

The models of Saturn in an ancient solar system model

Abstract

The previous papers in this series contain the locations of models of the planets of the solar system from Mercury to Jupiter, all of which have been derived from precise astronomical data. The model of Saturn, the next in the series, has yet to be identified. In this paper I show that a model of Saturn is located in Sudan in north Africa and show that the distance between the models of Jupiter and Saturn is that of the relative range of the planets at the 2729 BCE winter solstice. The geodesic line that connects the two planet models is also shown to pass through the center of the model of the planet Mars thereby interconnecting the geometric features of the solar system model. The instantaneous aphelion and perihelion distance at the winter solstice are then shown to also have been included in the model of Saturn and a second model of the planet is identified using these values on Easter Island in the Pacific ocean. The astronomical alignment of the planet model at Easter island is shown to be perpendicular to the airport runway and a third model of Saturn is identified in Athens which also uses the local airport's runway end point GPS coordinates as the essential part of the geodetic alignment. Finally, at the end of the system at the Acropolis in Athens, the geometric geodesic line system terminates at the location of the model of Mercury thereby fully closing off the surveying system used within the whole solar system model's construction.

ISBN 978-1-917081-01-6



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The Great Pyramid papers

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The models of Saturn in an ancient solar system model

A complete model of the inner solar system and the first planet of the outer solar system have been shown in the previous papers in this series to have been modeled across the face of the Earth with each of the planet's locations being clearly marked by ancient monuments and ground constructions. During the analysis of the inner solar system models it was found that some of the models were positioned relative to the previous planet in the sequence. The model of the planet Saturn shown in this paper uses positioning relative to the principal Jupiter model documented in the previous paper¹ in this series and by designing the planet's location in this manner it is therefore essential to have solved the Jupiter model first before the analysis and determination of the location of the Saturn model can be started.

The data source for starting to understand how the planet is positioned is the DE431 ephemeris data which list the range of Saturn from the Sun at the winter solstice of 2729 BCE as being about 1,521,554,251 km. The range of Jupiter was determined in the previous paper² as being 809,669,488 km and therefore the difference between these two ranges when scaled down onto the 1:87500 scale model of the solar system is 8134.397 perfect kilometers (pkm). Following the procedure that has been used throughout the system of rotating the range line to the planet by a ratio of 1 radian for every 365 pkm of length, then the rotation of the line from Jupiter to Saturn on the model must be 22.286 radians. This value can be brought back into rational bounds by modulating by 2 pi to give the rotation angle of the line as 196.8949 degrees and using due East as the starting reference direction for the line this positions it as emanating from the center of the Jupiter model at an azimuth of 286.8949 degrees.

Diagram T0 shows the relative range line between Jupiter and Saturn running from the Angkor Wat area of south east Asia to a location in northern Sudan in north Africa.

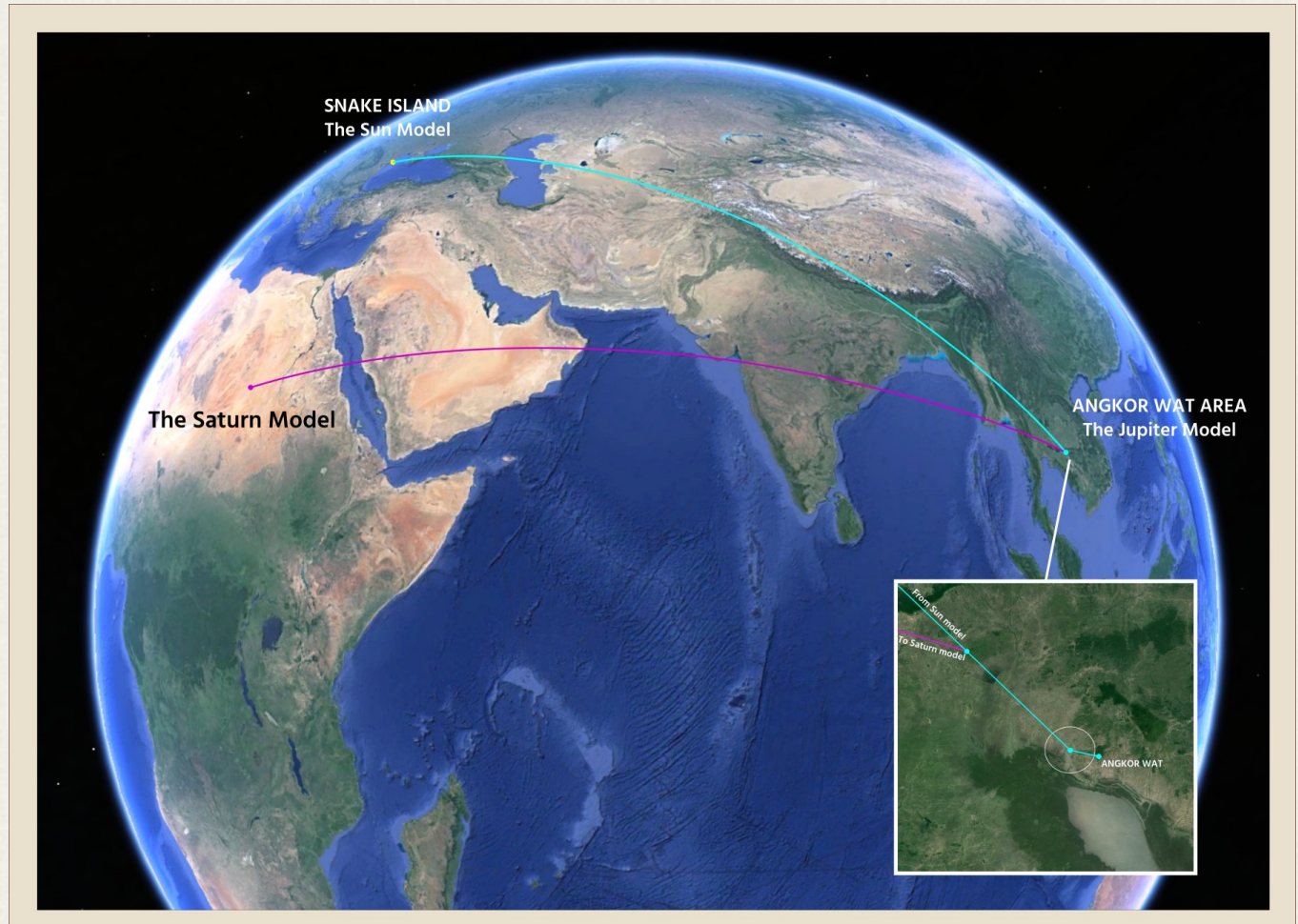


Diagram T0 - The relative range line between the models of Jupiter and Saturn

The inset illustration in diagram T0 shows the line to Saturn branching off from the location of Jupiter that was determined at the start of the previous paper³. The reason that there is no inset image showing the other end of the line where the Saturn model resides is that there is nothing constructed at this location nor are there any ground features that could help to distinguish a model from its surrounding desert area.

Investigation into the line that has just been drawn and the resulting location of Saturn, both of which are quantities that are derived from the accurate astronomy data and therefore cannot be changed in a major way, shows that that the outer solar system model and the inner solar system model interact with each other to give the Saturn line its complete definition. Diagram T1 shows the area of the Sudan and Saudi Arabia with the model of Mars from the inner solar system in Makkah marked onto the illustration and the inset image showing the lack of features at the location of the Saturn model.



Diagram T1 - The connection between the outer and inner solar system models at Makkah.

The line from Jupiter to Saturn does not just pass through the general area of the Mars model, it has to pass precisely through the GPS coordinate center of the Mars model and it is therefore possible to adjust the line's length, which then adjust the line's azimuth, so that the line and the Mars model center share a common point. In doing so the range difference between Saturn and Jupiter becomes perfectly defined and the astronomical data becomes disconnected from the modern DE431 data from which it was originally derived. The numerical data in the second paragraph of this paper is that of the fully calibrated system in which the Mars model has been used as the calibration point.

Diagram T2 shows the Jupiter to Saturn line passing through the center of the Mars model in Makkah with the details of the inner solar system model taken from the earlier paper also shown on the illustration for reference. There are now five solar system bodies connected at this location, The Sun and Mars connected via the blue line coming from the north, Jupiter and Saturn connected along the purple line running from east to west, and Venus which connects via the orange survey closure lines on the left of the diagram.



Diagram T2 - The line from Jupiter to Saturn passing through the Mars model in Mekkah.

With all previous planet models the long term average aphelion and perihelion distances have also been modeled on the system and the model of Saturn is no exception, although the manner of the modeling is different to that seen previously. The line length used in the construction is the *absolute* instantaneous periapsis distance of Saturn at the moment of the 2729 BCE winter solstice, scaled down by the model scale of 1:87500. The azimuth of the line however is taken from the instantaneous apoapsis distance relative to Jupiter then scaled down and the the angle calculated from the 365 pkm per radian ratio that is used throughout the solar system model. The line is therefore a hybrid line and is shown in diagram T3 starting at the Saturn model in Sudan and stretching 15471.102 pkm around the world at an angle of 161.11 degrees clockwise from east or an azimuth of 251.119077 degrees.

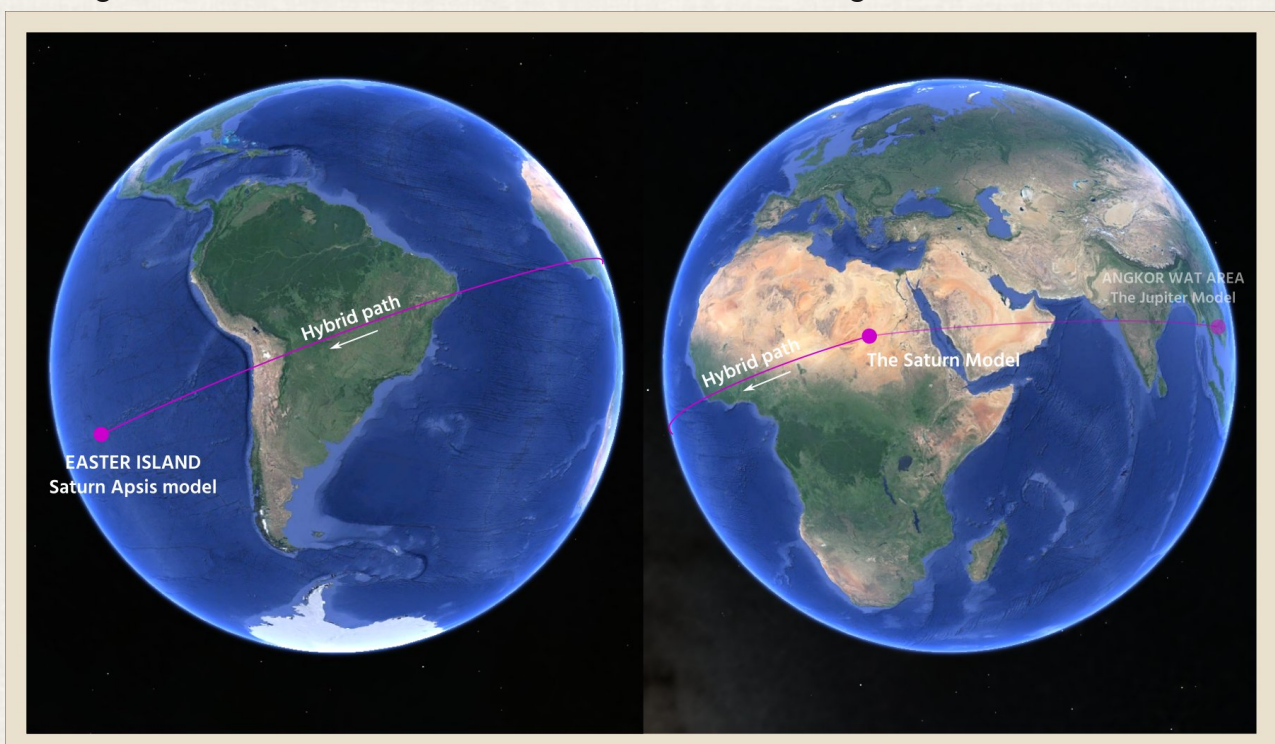


Diagram T3 - The hybrid apoapsis and periapsis line of the Saturn model.

The location of the end point of this line is entirely determined by the astronomy data and diagram T4 shows where it terminates on Easter Island.

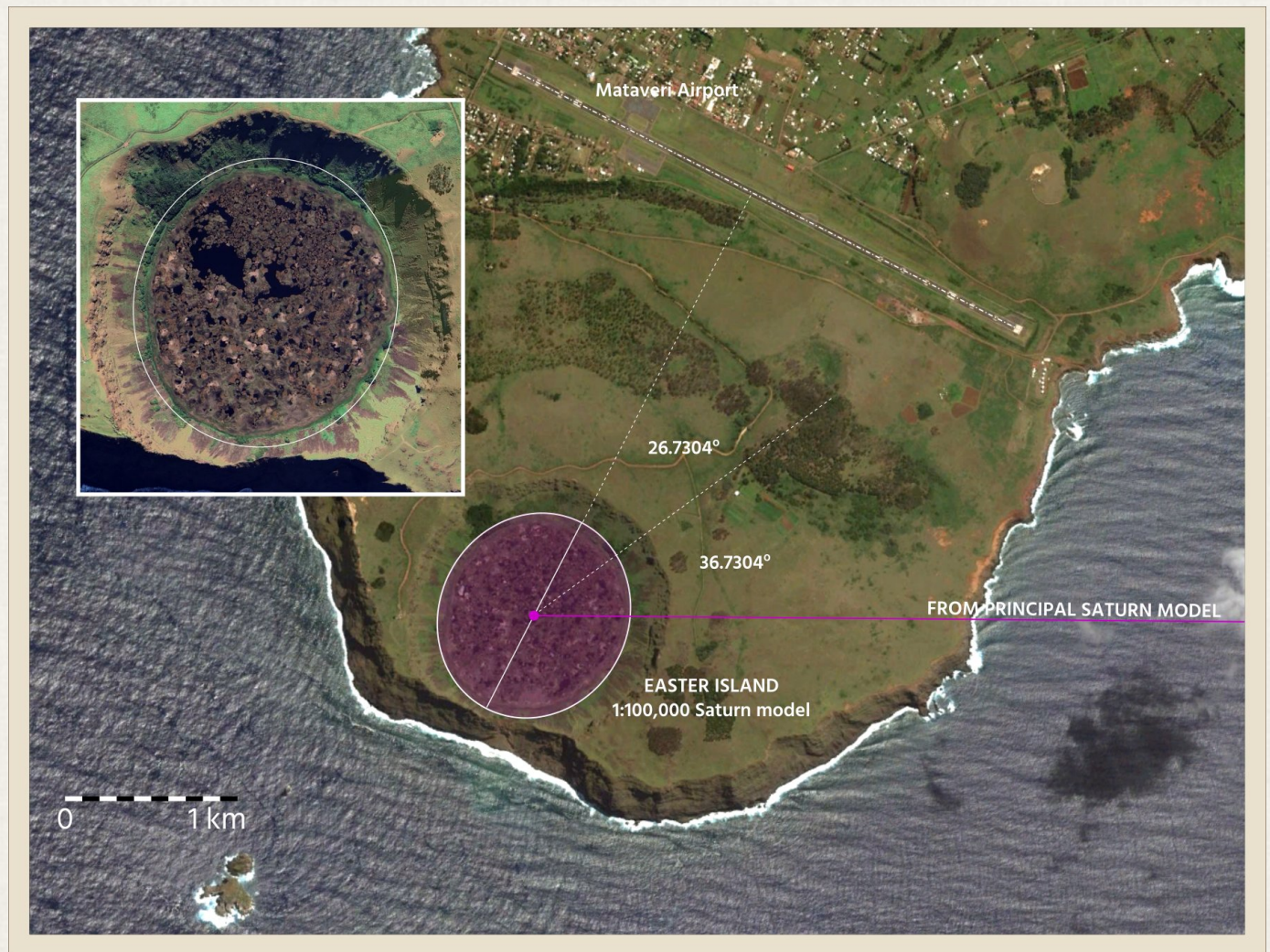


Diagram T4 - The hybrid apoapsis and periapsis line termination on Easter Island.

The line from the Saturn model location in north Africa is shown coming in from the east on the diagram and terminates at the center of what is currently thought to be a volcanic crater. This bottom of this crater is the same elliptical shape as Saturn (inset image) and is also a 1:100,000 scale model of the planet. The azimuth of the model's equator can be calculated precisely because it is perpendicular to the center line of the runway on Easter Island which is shown at the top of the diagram. The exact azimuth of the model's equator can be determined by accessing the pilot's data for the airport in which the GPS coordinates of both ends of the runway are given as $S27^\circ 9.48' / W109^\circ 26.20'$ and $S27^\circ 10.29' / W109^\circ 24.42'$. Plugging these values into a geodesic point to point calculator gives the runway heading as 117.22325507 degrees and therefore the azimuth of the equator line of the Saturn model is 27.22325507 degrees.

Because in previous models the azimuth of the equator and that of the inbound line have always been related the relationship between these two values for the Saturn model on Easter island was investigated and the solution to the angle between the two lines was solved. On the diagram the angle between the inbound line and the planet's equator line has been split according to the architect's design so that the upper angle is 10 degrees more than the lower angle, the upper angle being the obliquity of Saturn to its orbit. Because the inbound azimuth of the line from Sudan to Easter Island is known to a high level of precision then the obliquity of Saturn to its orbit can be specified to the same accuracy as the runway GPS coordinate measurements and is 26.73047196 degrees.

The alignment with the runway is noteworthy as this is the first time in the solar system model that the data being used by the architect's is explicitly modern data. Up to this point the use of modern data has

been implicit because of the use of GPS alignments at the start of the system, but the move to using specific modern information is significant. It is not possible to resolve the obliquity of Jupiter without reference to the airport data of Easter Island and therefore unless you understand the forward data access in the architecture and are prepared to use it in the solution you will make no more progress on solving the puzzle.

Because this modern data use is both novel in the design and also remarkable when viewed in a contemporary context, the very same system is used again in the next part of the solution to the Saturn puzzle to confirm that the alignment to the runway coordinates is not accidental. Having extracted the obliquity angle of Jupiter at Easter island the orbital inclination was then searched for during the research phase of the work, a value which is specified in the NASA data sheet as being 2.486 degrees. It was noticed that a perpendicular to the reverse azimuth of the line from the Jupiter model to the Saturn model came very close to Athens where the Mercury model is located in the inner solar system construction and through pursuing this line of enquiry the northern alignment branch of the Saturn model was uncovered as shown in diagram T5.



Diagram T5 - The northern alignment branch of the Saturn model to Athens.

The perpendicular to the Jupiter-Saturn line is shown with the white dashed line in the diagram and the purple line to the right of it is offset from it by the orbital inclination of Saturn 2.486 degrees. The length of the line that is required in the construction was deduced through analysis of the end point location and is 2000 pkm plus pi, or 2003.1415927 pkm. The reason that this length can be determined is that at the location now defined by the azimuth and length there is a clear marker point carved out of the hillside in Athens as shown in diagram T6.

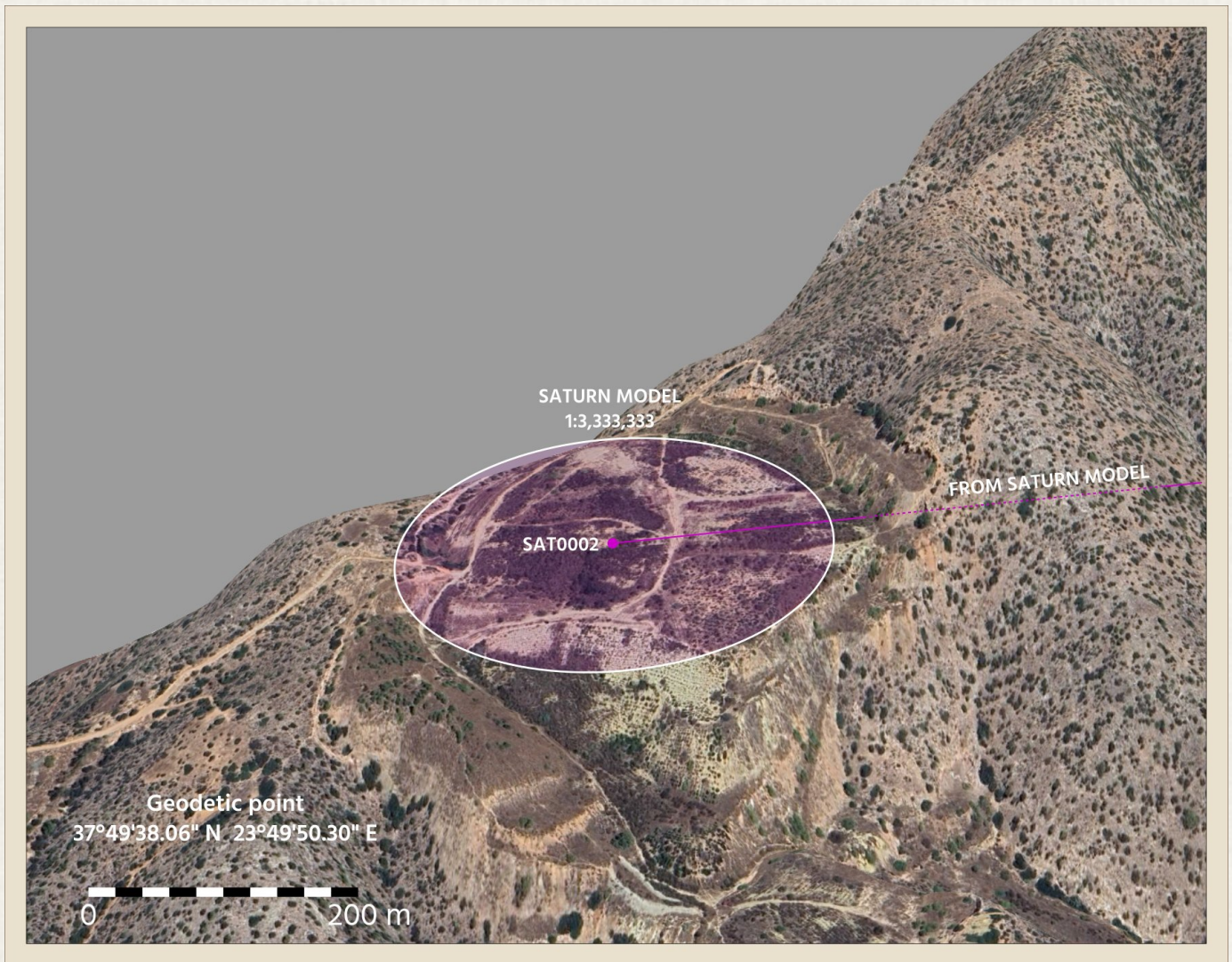


Diagram T6 - The northern alignment termination point in Athens.

In diagram T6 the vertical scale has been exaggerated by a factor of three so that the features on the hillside are easier to distinguish. The area has quite clearly been quarried with numerous features on the hillside showing un-natural angles and cuttings and the elliptical shape that is drawn onto the false plateau of the hillside is a one to 3.33333 million scale model of Saturn, centered on the geodesic point SAT0002 shown by the small purple circle. The manner of the alignment can be seen on a high altitude satellite photograph of Athens as shown in diagram T7.

In diagram T7 the geodetic location on the hillside is shown at the bottom, Athens airport is on the right and the center line of the runway is marked connecting the two. The inset image shows the airport in more detail with the end points of the runway 03L / 21R marked as purple dots and an extract from the airport's technical manual shown below. The runway end point GPS coordinates are shown in the table of data with runway 03L being 375525.24N 0235515.37E and that of runway 21R being 375648.14 0235634.21E the format of the numbers being degrees, minutes and seconds with the latitude format 'ddmmss' and the longitude format being 'dddmmss'. These points can be placed into a geodesic point to point calculator to get the azimuth of the runway from 21R to 03L and then the line extended until it passes through the hillside model of Saturn.

The calibration of the system is done by adjusting the azimuth of the line coming from the primary model of Saturn in the Sudan until the line, which has a fixed length of 2003.1415927 pkm, terminates on the runway's extension line. By calibrating in this manner the orbital inclination of Saturn can be determined as being 2.48526 degrees. The only limiting factor in the accuracy is the surveying of the airport runway's end nodes.

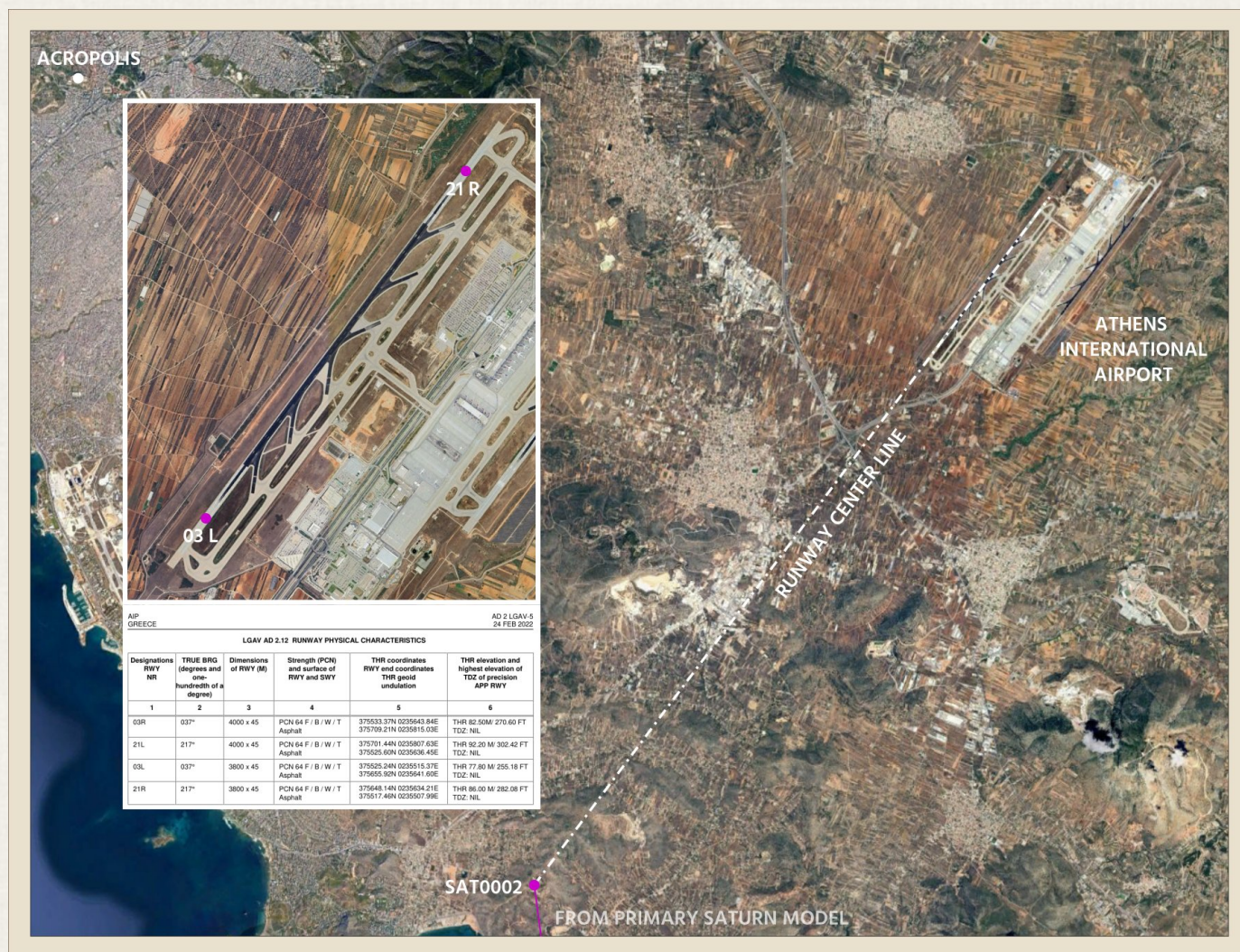


Diagram T7 - The alignment to the airport runway in Athens.

The primary purpose of this alignment is technical in that the orbital inclination of Saturn can be determined, but there is also the psychological aspect to be considered. The only way that the bearings can be solved is by completely accepting that at the time of construction of the ancient monuments the airport data of Athens International airport was accessible to whoever created the design system. The solution to the puzzle system therefore requires acceptance of this fact, without which no solution is possible.

In the top left corner of diagram T7 the location of the Acropolis is Athens is marked which is the location of the model of Mercury in the inner solar system model. Because the outer solar system model has already been shown to attach to the inner solar system model in Makkah the relationship between the Acropolis point and the hilltop model of Saturn was investigated further.

A model of Saturn at a scale of 2982.5731, that being the reciprocal polar flattening of the Earth's reference ellipsoid multiplied by ten, can be drawn around the hilltop point with its equator line set at an azimuth of Saturn's obliquity taken from the Easter Island model and the resulting elliptical cross section passes directly through the Theater of Dionysus at the foot of the Acropolis hillside, that being the exact location of the Mercury model shown in the earlier paper⁴. Diagram T8 shows this model of Saturn on a satellite image of the Athens area with the hilltop location, the airport runway center line and the inbound line from the model of Saturn in the Sudan all indicated on the diagram.

The details of the alignment to the Theater of Dionysus construction are shown in diagram T9 on which the additional geometry of the inner solar system Mercury model is not shown because the required reflection of the Saturn model at this location is so obvious from the carvings of the hillside that lie to the west of the model that the illustration is more informative without that geometry being shown.

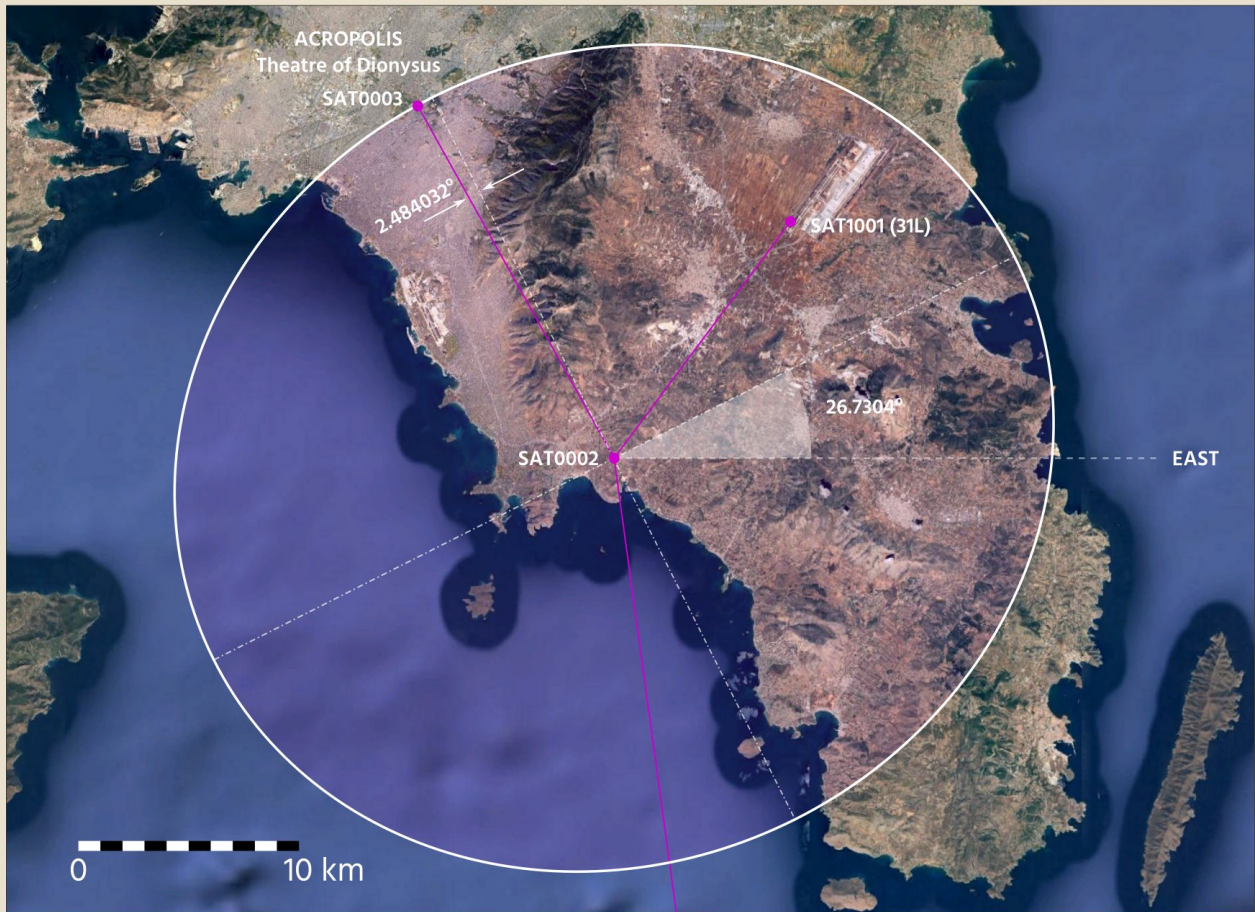


Diagram T8 - The 1:2982.5731 scale model of Saturn in Athens.

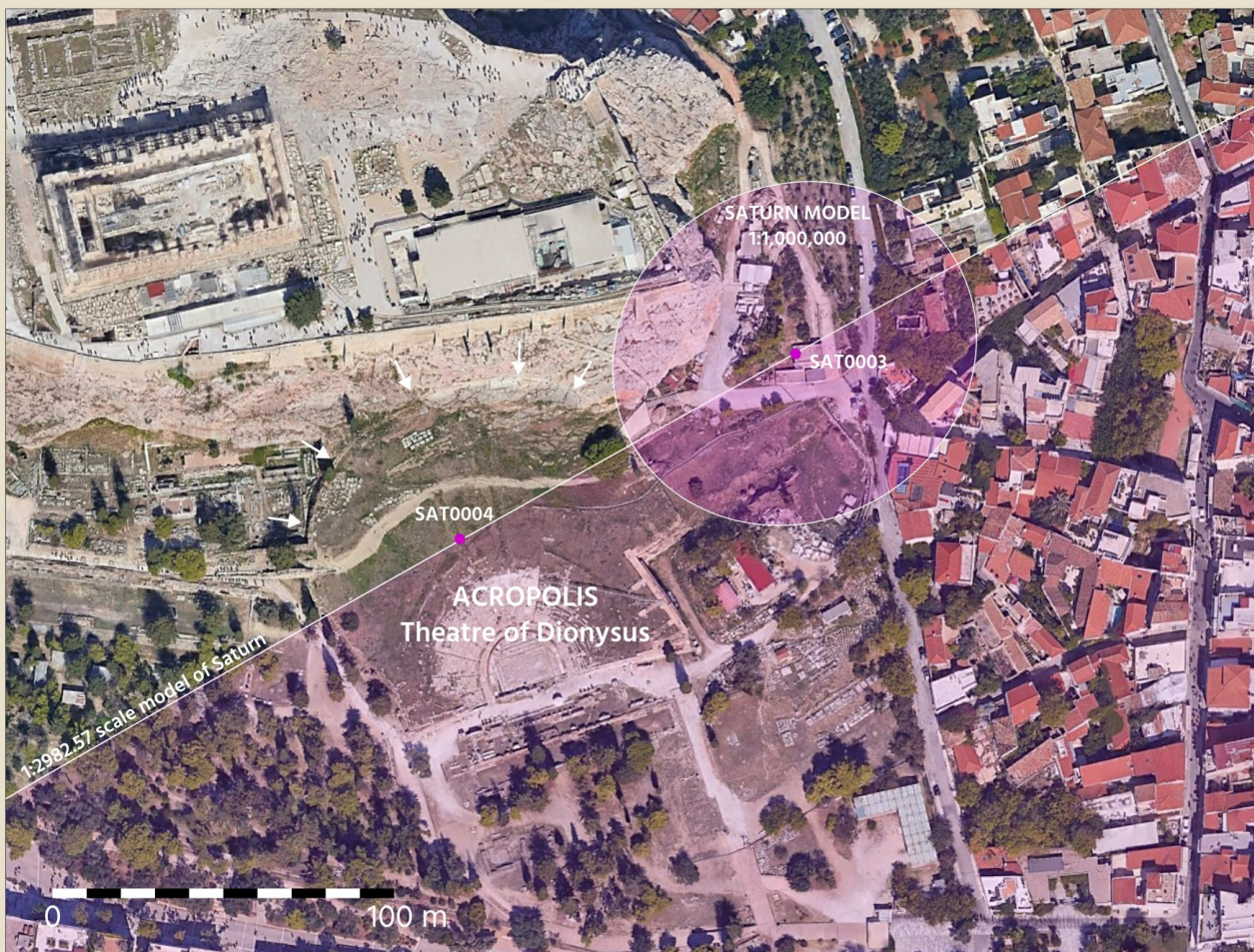


Diagram T9 - The model of Saturn at the Acropolis Theatre of Dionysus.

In diagram T9 a section of the 1:2982.57 scale model of Saturn is shown by the purple triangle like shape. The model of Saturn next to the Theater is a 1:1,000,000 scale model of the Planet and it aligns with the carved out section of the Acropolis hillside which was first shown in the earlier paper⁴ as being made up of two models of Mercury but which also doubles up as a model of Saturn. The point SAT0004 is equidistant with the point SAT0003 from the equator end point of the model and is the master alignment point that closes the surveying off with that of the Mercury system, the details of which are shown in diagram T10.



Diagram T10 - The survey closure points of the Saturn and Mercury models.

The end point of the Saturn geodetic system is located between the points MER0002 and MER0003 that were established in the earlier paper in this series. In order to calibrate the system so that the point SAT0004 falls on the line between the two Mercury points the only adjustment that can be made to the system is the relative range value of Saturn with respect to Jupiter that dictates the location of the primary Saturn model in Sudan. By increasing this value the orbital inclination changes very slightly because the Athens airport runway line is the alignment that dictates its value. The value shown in this paper of 2.48526 degrees for the orbital inclination is the fully calibrated value and the relative range of Saturn from Jupiter at the 2729 BCE winter solstice, after the calibration has been carried out, is 8134.444 pkm on the 1:87500 scale model of the solar system. The range of Saturn at the moment of the 2729 BCE winter solstice can then be calculated and is 1,521,274,237.46939 pkm.

In summary, the Saturn system starts near Angkor Wat in south east Asia, terminates at the Acropolis in Athens and uses Easter Island as one of its alignment points. The surveying data of the Sun, Mercury, Venus, Mars, Jupiter and Saturn are all connected together within the Saturn system and the alignments of the geodesic lines have to be computed with reference to the azimuths of two modern day airports. The overall solar system model is therefore now completely interlinked and the use of modern data in its construction confirmed beyond doubt.

Appendix

pm	Perfect meter. One 10 millionth of the distance from the North pole to the equator on the WGS84 reference ellipsoid of Earth. The conversion factor between meters and perfect meters is $1 \text{ pm} = 1.00019657308809 \text{ m}$
pkm	Perfect kilometer. 1000 perfect meters.

Tectonic plate movement

The geodetic calculations performed during the work for this paper were done on the Earth's WGS84 reference ellipsoid at the base date of Jan 14 2729 BCE with no tectonic plate movement applied to the points. On all diagrams in this paper all points on the geometric plots have had tectonic plate movement between the base date and the date February 26th 2018 applied to them using the mm/yr plate movements listed by the EarthScope Consortium on their interactive plate movement calculator (<https://www.unavco.org>) using the *terminating* point on each individual geodesic line as the reference coordinates for the plate movement that is applied to *both* end points of that line. The tectonic plate movement of Snake Island is taken from the inherent geometry of the model at that location.

Supplementary material

The data points and associated geodetic mappings for the inner solar system model are contained within a Google Earth application kml file. Each point in the file contains the high precision coordinates of the point as it was calculated by the software and a description of how the point and line from the previous location has been formed, listing both the numerical logic and the astronomical reference to which the point is associated. The file is available to download at the following URL:

<https://www.thegreatpyramidpapers.com/documents/kml/OuterSolarSystem.kml>

That kml file was produced on a piece of bespoke software which was designed and developed to create complex geodetic paths across the WGS84 reference ellipsoid specifically to solve the puzzle outlined in this and previous papers in the series. It was deliberately written in javascript to integrate into a webpage interface so that the underlying code could be examined. The fully functioning interface is available at the following URL:

<https://www.giza-plateau.com/PathCreator.html>

The file type that this programme uses is also bespoke and called '.gpf' or a Giza Pyramid File. Saved files can be loaded into the software using the available selection box on the webpage and the inner solar system model is available in this list under the name 'Inner solar system'. The interface also includes the ability to load any of the previously saved individual locations listed on the inner solar system model into the starting point of a new path, allowing the user to create new path systems and investigate further into the subject.

The calculations for the solar system model's astronomy were performed in a spreadsheet which is provided as supplementary material for reference and cross checking purposes

https://www.thegreatpyramidpapers.com/documents/ods/Solar_system.ods

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