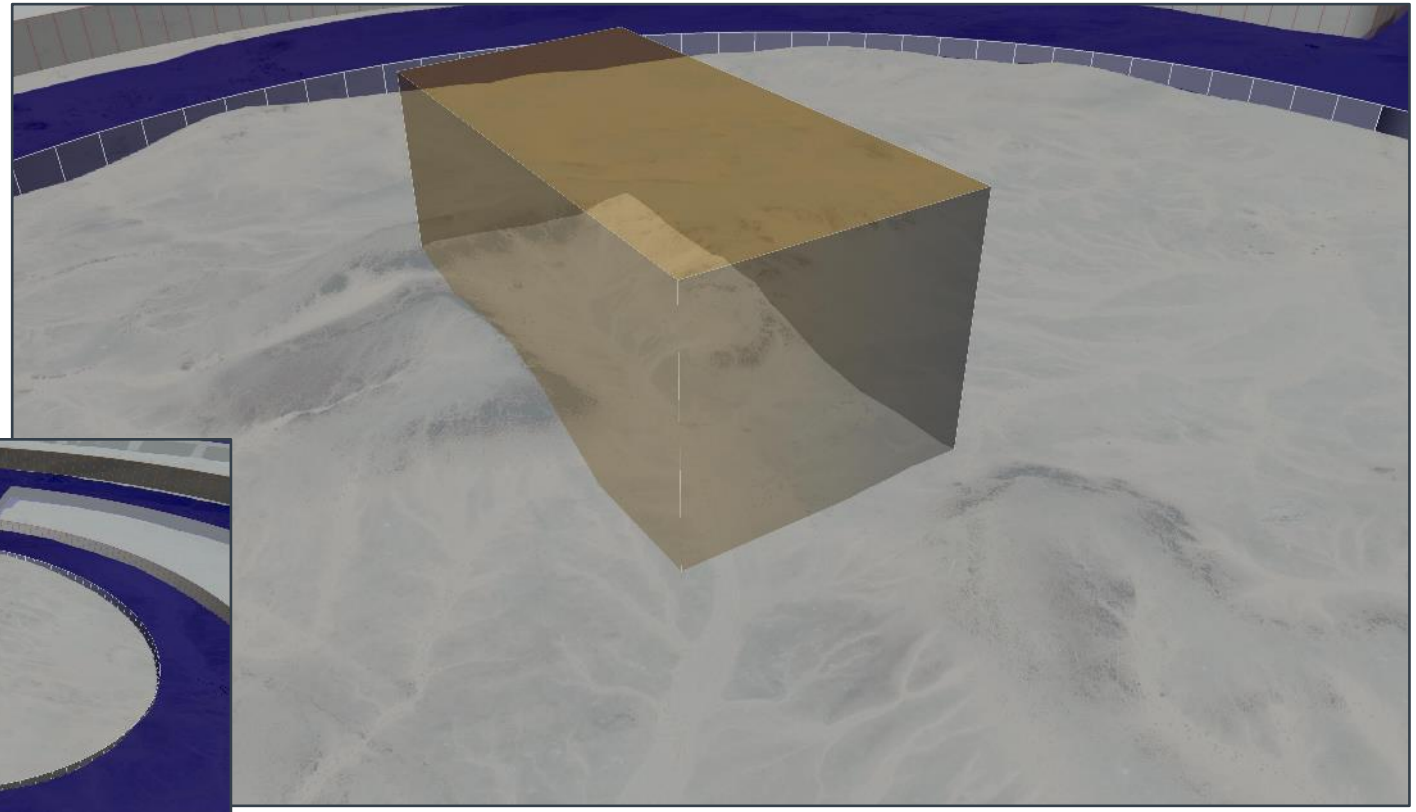


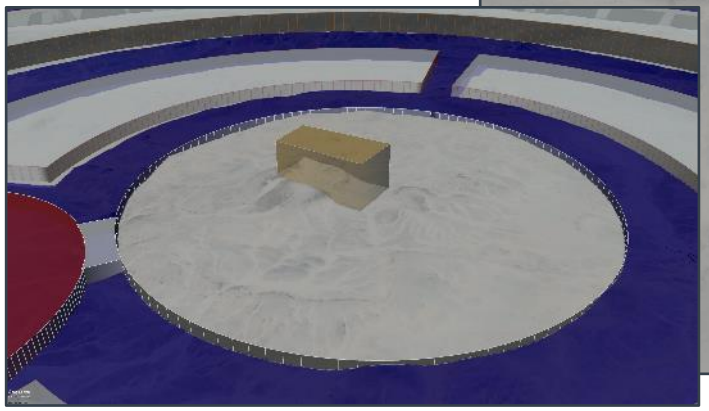
Reconstruction

Temple of Poseidon

“Poseidon's own temple, of a stadion in length and half a stadion in width, and of a proportionate height, having a sort of barbaric splendor”.

-Plato, Timaeus

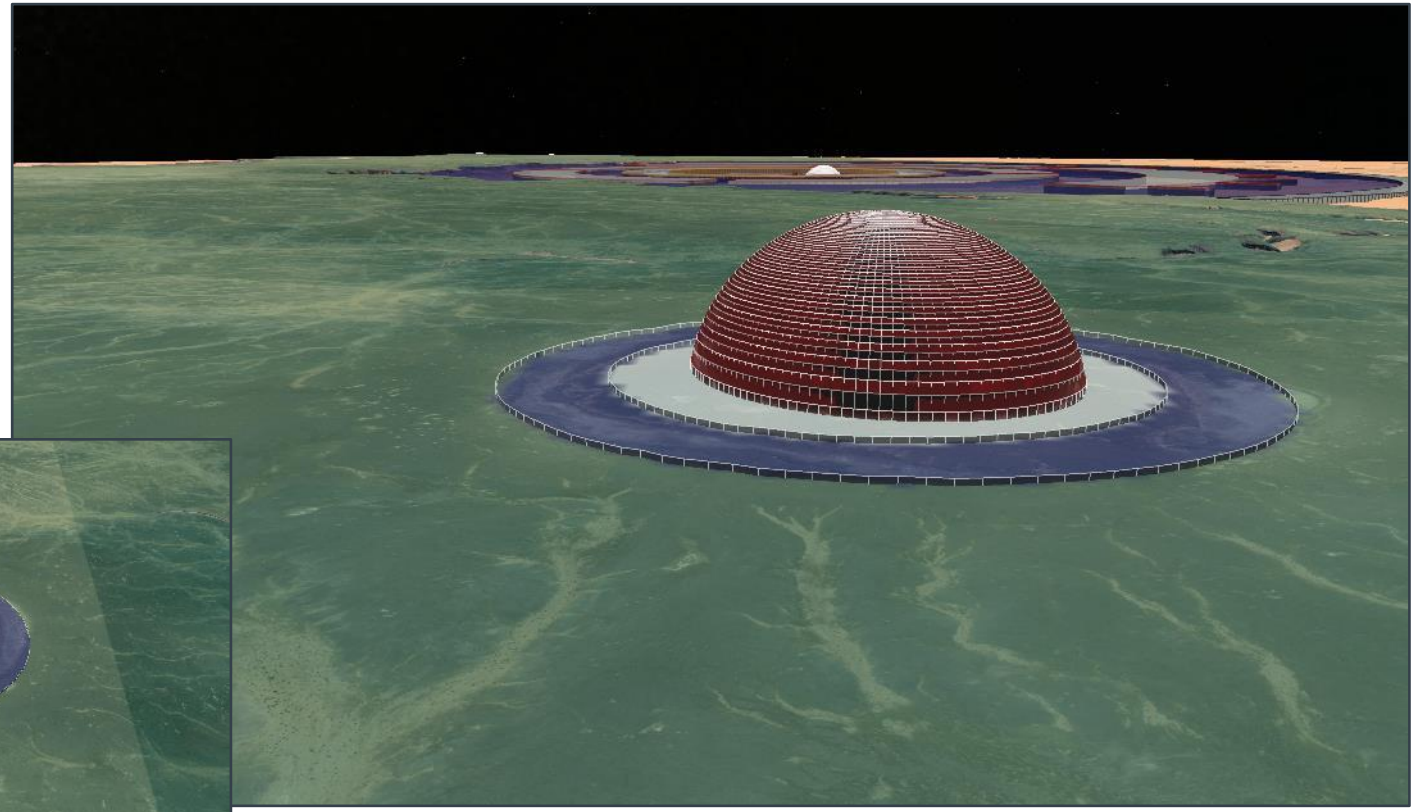


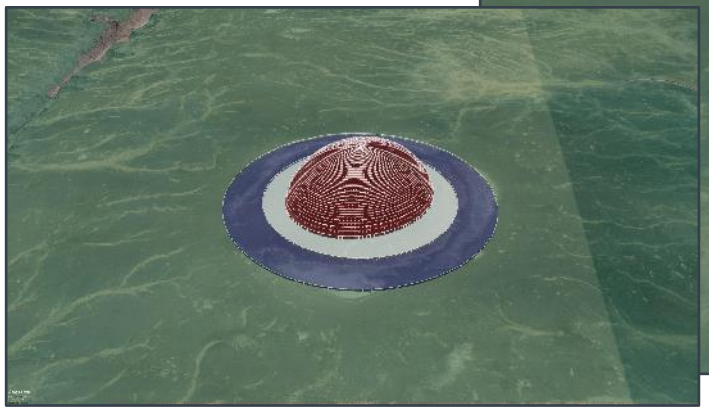


Reconstruction

Temple of Saturn

This is a hypothetical temple based on the alignment of Saturn's orbital layout with the circular structure on the boundary of the sea wall.

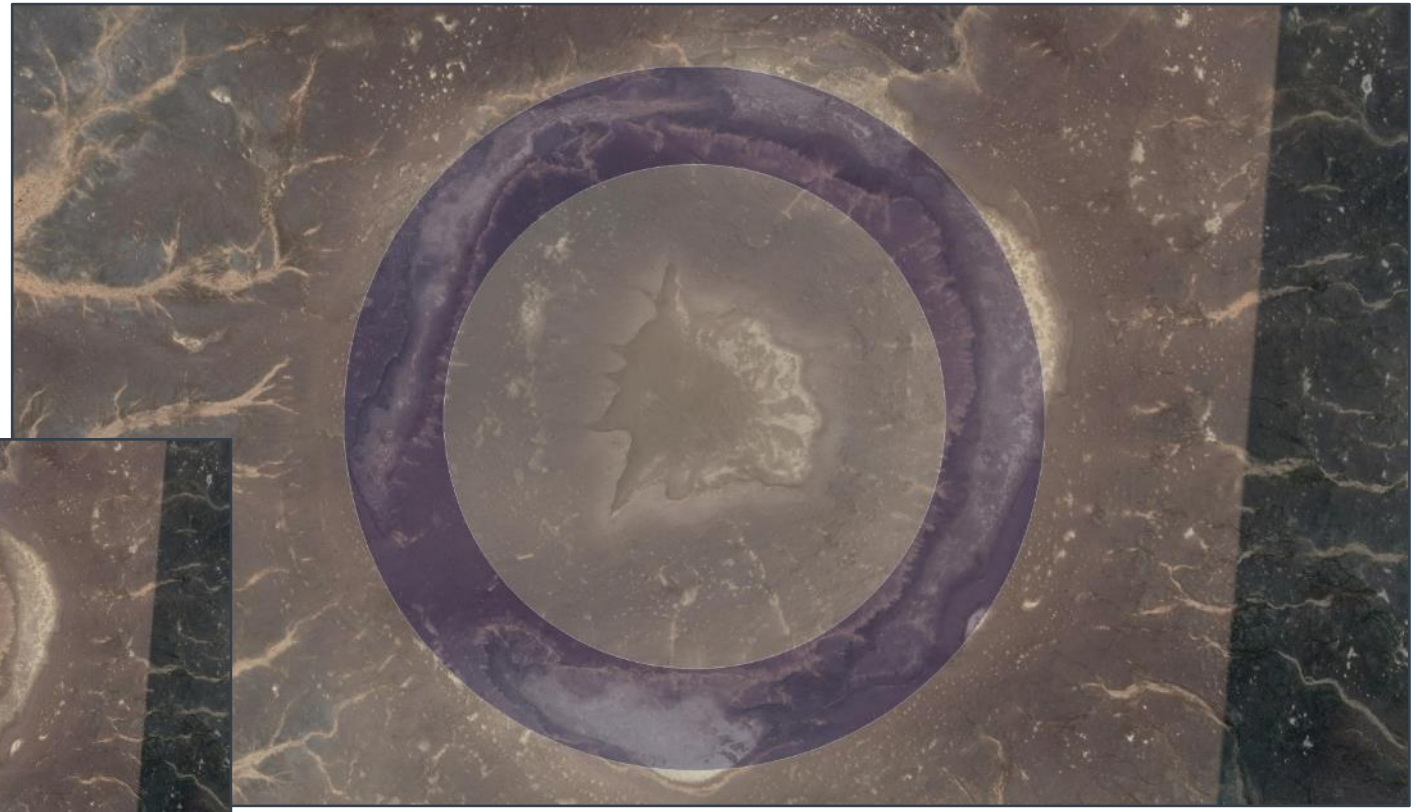




Reconstruction

Temple of Saturn

The foundation of the Temple of Saturn has approximately the same diameter as the center island of Atlantis (5 ka). It is surrounded by a “moat” with an average breadth of 1 ka.



Reconstruction

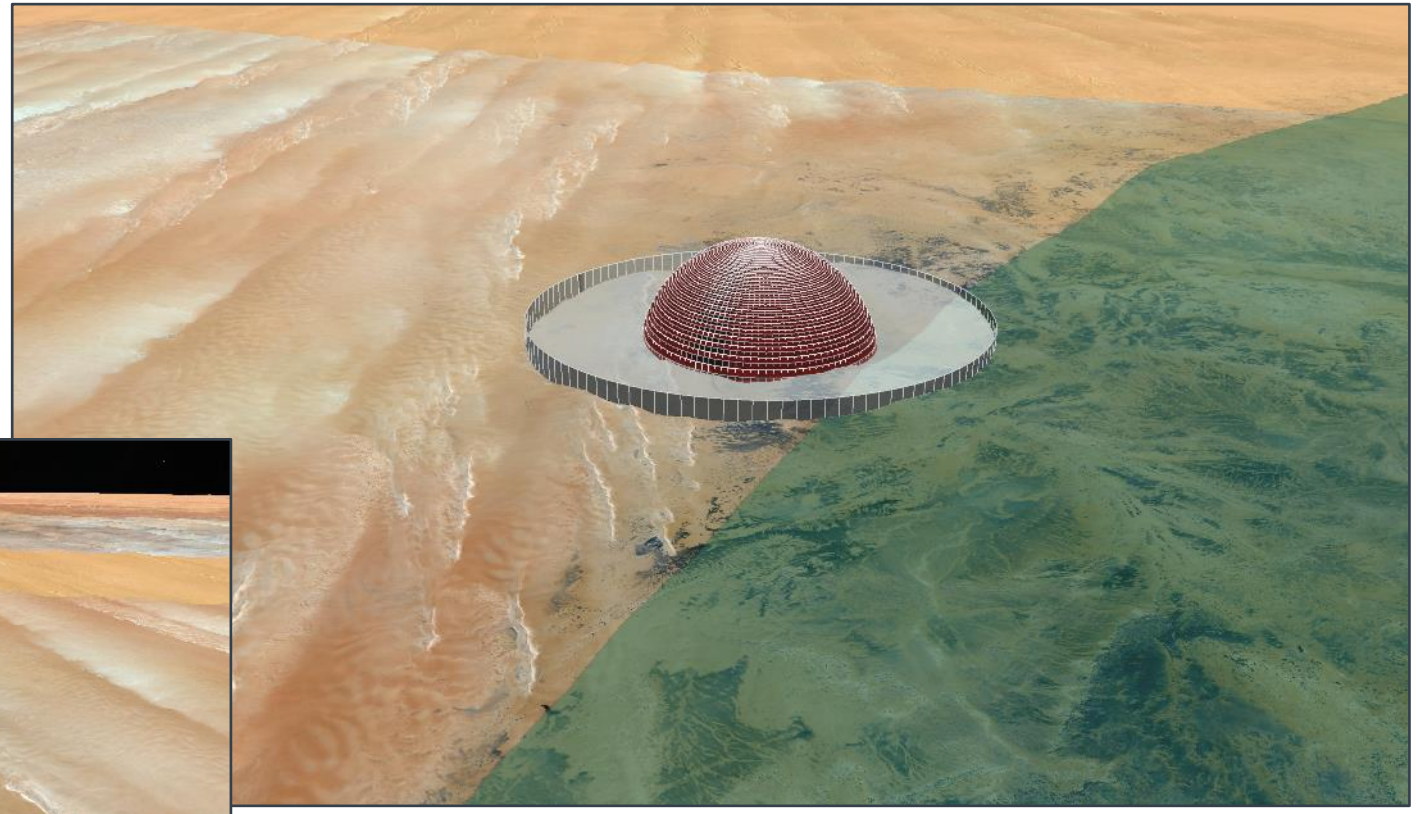
Temple of Uranus

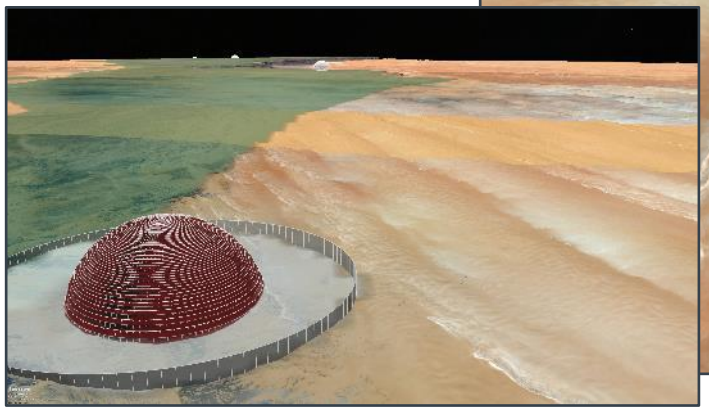
This is a hypothetical temple based on the alignment of Uranus's orbital layout with the horseshoe-like structure within the orbital zone.

Reconstruction

Temple of “Neptune”

This is a hypothetical temple based on the alignment of Neptune’s orbital layout with the anomaly within the orbital zone.

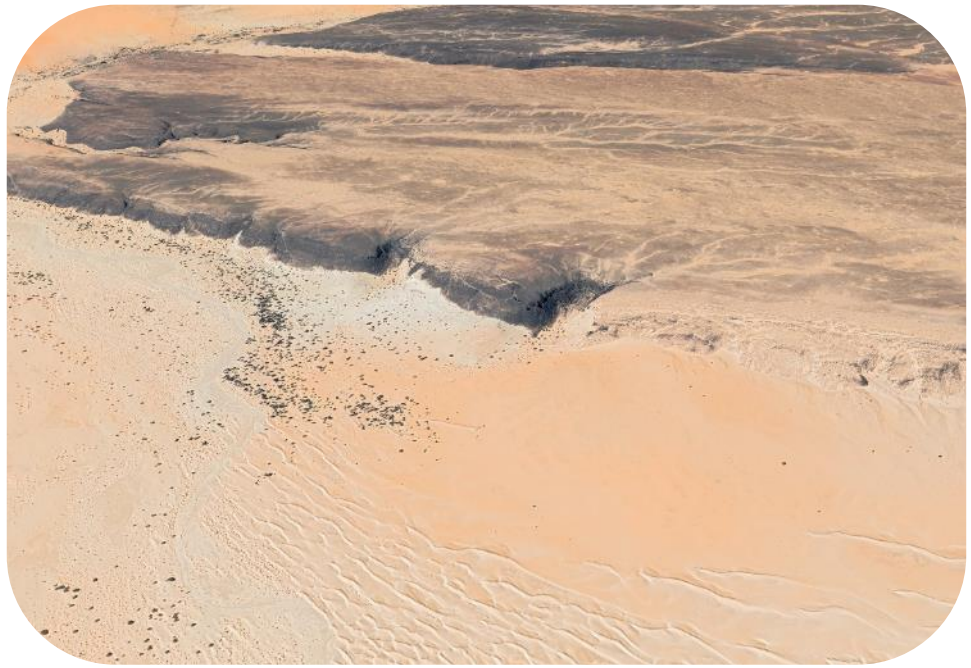




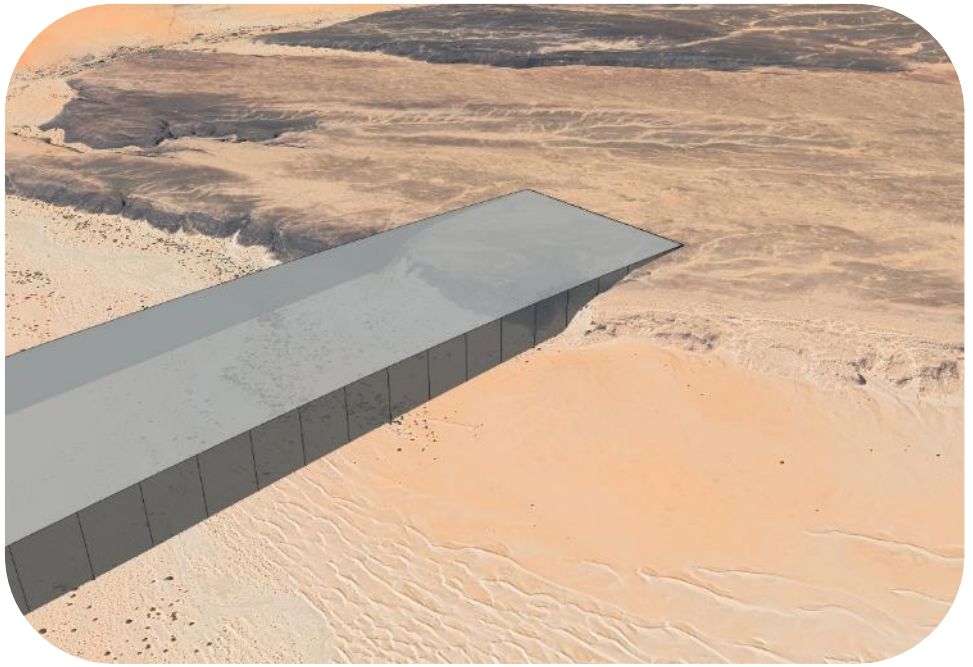
Neptune is the Roman counterpart of the Greek god Poseidon.

Reconstruction

Gates and Bridges



Possible structure location

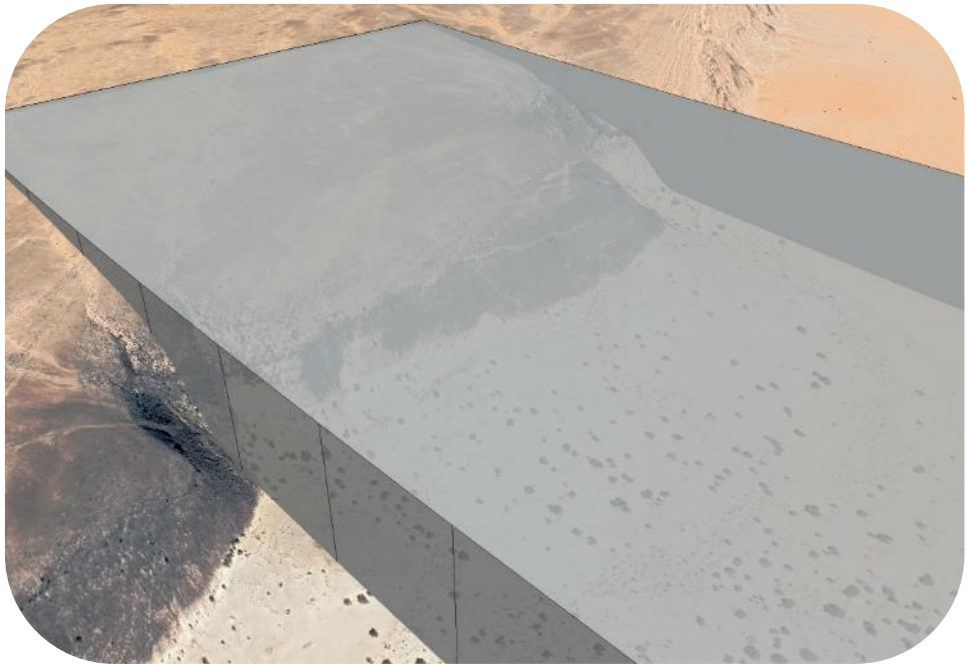


Possible structure location

Reconstruction

Gates and Bridges

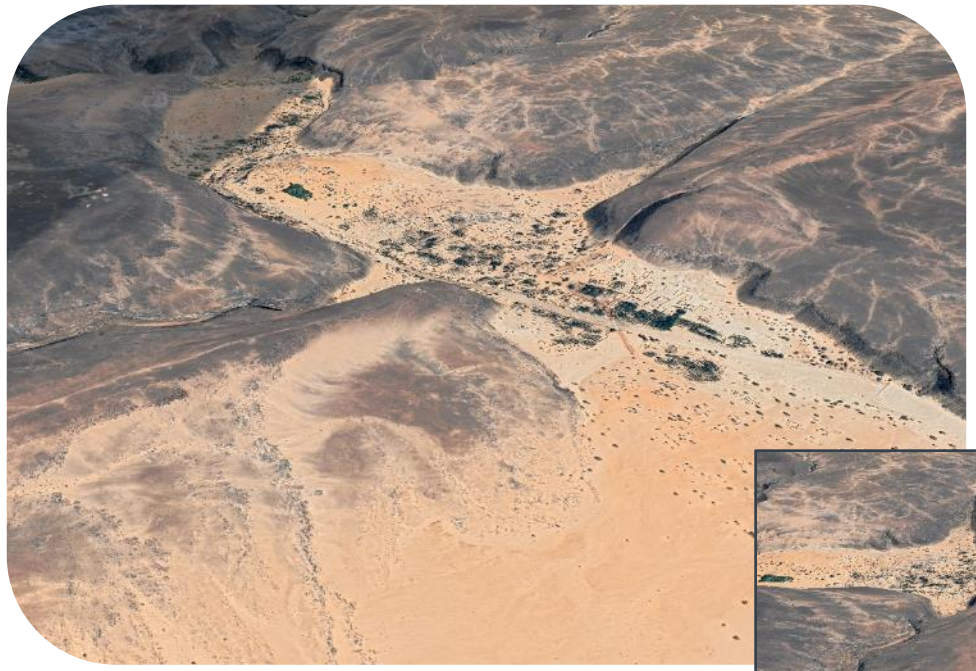
Possible structure location



Possible structure location

Reconstruction

Gates and Bridges



Possible structure location

Possible structure location

Reconstruction

Gates and Bridges

Possible structure location

Possible structure location

Reconstruction

The Canal

Canal/Channel Structure

Canal/Channel Structure

Reconstruction

The Canal

Canal/Channel Structure

Canal/Channel Structure

Reconstruction

The Serpent/Dragon

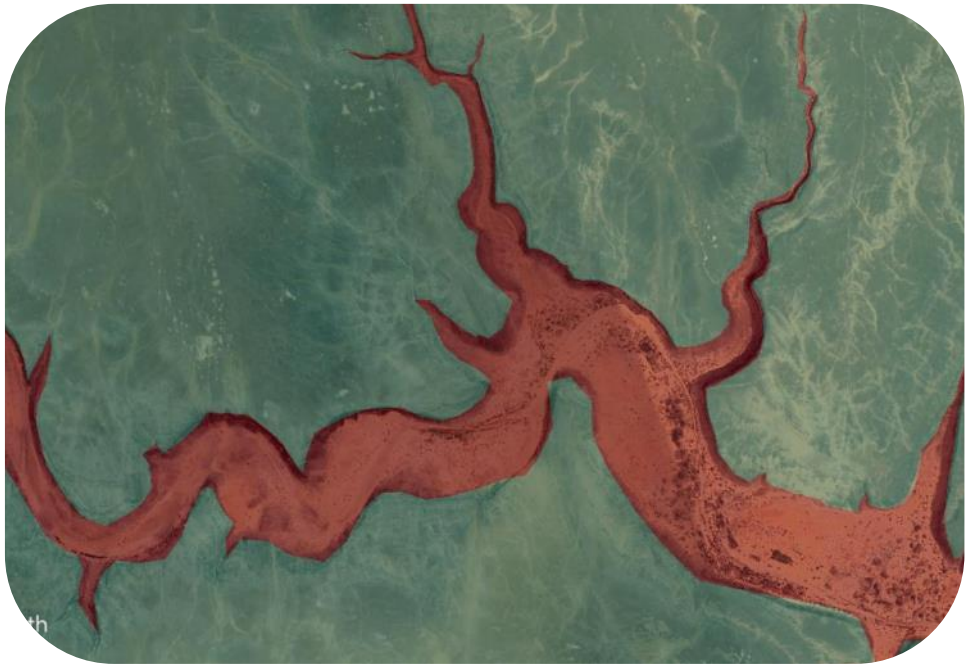
The Serpent/Dragon

The Serpent/Dragon

Reconstruction

The Serpent/Dragon

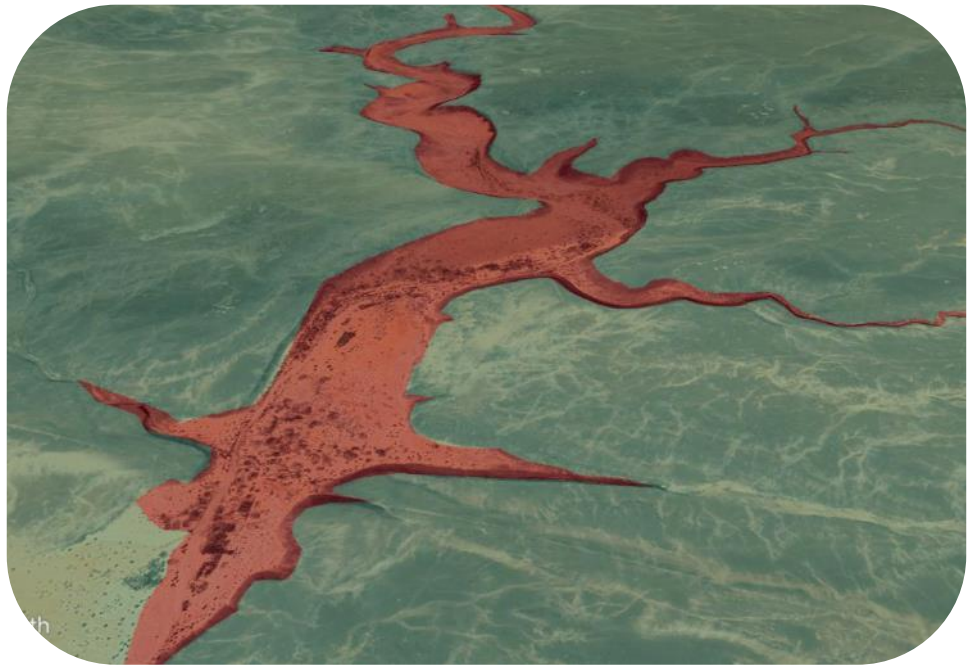
The Serpent/Dragon



The Serpent/Dragon

Reconstruction

The Serpent/Dragon

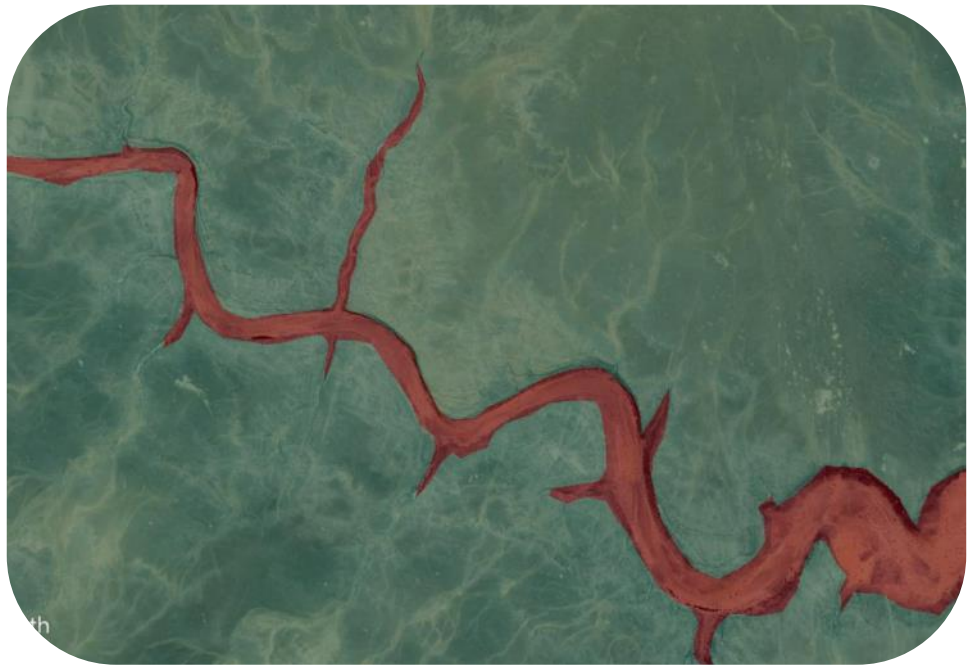


The Serpent/Dragon

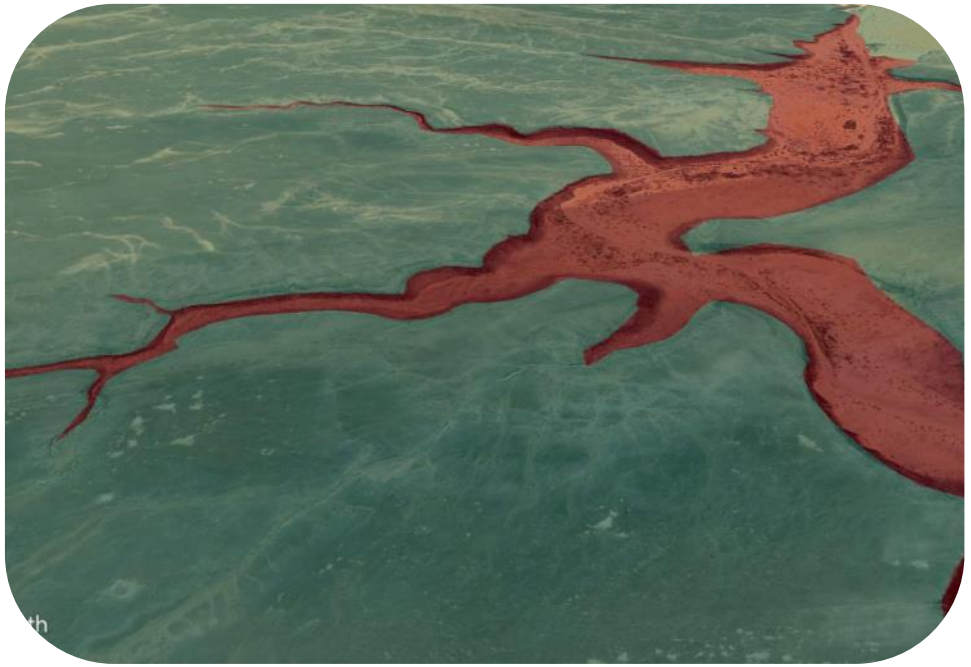
The Serpent/Dragon

Reconstruction

The Serpent/Dragon



The Serpent/Dragon



The Serpent/Dragon

Reconstruction

The Descent

Unusual “Canal” Formation

Unusual “Canal” Formation

Reconstruction

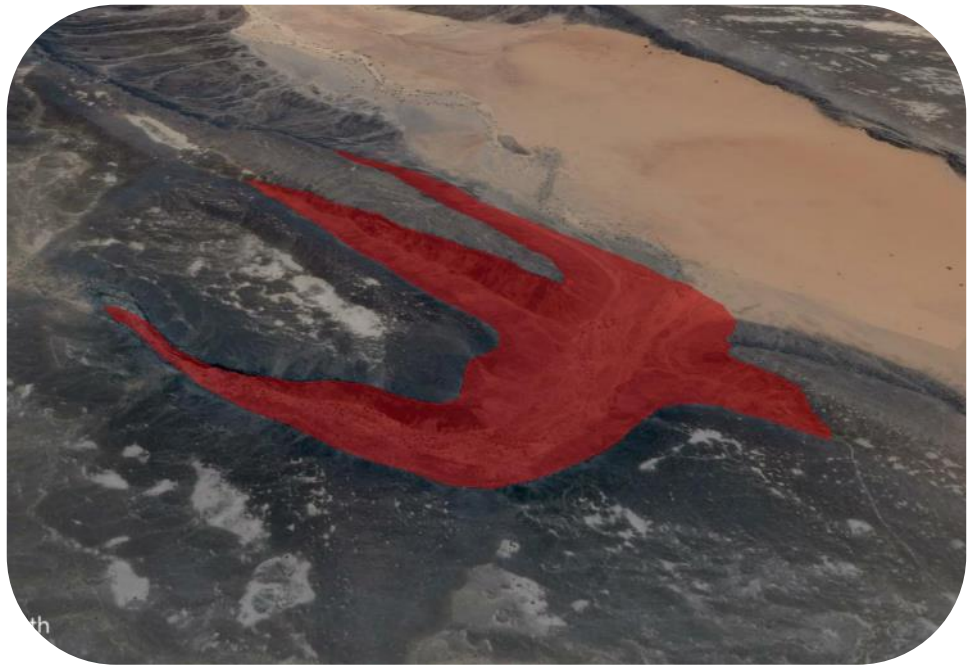
The Descent

Unusual “Canal” Formation

Stone artifact at Monte’s Prama Museum in Sardinia

Reconstruction

The Descent



Unusual “Canal” Formation

Stone artifact at Monte’s Prama Museum in Sardinia

Reconstruction

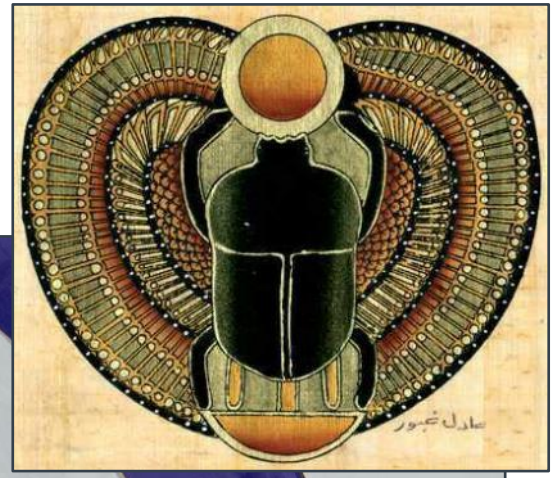
The Descent

Unusual “Canal” Formation

Stone artifact at Monte’s Prama Museum in Sardinia

Reconstruction

Egyptian Mythology: The Sacred Winged Scarab

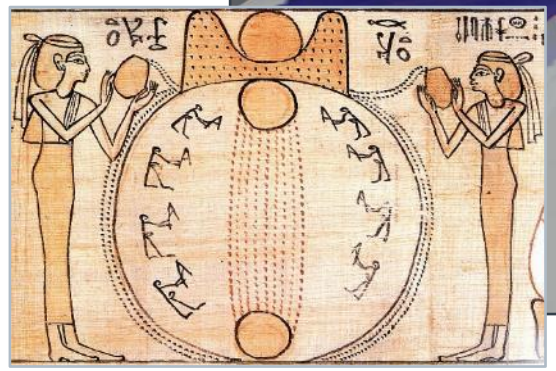


Reconstruction

Egyptian Mythology: The Apis Bull

Reconstruction

Egyptian Mythology: The Island of the Egg (Creation Myth)



Section VII:

Albrecht Dürer's Melancholy

The following section examines the work of Albrecht Dürer in order to extract embedded information from within his artwork. The purpose is to provide an example of another individual in human history that appears to have possessed advanced knowledge of the solar system.

Albrecht Dürer

Melencolia I

Melencolia I is a large **1514** engraving by the German Renaissance artist **Albrecht Dürer**. The print's central subject is an enigmatic and gloomy winged **female** figure thought to be a personification of melancholia – melancholy. Holding her head in her hand, she stares past the busy scene in front of her.

The area is strewn with symbols and tools associated with craft and **carpentry**, including an hourglass, weighing scales, a hand plane, a claw hammer, and a saw.

Other objects relate to alchemy, geometry or numerology. Behind the figure is a structure with an **embedded magic square**, and a ladder leading beyond the frame. The sky contains a rainbow, a comet or planet, and a bat-like creature bearing the text that has become the print's title.

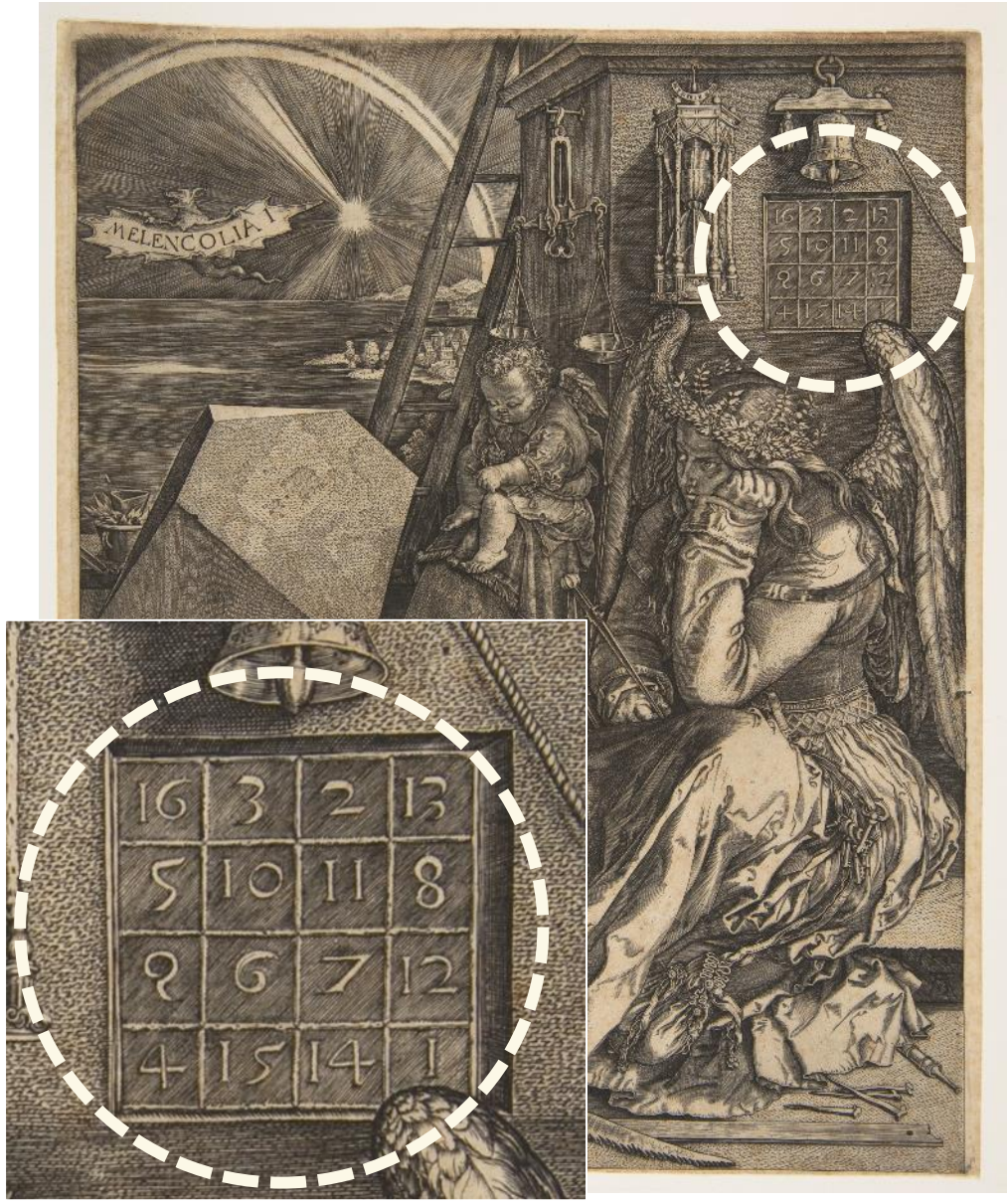
https://en.wikipedia.org/wiki/Melencolia_I

Albrecht Dürer

Melencolia I

Dürer may have associated melancholia with creative activity; the **woman** may be a representation of a Muse, awaiting inspiration but fearful that it **will not return**. As such, Dürer may have intended the print as a veiled self-portrait.

Other art historians see the figure as pondering the nature of beauty or the value of artistic creativity considering rationalism, or as a purposely obscure work that highlights the limitations of allegorical or symbolic art.



https://en.wikipedia.org/wiki/Melencolia_I

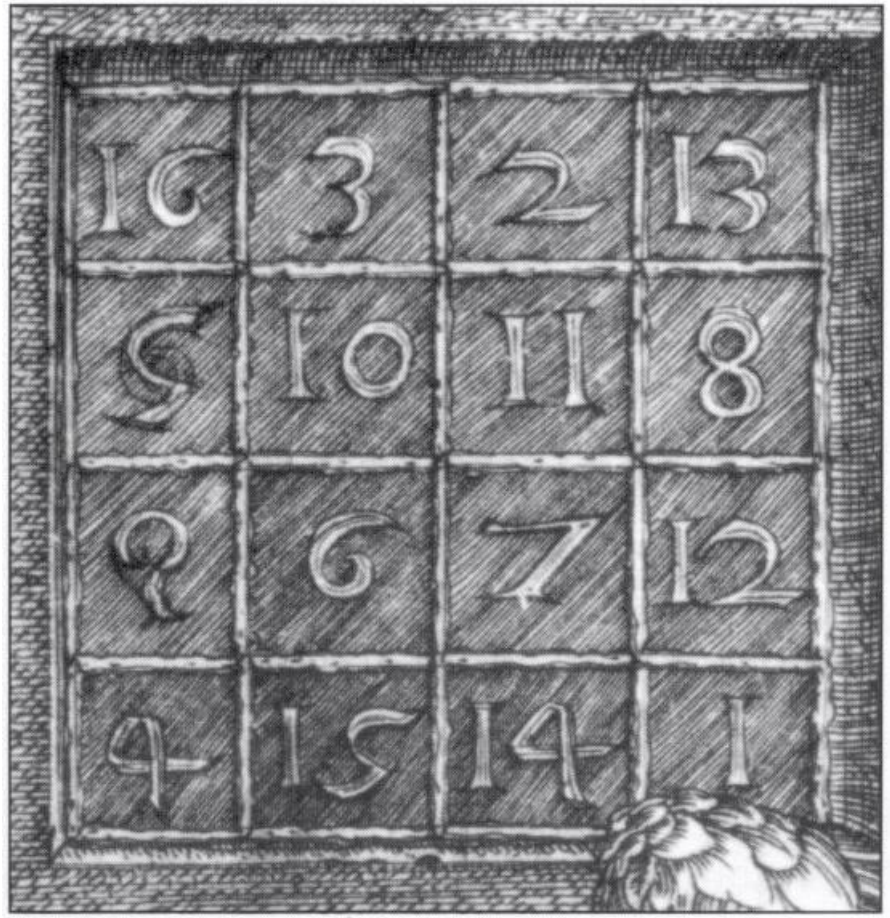
Albrecht Dürer

Dürer's Magic Squares

In mathematics, a square array of numbers, usually positive integers, is called a magic square if the sums of the numbers in each row, each column, and both main diagonals are the same.

The order of the magic square is the number of integers along one side (n), and the constant sum is called the magic constant. If the array includes just the positive integers, the magic square is said to be normal.

Dürer's engraving is one of the most well-known extant old master prints, but, despite a vast art-historical literature, **it has resisted any definitive interpretation**.



https://en.wikipedia.org/wiki/Magic_square

Albrecht Dürer

A Definitive Interpretation

Dürer's magic squares contain embedded orbital information (orbit radius) for several planets in the Solar System.

To extract the first orbit, concatenate the numbers in the first two rows (starting from the top left). The extracted number is shown below as well as its calculated $\boldsymbol{P-Ratio}$.

$$Orbit\ Value = 16 \cdot 3 \cdot 2 \cdot 13 \cdot 5 \cdot 10 \cdot 11 \cdot 8 = \mathbf{163,213,510,118}$$

$$\boldsymbol{Venus_{Max}\ Orbit} = \mathbf{\sim 163,200,000,000\ ants}$$
$$\boldsymbol{P-Ratio} = \mathbf{5.44}$$

Dürer's Magic Squares			
16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

Albrecht Dürer

A Definitive Interpretation

The next orbit value is extracted from the last two rows (starting from the most top left square of the last two rows). The extracted number is shown below as well as its calculated $\boldsymbol{P-Ratio}$.

$$Orbit\ Value = 9 \cdot 6 \cdot 7 \cdot 12 \cdot 4 \cdot 15 \cdot 14 \cdot 1$$
$$= \mathbf{96,712,415,141}$$

$$\boldsymbol{Mercury}_{\boldsymbol{Max}}^{\boldsymbol{Avg}}\ \boldsymbol{Orbit} = \mathbf{\sim 96,700,000,000}\ \boldsymbol{ants}$$
$$\boldsymbol{P-Ratio} = \mathbf{3.22}$$

Dürer's Magic Squares			
16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

Albrecht Dürer

A Definitive Interpretation

Dürer's magic squares were said to be based on a set of magic squares called the **Tabula Jovis**. The Tabula Jovis originated in Greece, around $\mathbf{10}\ \boldsymbol{BCE}$.

The tables below show how Dürer's system resembles a numerical "**mirror**" of the Tabula Jovis system.

Dürer's Magic Squares			
16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

Tabula Jovis Magic Squares			
4	14	15	1
9	7	6	12
5	11	10	8
16	2	3	13

This is a clue (or indicator) on how to extract more values from the magic squares. To do this, create a mirror of Dürer's magic squares system. Mirror **both the layout and the numerical characters** of the system.

Albrecht Dürer

Dürer's Magic Squares Mirror

The tables below show how to mirror Dürer's magic squares system. This closely mimics a true mirror image without invalidating the structure or order of the numerical characters. Meaning, it does not mirror number characters visually, just the ordinal position of the character. I.e., **16** becomes **61**, as opposed to **91** or an inverted sixteen (**9ɪ**), which is not a valid number.

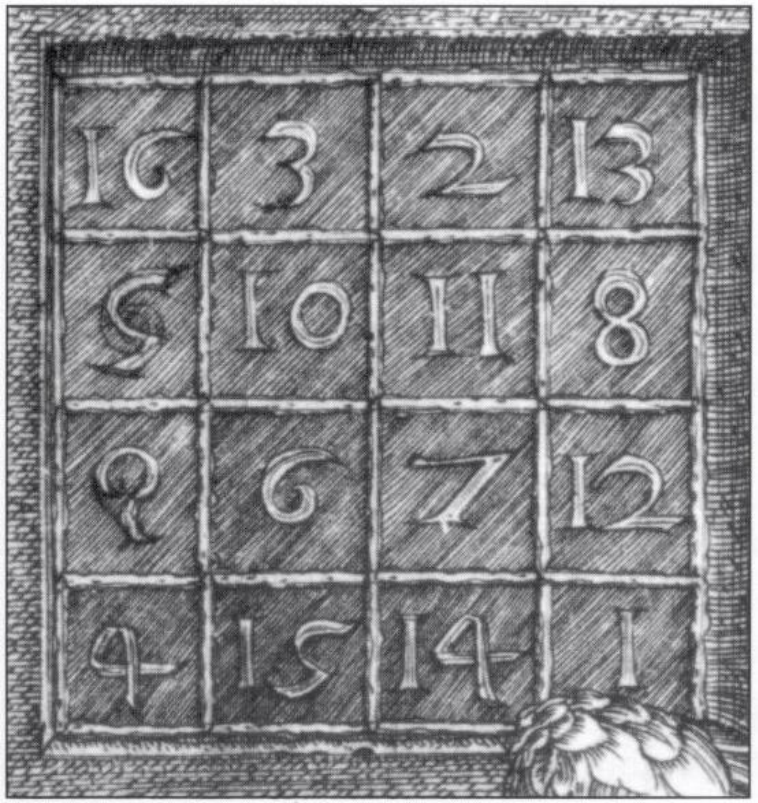
When the number "**10**" is mirrored, the "**0**" portion of the number is not discarded, but instead is "**pinned**" in front of the "**1**".

Dürer's Magic Squares			
16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

Dürer's Magic Squares Mirror			
31	2	3	61
8	11	01	5
21	7	6	9
1	41	51	4

Albrecht Dürer

Dürer's Magic Squares Mirror



https://en.wikipedia.org/wiki/Magic_square

Albrecht Dürer

Dürer's Magic Squares Mirror

Just as before. the next orbit value is extracted from the first two rows (starting from the top left). Note that the "pinned" zero is used for the rows and columns that intersect it.

The extracted number is shown below as well as its calculated $\boldsymbol{P-Ratio}$.

$$Orbit\ Value = 31 \cdot 2 \cdot 3 \cdot 61 \cdot 8 \cdot 11 \cdot 0 \cdot 1 \cdot 5$$
$$= \mathbf{312,361,811,015}$$

$$\boldsymbol{Mars_{Min}\ Orbit\ = \sim 312,360,000,000\ ants}$$
$$\boldsymbol{P-Ratio = 10.42}$$

Other orbit values can be extracted from this magic squares system. These orbits and their corresponding planets will be discussed in a later series.

Dürer's Magic Squares Mirror			
31	2	3	61
8	11	01	5
21	7	6	9
1	41	51	4

Section VIII:

Tenna Particles

The following section examines the mass of the elementary particles of the Standard Model. The purpose of this section is to demonstrate how conversions of units used in the Standard Model (and in science general) can possibly lead to more precise calculations and measurements (as well as new scientific discoveries).

Tenna Particles

The Higgs' Tenna

The Higgs boson, sometimes called the Higgs particle, is an elementary particle in the Standard Model of particle physics produced by the quantum excitation of the Higgs field, one of the fields in particle physics theory.

In the Standard Model, the Higgs particle is a massive scalar boson with zero spin, even (positive) parity, no electric charge, and no color charge, that couples to (interacts with) mass.

The most recent measured value for the mass of the Higgs boson is $\mathbf{124.96}\ (125.10 \pm .14)\ {}^{GeV}/_{c^2}$.

$$\mathbf{124.96}\ {}^{GeV}/_{c^2} = \mathbf{2.23457 \times 10^{-25}\ kg}$$

$$\mathbf{2.23457 \times 10^{-25}\ kg = 5.015879 \times 10^{-25}\ kt}$$

https://en.wikipedia.org/wiki/Higgs_boson

Tenna Particles

The Higgs' Tenna

The most recent measured value for the mass of the Higgs boson is $\mathbf{2.23457 \times 10^{-25}\ kg}$.

$$\mathbf{2.23457 \times 10^{-25}\ kg = 5.015879 \times 10^{-25}\ kt}$$

$$\frac{\mathbf{1}}{\mathbf{5.015879 \times 10^{-25}}} = \mathbf{1.99367 \times 10^{24}}$$

Note that the inverse of the mass of the Higgs boson is very close to $\mathbf{2.00 \times 10^{24}}$.

This section will assume the tenna creates a non-fractional value for the mass of the Higgs boson (the same way the ant creates a non-fractional for the gravitational constant). From this, a more precise value for the mass of the Higgs boson can be derived.

https://en.wikipedia.org/wiki/Higgs_boson

Tenna Particles

The Higgs' Tenna

The inverse of the mass of the Higgs boson is $\sim\mathbf{2.00 \times 10^{24}}$. Use the inverse of this value as the mass of the Higgs boson, and then convert back to SI units.

$$\frac{\mathbf{1}}{\mathbf{2.0000 \times 10^{24}}} = \mathbf{5.0000 \times 10^{-25}}\ kt$$

$$\mathbf{5.0000 \times 10^{-25}}\ kt = \mathbf{2.22749259897565 \times 10^{-25}}\ kg$$

$$\mathbf{2.22749259897565 \times 10^{-25}}\ kg = \mathbf{124.953165489344}\ {}^{GeV}/_{c^2}$$

The calculated mass of the Higgs boson is $\mathbf{124.953165489344}\ {}^{GeV}/_{c^2}$.

https://en.wikipedia.org/wiki/Higgs_boson

Tenna Particles

The Higgs' Tenna

The mass of the Higgs boson (in kilotenna) is:

$$\boldsymbol{Higgs\ boson}_{\boldsymbol{mass}} = \mathbf{5.00 \times 10^{-25}}\ kt$$

$$124.9532\ {}^{GeV}/_{c^2}$$

This value is the inverse squared of $\boldsymbol{\sqrt{2} \times 10^{12}}$.

$$\boldsymbol{x = \sqrt{2} \times 10^{12}}$$

$${}^{\mathbf{1}}/_{\boldsymbol{x^2}} \mathbf{= 5.00 \times 10^{-25}}$$

https://en.wikipedia.org/wiki/Higgs_boson

Tenna Particles

All the Higgs' Horses

The table below displays the converted mass values for the primary particles of the Standard Model, as well as their ratio to the Higgs Boson ($\mathbf{5.000000 \times 10^{-25}\ kt}$).

Particle	Kilograms	Kilotennae	Ratio to Higgs
Higgs Boson	$2.227308 \times 10^{-25}\ kg$	$\mathbf{5.0000 \times 10^{-25}\ kt}$	1.00×10^{0}
Z Boson	$1.626069 \times 10^{-25}\ kg$	$\mathbf{3.6500 \times 10^{-25}\ kt}$	7.3000×10^{-1}
W± Boson	$1.433020 \times 10^{-25}\ kg$	$\mathbf{3.2167 \times 10^{-25}\ kt}$	6.4333×10^{-1}
Up Quark	$3.920386 \times 10^{-30}\ kg$	$\mathbf{8.8000 \times 10^{-30}\ kt}$	1.7600×10^{-5}
Down Quark	$8.241722 \times 10^{-30}\ kg$	$\mathbf{1.8500 \times 10^{-29}\ kt}$	$\mathbf{3.7000} \times 10^{-5}$
Charm Quark	$2.280952 \times 10^{-27}\ kg$	$\mathbf{5.1200 \times 10^{-27}\ kt}$	1.0240×10^{-2}
Strange Quark	$1.710714 \times 10^{-28}\ kg$	$\mathbf{3.8400 \times 10^{-28}\ kt}$	7.6800×10^{-4}
Top Quark	$3.085077 \times 10^{-25}\ kg$	$\mathbf{6.9250 \times 10^{-25}\ kt}$	1.38500×10^{0}
Bottom Quark	$7.424975 \times 10^{-27}\ kg$	$\mathbf{1.6667 \times 10^{-26}\ kt}$	3.3333×10^{-2}

https://en.wikipedia.org/wiki/Standard_Model

Tenna Particles

All the Higgs' Horses

The table below displays the converted mass values for the primary indeterminate particles of the Standard Model, as well as their ratio to the Higgs Boson ($\mathbf{5.000000 \times 10^{-25}\ kt}$).

Particle	Kilograms	Kilotennae	Ratio to Higgs
Muon Neutrino	*indeterminate*	*indeterminate*	*indeterminate*
Tau	$3.167494 \times 10^{-27}\ kg$	$\mathbf{7.1100 \times 10^{-27}\ kt}$	1.4220×10^{-2}
Tau Neutrino	*indeterminate*	*indeterminate*	*indeterminate*
Muon	$1.884458 \times 10^{-28}\ kg$	$\mathbf{4.2300 \times 10^{-28}\ kt}$	8.4600×10^{-4}
Electron Neutrino	*indeterminate*	*indeterminate*	*indeterminate*
Electron	$9.110444 \times 10^{-31}\ kg$	$\mathbf{2.0480 \times 10^{-30}\ kt}$	4.0960×10^{-6}
Photon	*zero mass*	*zero mass*	*zero mass*
Gluon	*zero mass*	*zero mass*	*zero mass*

https://en.wikipedia.org/wiki/Standard_Model

Links:

Documents and Source Code

The following section contains links to all the documents and source code included with this series (Archaeological Renaissance). These include content files (such as the document you are reading now) in multiple formats as well as data reference files. These data reference files are Excel spreadsheets that contain the data referenced throughout this series.

Links

Archaeological Renaissance Download Links:

PDF Format:

Part I: Ants (includes technical primer)
Part I: Ants (no technical primer)
Part II: Pivots
Part III: Projections
Part IV: Frames

PowerPoint Format:

Part I: Ants (includes technical primer)
Part II: Pivots
Part III: Projections
Part IV: Frames

Data Reference Download Links:

Excel Spreadsheets:

Ancient Site and Pole Location Reference
Measurement System Reference
Solar System Reference

GitHub Links (Source Code):

Repository:
https://github.com/pmeaster/ArchaeologyTools

Clone Repository:
https://github.com/pmeaster/ArchaeologyTools.git

END OF PART I

Next:

Part II

Pivots

Covers the following topics:

1. Pole Shifts and Atlantis.
2. The Earth Grid.
3. The Prime Meridian and the Lantis.
4. Hyperborea.

Paul McKay Easter
Fairbanks, AK

Archaeological Renaissance