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New Digital Reconstruction of Ptolemy's Iran, Afghanistan, Turkmenistan, and Balochistan

Keywords: Claudius Ptolemy, ancient geography, GIS analysis, historical cartography, georeferencing

Summary: Claudius Ptolemy's 'Geography' is widely recognized as a monumental achievement of Hellenic science and a major cornerstone at the foundation of the science of geography. We present new results of our multi-year Universe of Ptolemy project founded by Lyudmila Filatova that involves georeferencing and visualization of data from Ptolemy's magnum opus. We have further extended the previously developed data set of more than 2,600 translations of the ancient coordinates of Ptolemaic objects to the modern coordinates visualizable in modern GIS tools, such as ArcGIS and Google Earth, to bridge the gap in the reconstruction between The Fertile Crescent and Arabia on the west and India on the east. This was accomplished by processing Ptolemy's data for 14 ancient provinces stretching from Assyria and Susiana along the modern Iran-Iraq border all the way to Paropanisadae, Arachosia, and Gedrosia that lie along the modern Afghanistan-Pakistan and Iran-Pakistan borders. Our new work presented in this paper adds 450+ new points to the expanding body of georeferenced coordinates. The paper is intended for researchers of history of cartography, archaeologists, and the members of the general public interested in the distant past of the modern Iran, Afghanistan, Turkmenistan, and Balochistan.

Introduction

This paper presents the new results of our multi-year "Universe of Ptolemy" project founded by the late Lyudmila Filatova. The project is devoted to studying the works of Claudius Ptolemy, a famous Hellenic researcher who helped lay the foundations of two modern scientific disciplines — astronomy and geography. It is believed that Claudius Ptolemy lived and worked in Alexandria, Egypt, in the 2nd century AD. His seminal *Geography* (*Geōgrafikē Yfēgēsis*) provided the coordinates of 6300+ ancient objects, such as cities, citadels, altars, temples, harbors, mountains, capes, bays, lakes, river sources, bends, confluences, mouths, etc. Livieratos (2006) established the need for "a rigorous revisiting of Ptolemy's representations, especially the regional tabulae, in terms of georeferencing." Other relevant publications will be referenced and briefly described in the next section devoted to the literature review. In this work, we have extended the previously developed data set of more than 2,600 translations of the ancient coordinates of Ptolemy's objects to the modern coordinates to bridge the gap between The Fertile Crescent and Arabia on the west and India before the Ganges on the east. We accomplished this new result by processing Ptolemy's data and the accompanying descriptions for 14 ancient provinces stretching from Assyria and Susiana that span the modern border of Iran and Iraq to Paropanisadae, Arachosia, and Gedrosia situated along the modern Afghanistan-Pakistan and Iran-Pakistan borders. Our new work presented in this paper adds

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450+ new points to the growing body of georeferenced coordinates that can be visualized using modern projections in such widely available GIS tools as ArcGIS and Google Earth.

The third section of the manuscript describes the newest modification of our hybrid human-machine methodology that combines traditional research techniques with modern approaches to GIS analysis, while making good use of the results of our prior work. The resulting reconstruction map of Ptolemy's Iran, Afghanistan, Turkmenistan, and Balochistan is presented in the fourth section of the paper, along with some identifications of ancient objects of particular interest, such as Aria Lake. In the final section, we draw conclusions and outline the perspectives for future research.

Literature Review

The main critically important source for our work is the modern German translation of Ptolemy's *Geography* by Stückelberger and Grasshoff (2006). The multi-volume treatise comes with an electronic database of coordinates of Ptolemy's objects complete with a well-developed system of unique name IDs, which we have been using as well. The book also contains an authoritative Greek version conveniently printed side by side with the translation. Stückelberger and Grasshoff suggest modern names for many of the Ptolemy objects listed in the database. Many of these suggested identifications came from the classical Latin translation of *Geography* by Müller (1883-1901). That old book is also useful, but numerous significant archaeological discoveries were made and, moreover, a few modern toponyms have been changed since its publication.

To pick the best English counterparts possible for the German names of Ptolemy objects, we consulted with two complete English translations of Ptolemy's *Geography* by Sanducci (Ptolemy 2024) and Stevenson (Ptolemy 1991), the latter of which is known to be of subpar quality (Diller 1935). We have adopted Hellenic-style names for most objects, with few exceptions made for famous toponyms, while iteratively improving upon our previous solution (Filatova et al. 2009) that was developed using imperfect data from Stevenson's translation. For eight of the fourteen provinces covered — Hyrcania, Margiana, Bactriana, Aria, Paropanisadae, Drangiana, Arachosia, and Gedrosia, — we accepted some of the suggestions from the partial English translation by McCrindle (1927). The scope of our work also included Assyria, Media, Susiana, Persia, Parthia, and Carmania (complete with Carmania Deserta, where only two objects with coordinates are mentioned). Berggren and Jones (2000) published an English translation of the theoretical chapters of *Geography* accompanied by a nearly complete reconstruction of Ptolemy's Gallia (Celtogalatia). Diller (2009) translated Book 8 of *Geography* into English. The "GeoPtolemy-0" catalog (Tsorlini 2011) provides the results of analyzing information about 3200+ objects covering Ptolemy's Mediterranean and Black Sea region.

Our earlier publications were devoted to GIS analysis, georeferencing and mapping of Ptolemy's India before the Ganges and Taprobane (Abshire et al. 2016), the "Fertile Crescent" comprising Judaea Palestina, Syria, Mesopotamia, and Babylonia (Abshire et al. 2017, 152–167), Britain and Ireland (Abshire et al. 2017), India beyond the Ganges, Serike and Sinae (Gusev & Stafeyev 2018), West Africa (Filatova et al. 2019), Arabia (Abshire et al. 2020),

and East Africa (Gusev & Stafeyev 2023). We have also framed the results of our project in the context of other significant ancient and medieval cartographic sources, such as *Tabula Rogeriana*, *Tabula Peutingeriana*, Hellenic Ptolemaic maps, and the Alfonsine tables (Gusev & Stafeyev 2021) and *The Mas'ud Canon* by Abu Rayhan al-Biruni (Gusev & Stafeyev 2024).

Barrington Atlas of the Greek and Roman World (Talbert 2000) is an authoritative source of information on ancient sites. Representative coordinates of many objects from Ptolemy's *Geography* can be found in the Digital Atlas of the Roman Empire (DARE) by Åhlfeldt (2020) and/or Pleiades, a gazetteer and graph of ancient locations edited by Bagnall and Talbert (2025). Some of those coordinates were corrected by us as necessary. Other sources that helped localize Ptolemy objects in the region of interest were (Potts 2011) and (Naderi et al. 2014).

Tobler (1966) pioneered application of numerical methods to georeferencing of old maps to relate the medieval Hereford map to an oblique Mercator projection. Strang (1998) warped modern map contours to superimpose them over Ptolemy's points in Britain. Manoledakis and Livieratos (2007) developed the *azimuth method* for approximate georeferencing of Ptolemy objects based upon transferring Ptolemy's azimuths into the modern projection. Literature reviews included in our works mentioned above reference many other sources on GIS analysis and georeferencing of ancient maps.

Methodology

We would like to state up front that the main change in methodology compared to our prior digital reconstructions is due to our understanding that Abu Rayhan al-Biruni, a famous scientist from Central Asia who wrote in the 11th century AD, knew the region of interest (the modern Iran, Afghanistan, Turkmenistan, and Balochistan) very well, as we reported last year (Gusev & Stafeyev 2024). This meant that we could leverage our reconstruction of al-Biruni's map from *The Mas'ud Canon* to improve our understanding of Ptolemy's map of the same area, given that al-Biruni expressed great respect of Ptolemy and mentioned Kalawziyah (Ptolemy's *Klaudias* in Cappadocia, ID 5.07.09.05, a town near the modern Kalaba in Turkey possibly flooded by a modern reservoir) as Ptolemy's birthplace.

Another specific feature of our methodology that proved important here and that we never described before involved using the so-called "washed relief" (SRTM) in addition to the standard ArcMap layers and Google Earth satellite imagery. STRMs were acquired from the geodatabase data of the licensed disks supplied with the software product by ESRI, as well as from freely distributed relief, infrastructure, and other data on the Internet. They came in the GeoTIFF format (Open Geospatial Consortium 2019), Polish format, etc. and helped us detect riverbeds and lakes covered with sand of deserts such as the Karakum Desert.

In our prior publications, we demonstrated the advantages of working with Ptolemy's coordinates directly, in addition to comparing old and modern maps and performing online searches for modern toponyms similar to ancient object names, with subsequent verification of the

finds. The known objects from Ptolemy's *Geography* can serve as reference points that help us locate and identify some of the previously unknown objects. We consult with Ptolemy's object descriptions and pay attention to the tribe names that he mentions as well.

What can go wrong? The negative factors that hamper our ability to pinpoint the correct modern locations of ancient objects are the source distortions, data compilation errors responsible for the duplicates abundant in the Ptolemy database, and discrepancies between different editions of *Geography*. The latter factor was previously shown to be a separate noise component hard to quantify in relation to Ptolemy's own errors (Dilke 1987), some of which he may have inherited from his predecessor, Marinus of Tyre (c. AD 70–130). We will discuss the impact of the adverse factors on the quality of identifications in the next section.

We proposed two methods of placing the unknown points approximately in the modern coordinate system starting with the coordinates of the nearby known reference points in (Abshire et al. 2016) and (Abshire et al. 2020). These two methods were based upon Delaunay triangulation of a spherical surface (for the unknown points surrounded by the known ones) and flocking with Bayesian correction (for the rest of the unknown points). The human-machine *method of constellations* previously used by Filatova et al. (2009) was like the azimuth method by Manoledakis and Livieratos (2007), but less stringent. It involved selecting groups of points in ArcGIS, moving them collectively, rotating and scaling them to match the known points, while placing the unknown ones from the same group approximately. When known points weren't recognized as such, the errors of their approximate placement by the method of constellations reached the values of ~70 km for Ptolemy's *Pasakartia* (Pasargadae in Parthia/Iran) and even ~300 km for his *Sitiphi colonia* (Sitifis in Mauretania Caesariensis, Sétif in the modern Algeria). The results of leave-one-out precision analyses for the triangulation and flocking methods were published in (Abshire et al. 2016), (Abshire et al. 2017), and (Abshire et al. 2020). We showed that predictive precision varied province-to-province depending on how well Ptolemy knew a certain province and how many objects we were able to identify in it and nearby.

Abshire et al. (2020) classified the Ptolemy points into four categories: *known* points, *tentatively identified* points, *unknown* points (placed approximately), and *duplicates*. We continue to use this classification and include a table of known and likely duplicates in Ptolemy's Iran, Afghanistan, Turkmenistan, and Balochistan in Appendix A at the end of the paper. We have identified 31 pairs and 4 triples of duplicates.

In the current project, as before, our first step was to identify and georeference as many Ptolemy objects as possible. The known objects became our reference points for subsequent work. The second step was to place approximately the objects that could not be georeferenced on the first step. The third step involved tentative or certain identification of some of the Ptolemy objects that were placed approximately. That's when our prior identifications of al-Biruni's objects from *The Mas'ud Canon* came in handy. If any new objects were identified with certainty, then the second step would have had to be revisited if there were any objects left to be placed approximately. In the end, the objects still placed approximately ("unknown") were mostly mountains and boundary marks. We will present the reconstruction maps, along with

discussion of some difficulties encountered and some noteworthy identifications of Ptolemy objects in the next section of the paper.

The Reconstruction Maps and Identifications

Figure 1 shows our general view map of Ptolemy's Iran, Afghanistan, Turkmenistan, and Balochistan produced using ESRI's ArcGIS. Figures 2-5 provide more detailed maps of the four corners of the region developed in ArcGIS. The tables of modern coordinates for Ptolemy's objects located in the modern Iran, Afghanistan, Turkmenistan, and Balochistan can be found in Appendix B at the end of the article. They are grouped according to the ancient provinces they belonged to.

We would like to begin our discussion of identifications with the provinces that proved to be the hardest ones to handle — Aria and Margiana. Arians lived along *Areios River* (the modern Hari River) and its tributaries. Their neighbors in Margiana lived along *Margos River* (the modern Murghab River) and its tributaries, such as its nameless left tributary easily identified as the modern Kushk River (Daryā-ye Koshk). *Saripha Mountains* (Selseleh-ye Safid Kūh, badly misnamed “Paropamisus Mountains”) separated Aria from Margiana. *Areios River* had one of its two sources located in *Saripha Mountains* (that's Darah-ye Karukh). Its other source was in *Paropanisos Mountains* having an angular shape and being readily identifiable thanks to the known locations in the adjacent Paropanisadae province, such as *Kabura* (the modern Kabul). The *Paropanisos mountains* are shown in Figure 6. Now, *Areios River* terminates in *Aria Lake*. Figure 7 illustrates a hypothesis made by one of our early predecessors (Butler 1907). The cartographer sought an existing Aria Lake south from Saripha Mountains, in line with the coordinates given by Ptolemy, and for this purpose “changed” the direction of the *Areios River*! But the actual Hari River flows north through the eastern part of Kopet Dag mountains and makes it to Turkmenistan, where it is called Tejen River. Then it gets lost in the Karakum Desert, and so does the Murghab River, which used to be the tributary of *Oxos River* (Amu Darya, Uzboy).

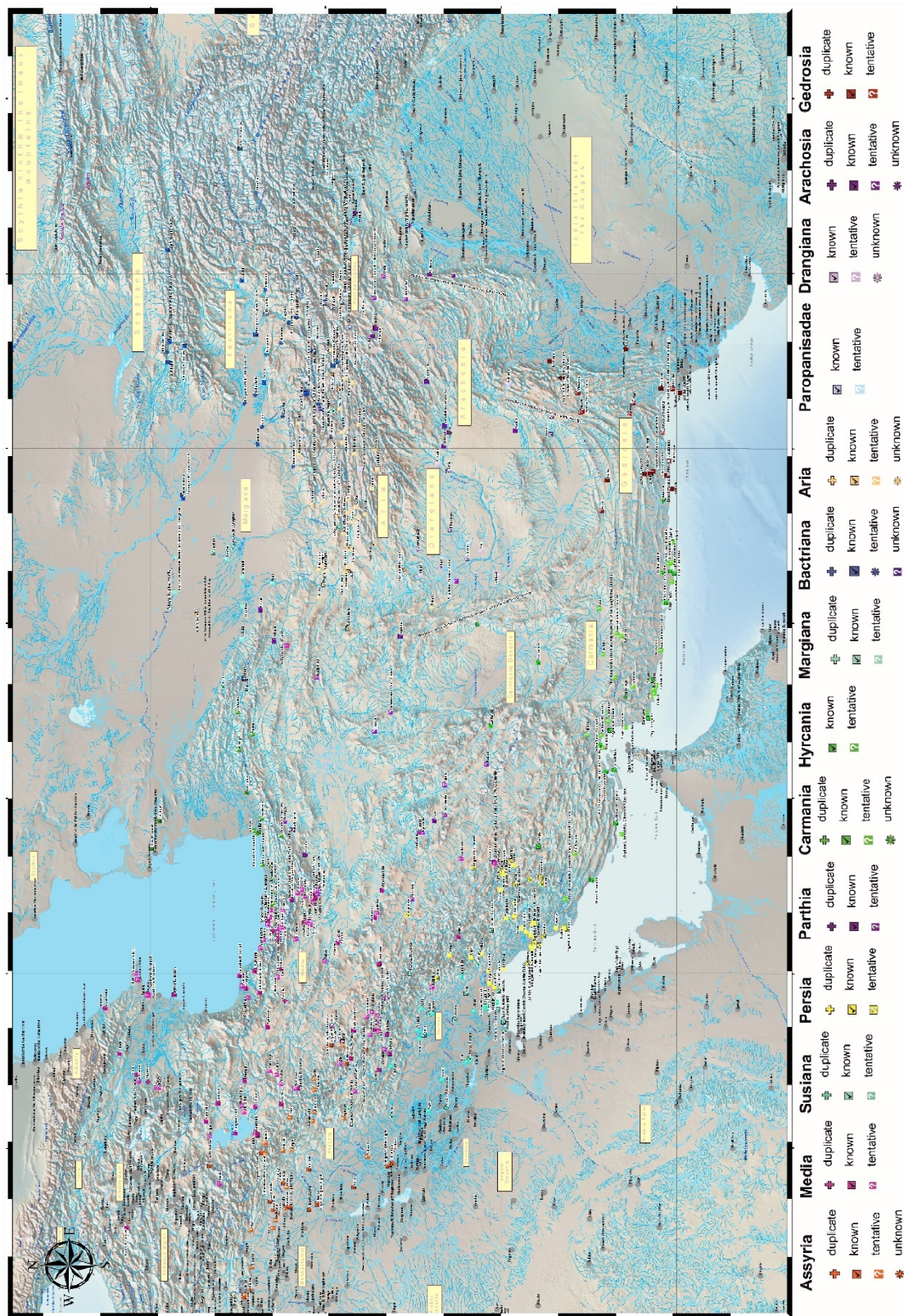


Figure 1: Ptolemy's Iran, Afghanistan, Turkmenistan, and Balochistan visualized in ArcGIS.

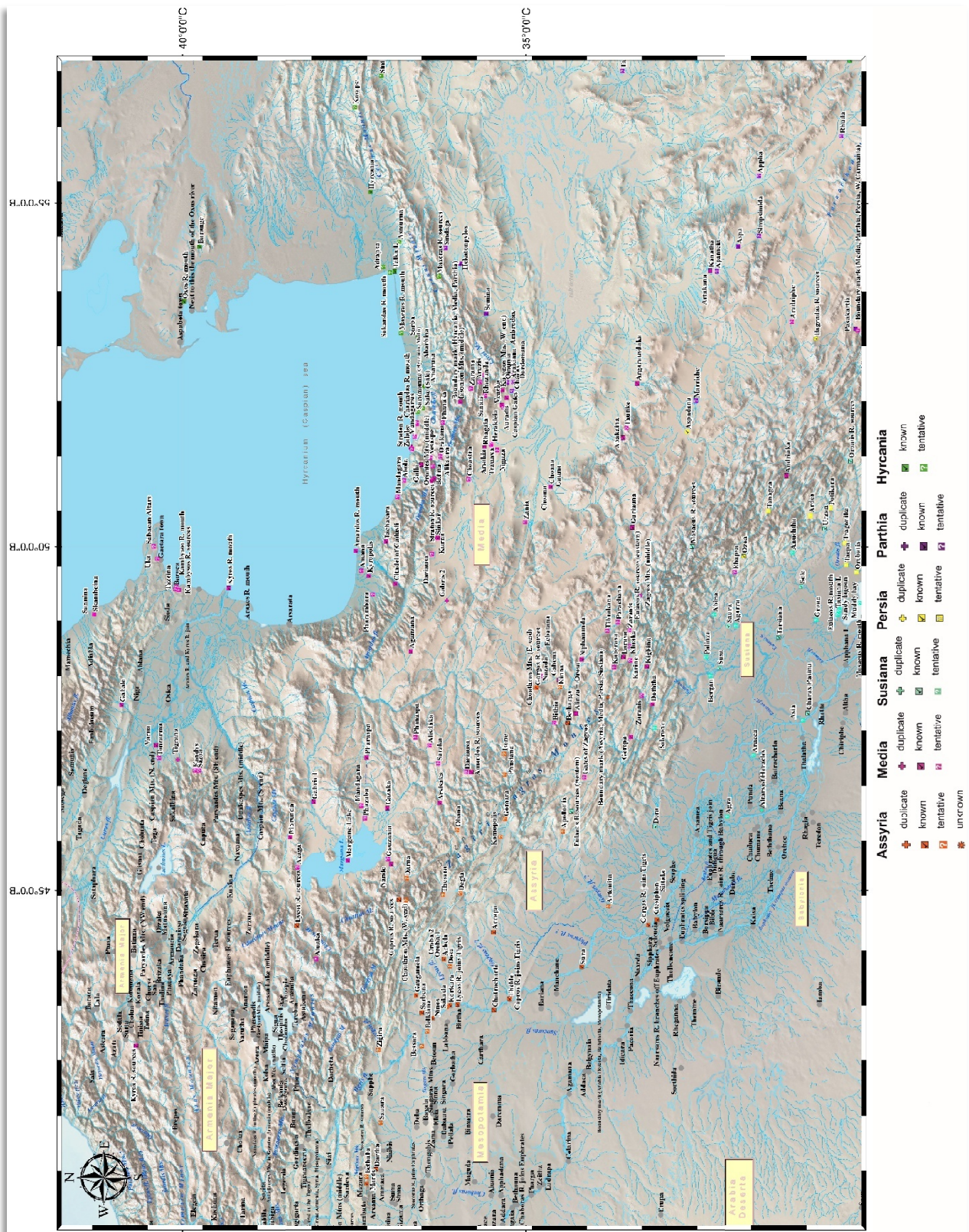


Figure 2: The northwest corner of the region visualized in ArcGIS.

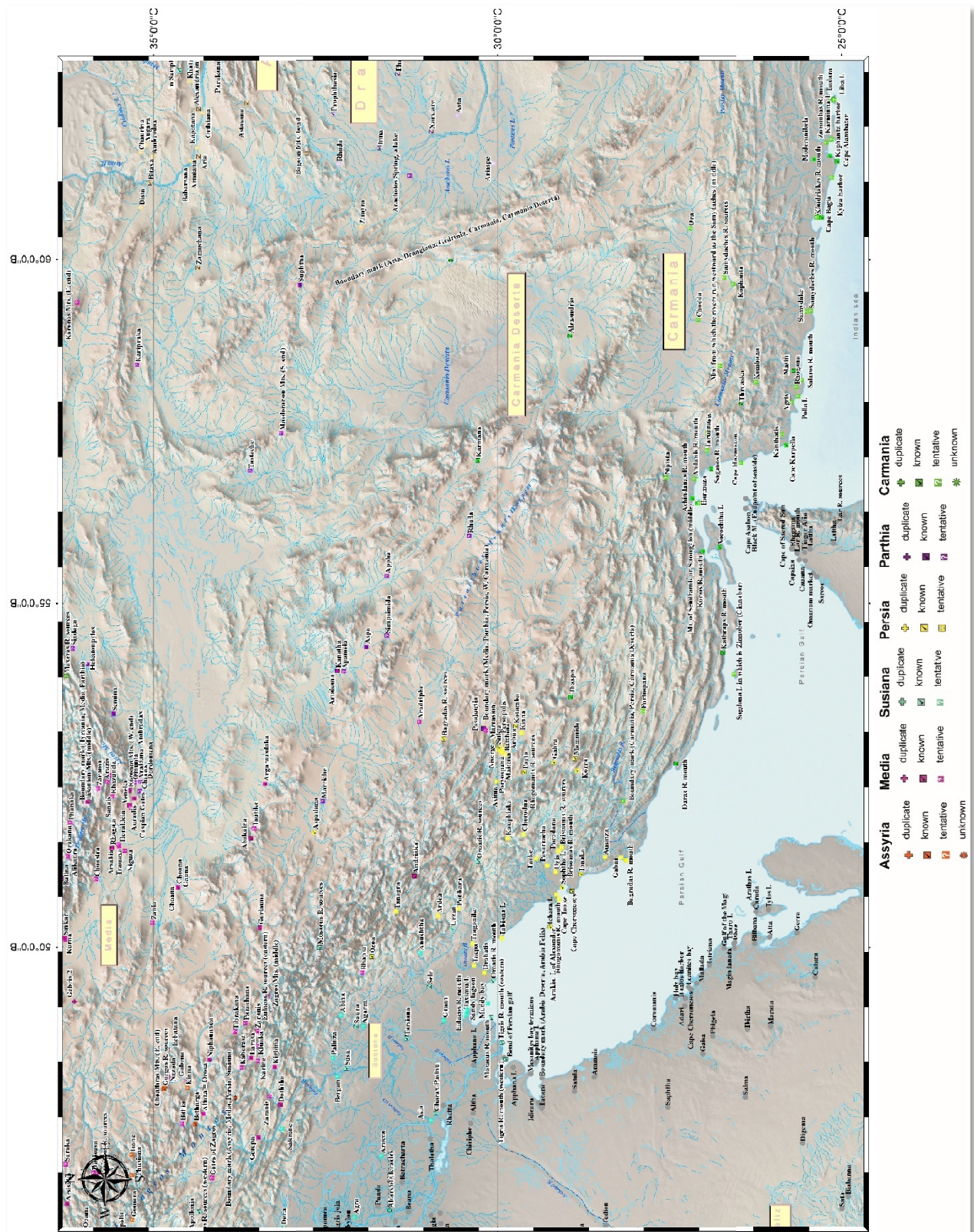


Figure 3: The southwest corner of the region visualized in ArcGIS.

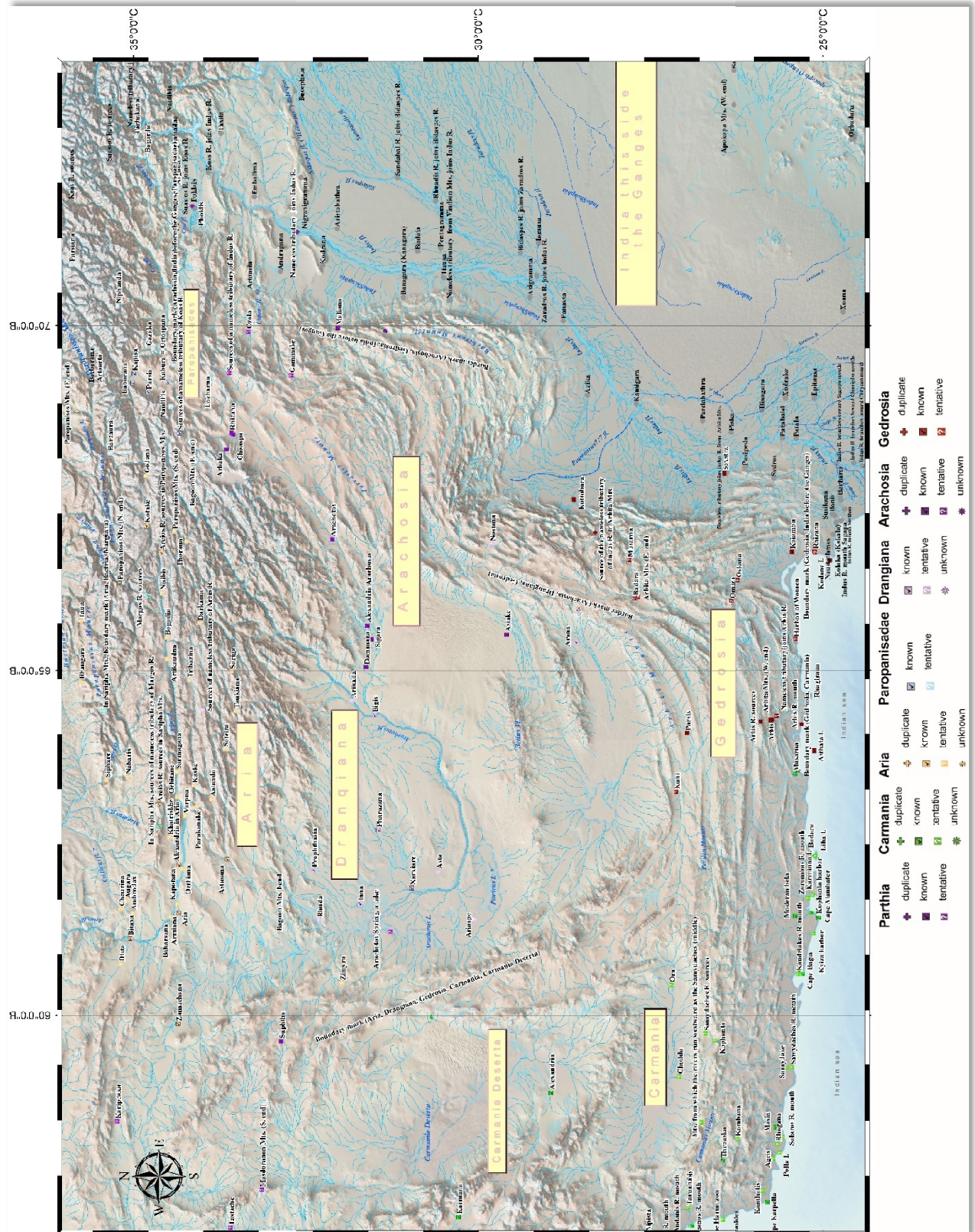


Figure 4: The southeast corner of the region visualized in ArcGIS.

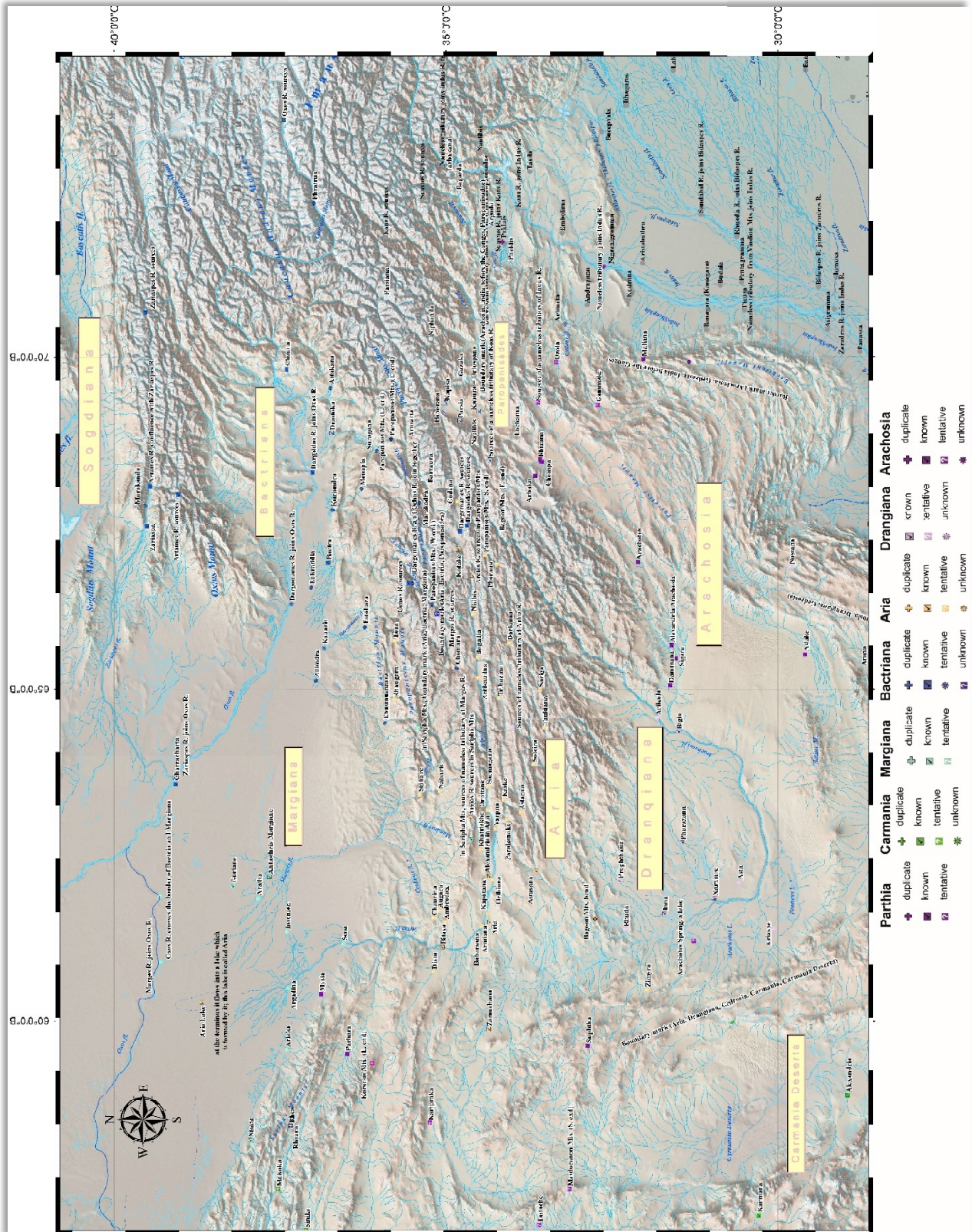


Figure 5: The northeast part of the region visualized in ArcGIS.

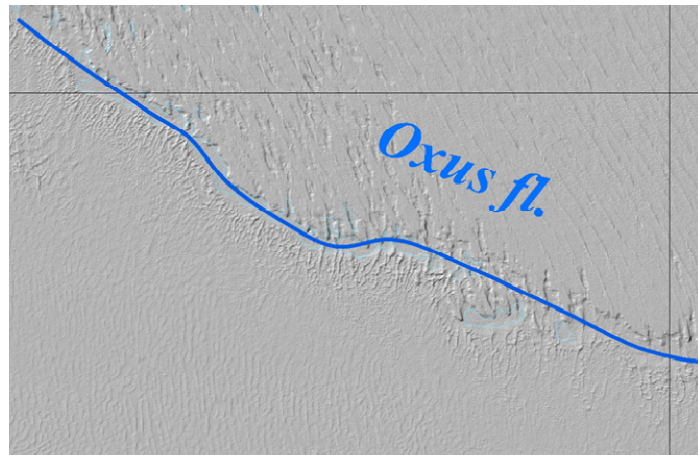


Figure 8. Restoring the route of the ancient *Oxos River* (Amu Darya, Uzboy).

In this manner, we have completely reconstructed the entire river valley and seen the present-day Amu Darya complete with its paleo-branch. We likewise determined the shape of the *Margos River* and found its confluence with the *Oxos* paleo-branch. We traced the course of the *Areios River* as it disappeared in the sand. Here we used Google Earth in addition to the “washed relief” and found out that along the *Areios River*, which also used to flow into the *Oxos* with one branch in the past (but not necessarily in Ptolemy’s time), there was a meridionally elongated group of small lakes, one of which we call *Aria Lake* in Figure 9.

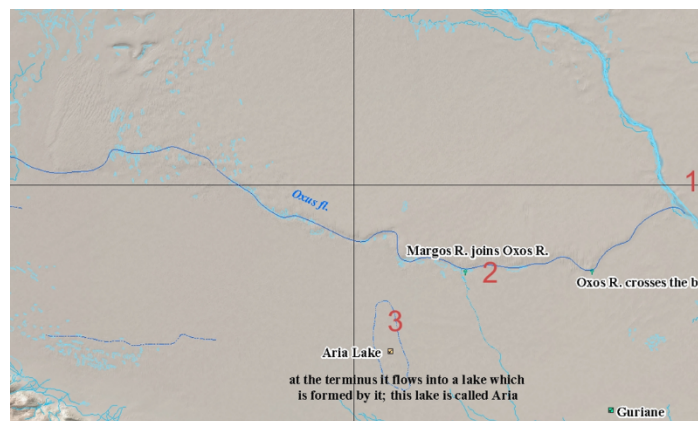


Figure 9. *Aria Lake* and the confluence of the ancient rivers *Margos* and *Oxos*.

This result brought us to the conclusion that coordinates of Ptolemy objects in Aria are particularly untrustworthy and one must rely primarily on their names.

We wrote previously about clusters linked to duplicates that we had encountered in Ptolemy’s West Africa (Filatova et al. 2019) and the Fertile Crescent (Abshire et al. 2017, 152–167). In Media and Parthia, we strongly suspect presence of three clusters associated with *Arsakia*, *Europos*, and *Rhagaia*, all of which correspond to the modern Iranian city of Rey. Indeed, we see two occurrences of *Gabris*, the first of which is definitely Tabriz (a γ read instead of a τ). The second *Gabris* is likely also Tabriz, just from another cluster. Likewise, there are two instances of *Choana*, both of which we take to be Qom, and one *Gauna*, which we are less certain about.

Another noteworthy achievement was that we traced Ptolemy's *Bagradas River* that served as border between Persia and Carmania. The modern Mand River (also called Mond River) was formerly considered a separate river in its upper reaches and called Kara-Aghaj there. We take that old name to be a form of *Bagradas*. Ptolemy places the sources of the *Bagradas* not far from *Pasakartia* (Pasagardae), where Sivand River flows. Sivand River is a tributary of Kor River, which ends in Bakhtegan Lake that recently dried up because of Iranian hydro projects. We found the location where Bakhtegan Lake used to overflow (see Figure 10). From there, the water flowed past Ptolemy's *Thaspis* (the modern Fasa) and into the Mand River via a tributary.



Figure 10. The place where *Bagradas River* used to flow out of Bakhtegan Lake (Google Earth).

Conclusions and Future Work

We have presented a new digital reconstruction of Ptolemy's map of 14 ancient provinces that comprise the modern Iran, Afghanistan, Turkmenistan, and Balochistan. This achievement closes the gap between our earlier reconstructions of Arabia and the Fertile Crescent in the west and India in the east. The results obtained thanks to a modified methodology leveraging our prior reconstruction of al-Biruni's map from *The Mas'ud Canon* help improve understanding of how human civilization progressed in the region and of how much the ancient geographers knew about it. We are planning our next reconstruction to be an improved version of Ptolemy's India and Taprobane.

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Appendix A. Table of Known and Likely Duplicates

Table 1. Known and likely duplicates in Ptolemy's Iran, Afghanistan, Turkmenistan, and Balochistan.

<i>Ptolemy ID 1</i>	<i>Ptolemy Name 1</i>	<i>Ptolemy ID 2(/3)</i>	<i>Ptolemy Name 2(/3)</i>	<i>Modern Name(s)</i>
6.01.03.04	Sauara	5.18.10.08	Sararra (in Mesopotamia)	Gürkaynak
6.01.05.06	Arbela	6.01.03.09 / 6.01.04.08	Oroba / Oroba	Erbil
6.01.06.04	Bethura	6.02.15.03	Betharga (in Media)	Bisotun
6.02.01.04	Sannina	6.02.08.02	Skambeina	Sarvan (Al-Biruni's Shirvan)
6.02.01.09	Kyros R. mouth	5.13.03.02	Kyros R. mouth (in Great- er Armenia)	Kura R. mouth
6.02.01.10	Kyros R. sources	5.10.06.05	Zadris (in Kolchis)	Kura R. source
6.02.04.06	Koronos Mts. (E. end)	6.05.01.04	Koronos Mts. (E. end) (in Parthia)	Küh-e Chehel Ghâr (2518 m)?
6.02.08.03	Gabale	5.12.06.04	Chabala (in Albania)	Qabala archaeological site
6.02.08.04	Uka	5.12.05.06	Baruka (in Albania)	Baku (Al-Biruni's Bakuya)
6.02.08.07	Gabris	6.02.10.08	Gabris	Tabriz (Tebriz) / Abhar?
6.02.09.04	Tigrana	5.13.22.07	Tigranoama (in Greater Armenia)	Tigranakert archaeological site
6.02.11.08	Alinza = Orosa	6.02.13.03	Alinza	Harsin
6.02.14.05	Choana	6.02.16.02 / 6.05.03.09	Gauna / Choana (in Par- thia)	Qom / Qanavat? / Qom
6.02.16.01	Arsakia	6.02.17.02 / 6.05.04.06	Europos / Rhagaia (in Parthia)	Rey
6.02.18.05	Kanatha	6.05.04.04	Artakana (in Parthia)	Ardakan
6.03.04.03	Altars of Heracles	5.18.01.07	Altars of Heracles (in Mesopotamia)	Tall Lû, Girsu Tello archaeo- logical site
6.03.04.04	Agra	6.03.04.05 / 6.03.05.07	Aracca / Agarra	Aggar? / Raash? / Langar (Longor)?
6.04.01.08	Bagradas R. mouth	6.04.02.10	Bagradas R. mouth	Rûdkhāneh-ye Mand mouth
6.05.02.02	Ambrodax	6.17.05.02	Ambrodax (in Aria)	Aradan / Āsyā-ye Bādak (Asia Badak)?
6.05.02.05	Rhoara	6.10.04.05	Rhea (in Margiana)	Rahvard
6.05.03.08	Armiana	6.10.01.07	Aria (in Aria)	Ghourian (Ghōriyān)
6.08.02.06	Boundary mark (Gedrosia, Carmania)	6.08.10.01	Boundary mark (Gedrosia, Carmania)	Patan Maiski Koh?
6.08.09.02	Kophanta harbor	6.08.14.05	Kophanta	Gavāter (Gowatr) / Fanuj (Fannūj)?
6.08.09.04	Badara	6.21.05.03	Badara (in Gedrosia)	Gwadar / Phadden (Phadan)?
6.08.09.05	Musarna	6.21.05.04	Musarna (in Gedrosia)	Miski? / Khuzdar (Al- Biruni's Kuzdar)?
6.09.02.06	Oxos R. sources	6.11.01.10	Oxos R. sources (in Bactriana)	Amu Darya R. source (Lake Zorkul)
6.11.05.01	Paropanisos Mts. (W. end)	6.17.01.13	Paropanisos Mts. (N. end) (in Aria)	Same Ptolemy coordinates, placed approximately
6.11.05.02	Paropanisos Mts. (E. end)	6.17.01.14	Paropanisos Mts. (E. end) (in Aria)	Placed approximately
6.18.04.04	Baborana	7.01.43.02	Barborana (in India be- fore the Ganges)	Charikar (Al-Biruni's Par- wan)
6.18.04.07	Drastoka	7.01.43.05	Drastoka (in India before the Ganges)	Qunduz (ancient Drapsaka, Al-Biruni's Walwalij)
6.18.05.01	Naulibis	7.01.44.05	Naulibis (in India before the Ganges)	Liwān?
6.20.02.03	Nameless tributary joins Indus R.	7.01.28.05	Nameless tributary joins Indus R. from Arachosia (in India before the Gan- ges)	Kurram R. (Kurrama R.) joins Indus R.
6.20.04.03	Phoklis	7.01.44.04	Poklais (in India before the Ganges)	Charsadda

6.21.01.07	Boundary mark (Gedrosia, India before the Ganges)	6.21.02.11	Boundary mark (Gedrosia, India before the Ganges)	Gadani Hill (87 m)?
6.21.03.07	Source of the nameless tributary of Indus R. in Arbita Mts.	7.01.28.09	Source of the nameless tributary of Indus R. in Arbita Mts. (in India before the Ganges)	Mula R. source

Appendix B. Tables of Ptolemy's Objects

Table 2. Ptolemy's Objects in Assyria.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.01.01.07	Boundary mark (Assyria, Media, Persia, Susiana)		36.00	84.00	33.8073	47.8180	unknown
6.01.01.09	Choathras Mts. (W. end)	Zagros Mts.: Hasari Rost (3573 m)	39.50	80.00	36.7407	44.8612	tentative
6.01.01.10	Choathras Mts. (E. end)	Zagros Mts.: Kūh-e Bānchāl (2422 m)	38.00	83.00	34.8446	47.9574	tentative
6.01.03.03	Marde	Mardin	38.25	76.00	37.3153	40.7393	known
6.01.03.04	Sauara	Gürkaynak	37.25	76.25	37.1119	41.6275	tentative
6.01.03.05	Bessara	Āskī Mūşil	37.33	77.00	36.5108	42.7366	tentative
6.01.03.06	Belkiana	Mīnkarah	37.00	77.50	36.4342	42.9581	tentative
6.01.03.07	Ninos	Nineveh (Al-Biruni's Nineviah)	36.67	78.00	36.3575	43.1523	known
6.01.03.08	Sakada	ruins near Qaryat as Salāmīyah (Manşūrīyat as Salāmīyah)	36.50	78.50	36.1449	43.3062	tentative
6.01.03.09	Oroba 1	Erbil	36.33	79.33	36.1910	44.0092	duplicate
6.01.03.10	Thelde	Tall Faḥl	36.00	80.00	35.2309	43.4234	tentative
6.01.03.11	Ctesiphon	Taq-Kisra (Al-Biruni's Al Madain=Tisafun)	35.00	80.00	33.0935	44.5809	known
6.01.04.01	Bethaba	Būlbūl (Bnabil)	38.67	77.67	37.3141	40.8382	tentative
6.01.04.02	Dartha	Dara (Al-Biruni's Dara)	38.75	78.50	37.1777	40.9483	known
6.01.04.03	Zigira	Zakho (Zaxo)	38.75	79.67	37.1415	42.6836	tentative
6.01.04.04	Darna	Darbekeh (Darībekeh)	39.50	80.50	36.7318	45.1785	tentative
6.01.04.05	Obana	Baneh	39.00	81.00	35.9974	45.8852	tentative
6.01.04.06	Thesara	Tell Shemshara	38.50	81.25	36.2009	44.9383	tentative
6.01.04.07	Korkura	Nimrud (ancient Calah)	38.17	78.33	36.0981	43.3287	known
6.01.04.08	Oroba 2	Erbil	38.17	79.33	36.1910	44.0092	duplicate
6.01.05.01	Degia	Dokan (Dukan)	38.17	80.75	35.9503	44.9628	tentative
6.01.05.02	Komopolis	Qumash	38.50	81.50	35.3637	45.7898	tentative
6.01.05.03	Dosa	near Dustapa (Dustepe)	37.75	79.00	36.1040	43.8961	tentative
6.01.05.04	Gaugamela	Tall Jūmal	37.00	79.50	36.5932	43.4810	known
6.01.05.05	Sarbenā	Khūrsbāt (Khorsabad, Dur-Sharrukin)	37.00	79.00	36.5097	43.2282	known
6.01.05.06	Arbela	Erbil	37.25	80.00	36.1910	44.0092	known
6.01.05.07	Gomara	Khurmāl	37.50	81.33	35.3008	46.0412	tentative
6.01.05.08	Phusiana	Bozan	37.67	82.17	35.3088	46.6935	tentative
6.01.05.09	Isonē	Sanandaj (ancient Nicea Nialia, Barsa)	37.50	82.50	35.3143	46.9923	tentative
6.01.06.01	Sura	Samarra archaeological site (Al-Biruni's Surra-man-ra'a)	36.67	83.00	34.1877	43.8889	known
6.01.06.02	Chatracharta	Ashur (Ash Sharqāt)	36.17	80.50	35.4597	43.2611	known
6.01.06.03	Apollonia	Sarpol-e Zahab, the ancient place attested as Valashfarr, Beth Lashpar, Chala, Albania	36.50	81.50	34.4627	45.8692	tentative
6.01.06.04	Bethura	Bisotun	36.75	83.33	34.3903	47.4360	known
6.01.06.05	Arrapa	Kirkuk (Kerkuk)	36.50	82.00	35.4696	44.3957	known
6.01.06.06	Kinna	Kangāvar (Al-Biruni's Kasr al-Lusus)	36.17	83.33	34.5017	47.9598	tentative
6.01.06.07	Artemita	Tulūl al Karsatal and Tall an Namirah	36.00	81.25	33.8015	44.7769	tentative
6.01.06.08	Sittake	Muḥammad al Ḥamdān	35.50	82.00	33.0911	45.0374	tentative
6.01.07.02	Lycos R.	Great Zab R. sources	39.00	78.00	38.3282	44.4965	known

	sources						
6.01.07.03	Lycos R. joins Tigris	Great Zab R. joins Tigris	36.33	79.00	35.9900	43.3420	known
6.01.07.04	Capros R. sources	Little Zab R. sources	39.50	79.00	36.8413	44.8655	known
6.01.07.05	Capros R. joins Tigris	Little Zab R. joins Tigris	36.08	79.50	35.2387	43.4303	known
6.01.07.06	Gorgos R. sources	near Heydarābād (Hidar Abad)	38.00	83.00	34.8419	47.9487	known
6.01.07.07	Gorgos R. joins Tigris	Diyala R. (Sirwan R.) joins Tigris	35.67	80.00	33.2206	44.5060	known

Table 3. Ptolemy's Objects in Media.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.02.01.04	Sannina	Sarvan (Al-Biruni's Shirvan)	43.00	80.00	41.2834	49.0177	tentative
6.02.01.05	Kambysos R. mouth	near Gobustan	42.75	81.00	40.0858	49.4178	tentative
6.02.01.06	Kambysos R. sources	near Gobustan	41.00	80.00	40.0501	49.3774	tentative
6.02.01.07	Tazeina	Gobustan National Park Museum	42.50	81.67	40.1020	49.3878	tentative
6.02.01.08	Sabaeen Altars	Surakhani Fire Temple, Atashgah	42.50	82.50	40.4155	50.0086	tentative
6.02.01.09	Kyros R. mouth	Kura R. mouth	42.25	84.00	39.3269	49.4037	known
6.02.01.10	Kyros R. sources	Kura R. source	39.50	82.00	40.6753	42.7422	known
6.02.02.01	Citadel of Cadusii	Kaluraz	42.00	84.67	36.8936	49.4643	known
6.02.02.02	Kyropolis	Rasht	41.50	85.50	37.2808	49.5831	known
6.02.02.03	Amardos R. mouth	Sefid-Rud R. mouth	41.50	86.50	37.4667	49.9429	known
6.02.02.04	Amardos R. sources	Sefid-Rud R. sources (Ghezel Ozan R. source)	38.50	85.00	35.7917	46.7233	known
6.02.02.05	Margiane Lake	Lake Urmia	39.33	82.50	37.5861	45.4359	known
6.02.02.06	Amana	Khomam (Al-Biruni's Kautam)	40.67	87.50	37.3900	49.6584	tentative
6.02.02.07	Akola	Alkaleh (Ālkalleh)	40.25	88.25	36.7705	50.9692	tentative
6.02.02.08	Straton R. mouth	Rūdkhāneh-ye Chālūs R. mouth	40.00	90.33	36.6719	51.4561	known
6.02.02.09	Straton R. sources	Rūdkhāneh-ye Chālūs R. sources	38.50	88.00	36.3317	50.9985	known
6.02.02.10	Mandagarsis	Mazgah (Mazgā)	40.00	92.00	36.6119	51.6049	tentative
6.02.02.11	Charindas R. mouth	Kojur R. (Kojoor R.) mouth	40.50	93.00	36.5864	51.7903	tentative
6.02.02.12	Boundary mark (Hyrcania, Media)	Sisangan Beach (Al-Biruni's Susangin)	40.50	94.00	36.5837	51.8134	tentative
6.02.03.07	Boundary mark (Media, Parthia, Persia, W. Carmania)	Tang-e Bolāghī (Achaemenid Empire Path)	34.50	94.00	30.1667	53.1540	tentative
6.02.03.11	Boundary mark (Hyrcania, Media, Parthia)	Mount Damavand (Kūh-e Damāvand (5610 m))	39.00	94.00	35.9550	52.1100	tentative
6.02.04.02	Zagros Mts. (middle)	Zagros Mts., Kūh-e Oshtorānkūh (4015 m)	38.00	85.00	33.3442	49.2890	known
6.02.04.03	Orontes Mts. (middle)	Alborz Mts., Kūh-e 'Alam (4799 m)	38.00	88.50	36.3757	50.9617	known
6.02.04.04	Iasonion Mts. (middle)	Kūh-e Damāvand (5610 m) (Al-Biruni's Dunbavand Mt.)	36.00	90.50	35.9550	52.1100	known
6.02.04.05	Koronos Mts. (W. end)	Kūh-e Kohlraz (2191 m)	38.00	92.00	35.3416	52.2841	known
6.02.04.06	Koronos Mts. (E. end)	Kūh-e Chehel Ghār (2518 m)	39.00	101.00	36.1023	59.3719	tentative

6.02.07.01	Gates of Zagros	Gardaneh-ye Hasanābād	37.00	84.50	34.1509	46.6523	tentative
6.02.07.02	Caspian Gates	Sar Darreh pass	37.00	94.00	35.2762	52.1696	known
6.02.08.02	Skambeina	Sarvan (Al-Biruni's Shirvan)	42.50	79.50	41.2834	49.0177	duplicate
6.02.08.03	Gabale	Qabala	42.00	80.00	40.8838	47.7064	known
6.02.08.04	Uka	Baku (Al-Biruni's Bakuya)	42.50	80.67	40.3660	49.8338	tentative
6.02.08.05	Varna	Barda (Al-Biruni's Barda'a)	42.00	81.00	40.3830	47.1190	known
6.02.08.06	Kandys	Khankendi (Xankandi, Stepanakert)	42.00	83.50	39.8176	46.7528	tentative
6.02.08.07	Gabris 1	Tabriz (Tebriz)	41.25	83.00	38.0810	46.2901	known
6.02.08.08	Sazoa	Shusha (Shushi)	41.50	83.00	39.7599	46.7498	tentative
6.02.09.01	Tonzarma	Tartar (Terter)	41.75	81.50	40.3419	46.9322	tentative
6.02.09.02	Azaga	Tasuj	41.17	81.25	38.3168	45.3440	tentative
6.02.09.03	Morunda	Marand	41.50	81.33	38.4239	45.7818	known
6.02.09.04	Tigrana	Tigranakert	41.50	82.67	40.0653	46.9058	duplicate
6.02.09.05	Pharambara	Fuman	41.33	84.17	37.2237	49.3124	tentative
6.02.09.06	Tachasara	Atash Sara	41.00	84.33	37.0299	50.0761	known
6.02.10.01	Zalake	Chalus (Al-Biruni's Shalus)	41.00	86.25	36.6548	51.4206	tentative
6.02.10.02	Aluaka	Başkale	40.50	80.67	38.0444	44.0119	tentative
6.02.10.03	Gauzania	Teppe Hasanlu (Hasanlu tepe)	40.67	82.00	37.0045	45.4589	tentative
6.02.10.04	Phazaba	Bonab	40.17	82.50	37.3378	46.0527	tentative
6.02.10.05	Pharaspā	Zohak Qal'eh, S Hashtrud	40.50	85.50	37.3157	46.9434	known
6.02.10.06	Kurna	Kouraneh	40.50	86.25	36.2758	50.1241	tentative
6.02.10.07	Phanaspa	Takht-e Soleyman Archaeological Site (Adur Gushnasp)	40.00	86.50	36.6053	47.2347	tentative
6.02.10.08	Gabris 2	Abhar	40.33	87.67	36.1468	49.2180	duplicate
6.02.10.09	Nande	Naqadeh	39.67	81.67	36.9551	45.3876	known
6.02.10.10	Gazaka	Leilan	39.50	83.67	37.0123	46.2019	known
6.02.10.11	Saraka	Karāftu	39.33	85.25	36.2708	46.8533	tentative
6.02.11.01	Mandagara	Maragheh (Al-Biruni's Maraga)	39.50	87.75	37.3902	46.2392	tentative
6.02.11.01	Mandagara	Markuh Castle	39.50	87.75	36.8640	50.7339	tentative
6.02.11.02	Aganzana	Zenjan	39.50	89.00	36.6709	48.4851	known
6.02.11.03	Galla	Kelar ancient hill, near Kalārdasht	39.25	90.17	36.5187	51.2007	known
6.02.11.04	Orakana	Harijan in Mazandaran Province	39.50	91.00	36.2407	51.3223	tentative
6.02.11.05	Alikadra	Alika (Elīkā)	39.00	93.00	36.2098	51.4074	tentative
6.02.11.06	Phanaka	Pulad Castle, Baladeh	39.50	93.00	36.2056	51.8126	tentative
6.02.11.07	Nazada	Asadabad	38.17	83.00	34.7823	48.1200	tentative
6.02.11.08	Alinza = Orosa	Harsin	38.00	84.00	34.2718	47.5806	known
6.02.11.09	Arsisaka	Saqqez	38.67	85.00	36.2499	46.2735	known
6.02.12.01	Alisdaka	Takāb	38.75	86.67	36.4009	47.1133	tentative
6.02.12.02	Dariausa	Owzun Darreh (Ūzūn Darreh)	38.50	87.50	36.3632	49.9008	tentative
6.02.12.02	Dariausa	Darreh Vazan (Darreh Dowzān)	38.50	87.50	35.8635	46.7301	tentative
6.02.12.03	Sinkar	Shinqar (Shingher, Shenqar)	38.50	88.00	36.2881	50.1358	known
6.02.12.04	Batina	Bijdeh-ye Now (Bīraz-e Now)	38.67	89.00	36.3505	51.1815	tentative
6.02.12.05	Vesaspe	Velasht	38.67	89.67	36.3867	51.3025	tentative
6.02.12.06	Niguza	Nizamabad	38.00	90.25	35.4162	51.4074	tentative
6.02.12.07	Sanais	Zan in Tehran province	38.33	92.00	35.5955	52.2002	tentative
6.02.12.08	Rhazunda	Roodafshān	38.67	93.33	35.6411	52.5018	tentative
6.02.13.01	Veneka	Eyvānekey (Al-Biruni's Al Huvar, Huvar er-Rey)	38.25	93.33	35.3464	52.0671	known
6.02.13.02	Bithia	Dinavar	37.67	85.50	34.5856	47.4416	tentative
6.02.13.03	Alinza	Harsin	37.75	86.17	34.2718	47.5806	duplicate
6.02.13.04	Zaranis	Zarrinābād	37.00	86.00	33.4978	48.7868	tentative
6.02.13.04	Zaranis	Zorantel (Zuran Tall)	37.00	86.00	33.3151	47.8403	tentative

6.02.13.05	Gabena	Gowdin Hill archaeological site (Godin tepe)	37.50	87.00	34.5185	48.0683	known
6.02.13.06	Larasa	Lorestan (Al-Biruni's Al Lur)	37.17	87.17	33.5819	48.3988	known
6.02.14.01	Ecbatana	Hamadan (Hamedan, Hegmataneh)	37.75	88.00	34.8036	48.5176	known
6.02.14.02	Choastra	Karaj	37.67	89.00	35.8325	50.9914	tentative
6.02.14.03	Niphauanda	Nahavand (Al-Biruni's Nihavand)	37.17	88.83	34.1876	48.3680	known
6.02.14.04	Guriauna	Golpayegan (Gurbayigan)	37.33	91.00	33.4537	50.2883	known
6.02.14.05	Choana	Qom	37.25	92.00	34.6400	50.8763	known
6.02.14.06	Trauaxa	Chāl Tarkhān	37.67	93.00	35.4997	51.4759	tentative
6.02.15.01	Auradis	Teppeh Gis Historical Hill	37.25	93.67	35.3246	52.0334	tentative
6.02.15.02	Tibrakana	Tabarijan	36.00	86.33	33.8172	48.7787	tentative
6.02.15.03	Betharga	Bisotun	36.67	84.33	34.3903	47.4360	duplicate
6.02.15.04	Karine	Khorramabad	36.33	85.17	33.4837	48.3534	tentative
6.02.15.05	Kaberasa	Kākārezā	36.50	86.00	33.7190	48.2541	tentative
6.02.15.06	Parachana	Chalanchulan (Chālān Chūlān)	36.00	87.67	33.6640	48.9074	tentative
6.02.16.01	Arsakia	Rey	36.50	88.00	35.6007	51.4457	known
6.02.16.02	Gauna	Qanavat	36.50	88.75	34.6133	51.0253	tentative
6.02.16.03	Herakleia	Bahram Rey Fire Temple on Tappeh-ye Mīl hill	36.67	89.00	35.5074	51.5015	tentative
6.02.16.04	Zania	Saveh (Al-Biruni's Sava)	36.83	90.25	35.0101	50.3631	tentative
6.02.16.05	Aruzis	Ārū (Aroo)	36.33	91.00	35.6700	52.4035	tentative
6.02.16.06	Zarama	Zarmān	36.50	92.33	35.7991	52.3078	tentative
6.02.17.01	Tautike	Tekyeh (Tekieh, Tekyeh-ye Sādāt)	36.25	93.33	33.5368	51.7293	tentative
6.02.17.02	Europos	Rey	36.67	93.67	35.6007	51.4457	duplicate
6.02.17.03	Abakaina	Abyaneh	36.00	93.00	33.5853	51.5922	known
6.02.17.04	Kigbina	Kabgān	35.58	87.00	33.2397	48.2635	known
6.02.17.05	Doththa	Pol-e Dokhtar (Poldokhtar)	35.42	88.00	33.1596	47.7161	known
6.02.17.06	Gerepa	Garab	35.33	89.67	33.4737	47.2362	known
6.02.18.01	Rhapsa	Par Siah	35.67	90.17	31.9555	49.6327	tentative
6.02.18.02	Andriaka	Dūrak (Al-Biruni's Ad-Daurak)	35.17	91.00	31.2017	51.0377	known
6.02.18.03	Kluaka	Kulageh	35.17	92.67	33.4904	48.5620	tentative
6.02.18.04	Argarausdaka	Ardestan	35.33	93.33	33.3788	52.3776	known
6.02.18.05	Kanatha	Ardakan	35.75	93.50	32.3207	54.0210	duplicate
6.02.18.06	Aradriphe	Abarkuh (Abarquh)	34.75	93.33	31.1282	53.2822	tentative

Table 4. Ptolemy's Objects in Susiana.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.03.02.01	Tigris R. mouth (western)	Khawr Abd Allah	30.25	79.50	29.8764	48.3826	known
6.03.02.03	Tigris R. mouth (eastern)	Shatt al-Arab	31.00	80.50	29.9308	48.6151	known
6.03.02.04	Charax Pasinu	Jabal Khaybar (Jabal Khuyabir)	31.00	81.67	30.8950	47.5824	known
6.03.02.05	Mosaeus R. mouth	Khowr-e Mūsá	30.67	82.00	30.0885	48.9854	known
6.03.02.06	Mosaeus R. sources	Karun (Koohrang) R. source	33.00	82.50	32.5834	50.0043	known
6.03.02.07	Muddy bay	Iranian Bay	31.00	83.00	30.1348	49.1852	tentative
6.03.02.08	Eulaeos R. mouth	Khowr-e Dowraq	30.67	84.50	30.4593	49.0207	tentative
6.03.02.09	Eulaeos R. sources (western)	Rūdkhāneh-ye Ravand source	35.00	83.00	34.3391	46.1551	known
6.03.02.11	Eulaeos R. sources (eastern)	Rūdkhāneh-ye Karkheh source	38.00	86.00	33.4305	48.9240	known
6.03.02.13	Sandy lagoon	Khowr-e Māhshahr	30.50	84.50	30.4346	49.1446	tentative
6.03.02.14	Oroatis R. mouth	Rūdkhāneh-ye Zohreh	30.50	86.50	30.0673	49.5115	known

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6.03.02.15	Oroatis R. sources	Rūdkhāneh-ye Zohreh	34.67	88.50	30.2730	51.2521	known
6.03.04.03	Altars of Heracles	Tall Lū, Girsu Tello Archaeo-logical Site	34.08	80.00	31.5618	46.1769	duplicate
6.03.04.04	Agra	Aggar	33.75	80.50	32.0667	46.0833	tentative
6.03.04.05	Aracca	Raash	32.67	80.17	31.6812	46.9719	tentative
6.03.04.06	Asia	As Suwayb	31.67	80.17	30.9634	47.4844	tentative
6.03.05.01	Palinza	Dezful	35.50	83.75	32.3830	48.3982	tentative
6.03.05.02	Sakrone	Seymareh Ancient City (Al-Biruni's Saymara)	35.00	82.75	33.1291	47.3675	tentative
6.03.05.03	Bergan	Ivan-i Karkheh (Iwan-e Kark-heh)	34.75	84.25	32.3215	48.1276	tentative
6.03.05.04	Susa	Shush (Al-Biruni's As-Sus)	34.25	84.00	32.1893	48.2469	known
6.03.05.05	Saura	Shushtar (Al-Biruni's Tuster)	32.75	85.00	32.0507	48.8530	known
6.03.05.06	Dera	Badrah	33.67	81.50	33.1235	45.9320	known
6.03.05.07	Agarra	Langar (Longor)	33.33	83.67	31.9388	48.8592	tentative
6.03.05.08	Abina	Ambal (Anbar)	33.17	85.17	32.2621	49.0163	tentative
6.03.05.09	Tarsiana	Ahvaz (Al-Biruni's Souk al-Ahvaz)	32.50	82.00	31.3177	48.6844	known
6.03.05.10	Sele	Cham Şabī	32.50	84.00	30.9899	49.4298	known
6.03.05.11	Graan	Ghargāneh	31.50	82.00	30.7709	48.9442	tentative
6.03.05.12	Anuchtha	Ābezhdān (Ābeshdūn, Āveshtan)	31.67	83.50	31.1199	49.9237	tentative
6.03.05.13	Urzan	Arrajan archaeological site, near Rūstā-ye Arjān (Al-Biruni's Arrajan)	31.67	84.67	30.6539	50.2747	known
6.03.06.02	Taxiana I.	Bandar-e Emam Khomeyni	29.25	84.00	30.4400	49.0800	tentative

Table 5. Ptolemy's Objects in Persia.

<i>Ptolemy ID</i>	<i>Ptolemy Name</i>	<i>Modern Name</i>	<i>Ptol. Lat.</i>	<i>Ptol. Lon.</i>	<i>Mod. Lat.</i>	<i>Mod. Lon.</i>	<i>Status</i>
6.04.01.08	Bagradas R. mouth	Rūdkhāneh-ye Mand mouth	29.25	94.00	28.1349	51.2671	known
6.04.02.02	Cape Taoke	Ra's osh Shaṭṭ	30.17	87.50	29.1037	50.6972	tentative
6.04.02.03	Rhogomanis R. mouth	Dalaki R. mouth	30.00	88.50	29.1414	50.7692	tentative
6.04.02.04	Rhogomanis R. sources	Dalaki R. source	35.00	92.00	29.6073	52.0276	tentative
6.04.02.05	Cape Chersonesos	Bushehr	29.50	89.67	28.9151	50.8248	known
6.04.02.06	Ionaka	Jaenak (Jainag, Jā'inak)	29.75	90.00	28.7877	51.0691	known
6.04.02.07	Brisoanas R. mouth	Rūdkhāneh-ye Sūr mouth	29.67	92.00	29.0316	51.0288	tentative
6.04.02.08	Brisoanas R. sources		34.50	93.00	29.0645	51.4575	tentative
6.04.02.09	Ausinza	Zeizar (Zīzār)	29.33	93.00	28.4376	51.3128	tentative
6.04.02.10	Bagradas R. mouth	Rūdkhāneh-ye Mand mouth	29.25	94.00	28.1349	51.2671	duplicate
6.04.02.11	Bagradas R. sources	Sivand R. source (Cheshmeh-ye Pahn spring)	35.25	94.00	30.7777	53.0331	known
6.04.04.02	Ozoa	Izeh (Al-Biruni's Idaj (Izaj))	35.33	85.75	31.8240	49.8701	known
6.04.04.03	Tanagra	Tang-e Ābriz gorge	34.50	86.00	31.4648	50.5233	tentative
6.04.04.04	Marrasion	Seydan (Seyyedān, Seydun)	34.50	92.50	30.0087	53.0092	tentative
6.04.04.05	Aspadana	Isfahan	33.58	86.00	32.6544	51.6747	known
6.04.04.06	Axima	Anshan archaeological site near Malyan	33.83	87.75	30.0113	52.4088	tentative
6.04.04.07	Poryospana	Firoozi (Fīrūzī)	33.83	89.00	29.9300	52.8360	tentative
6.04.04.08	Persopolis	Persepolis	33.33	91.00	29.9351	52.8896	known
6.04.04.09	Niserge	Naqsh-e Rostam archaeological site	34.00	90.25	29.9890	52.8745	tentative
6.04.05.01	Sukta	Estakhr (Istakhr) archaeological site	34.00	91.50	29.9795	52.9092	known
6.04.05.02	Arbua	Akhur-i Rustam	33.00	92.25	29.8668	52.9402	tentative
6.04.05.03	Kotamba	Qadamgah ancient site	33.67	93.50	29.7340	53.2123	known
6.04.05.04	Potikara	Paduk (Pā-ye Dūk, Bādūk), near Cheshmeh-ye Pāzkār spring	32.25	87.25	30.5672	50.5671	tentative
6.04.05.05	Ardea	Suq (Al-Biruni's Souk al-Arba'a)	32.50	88.00	30.8578	50.4580	tentative
6.04.05.06	Kauphiaka	Qaemyeh (Qā'emīyeh), near Chukak	32.50	89.00	29.8516	51.5879	tentative
6.04.06.01	Batthina	Tall-i Bakun archaeological site	32.33	90.00	29.9137	52.8856	tentative
6.04.06.02	Kinna	Kamjan in Fars province	32.33	92.33	29.6455	53.1161	tentative
6.04.06.03	Parodana	Ab Pay-ye Arghavan (Ab Pay-ye Arghuan)	32.25	93.83	29.1088	51.4068	tentative
6.04.06.04	Taepa	Kareh Pa (Koreh Pā)	31.75	87.00	30.3355	49.7423	tentative
6.04.06.05	Tragonike	Darunak (Dorunak)	31.67	87.67	30.3567	50.0566	tentative
6.04.06.06	Maitona	Marvdasht	31.75	89.17	29.8787	52.8066	tentative
6.04.06.07	Chorodna	Kazerun (Al-Biruni's Kazarun)	31.25	90.00	29.6178	51.6477	tentative
6.04.06.08	Korra	Firuzabad (Ardashir-Khurra, Al- Biruni's Gur)	31.67	91.33	28.8443	52.5713	known
6.04.06.09	Gabra	Kavar	31.50	92.25	29.1832	52.6956	known
6.04.06.10	Orobatis	Abadeh	30.83	87.00	30.1864	49.6309	tentative
6.04.07.01	Taoke	Dalaki	30.33	89.00	29.4345	51.2928	tentative
6.04.07.02	Parta	Shiraz	30.33	90.00	29.6079	52.5491	known
6.04.07.03	Mammida	Meymand	30.33	91.00	28.8691	52.7502	known
6.04.07.04	Uzia	Eisovand (ʿĪsvand)	30.00	91.67	29.1513	51.0984	tentative
6.04.07.05	Pasarracha	Borazjan archaeological site	30.50	93.00	29.2756	51.1878	tentative
6.04.07.06	Gabai	Kabgan (Kabgān, Kābghān, Kabkān, Kapkan) in Bushehr province	30.17	93.67	28.2066	51.3090	tentative
6.04.08.02	Tabiana I.	Ra's-e Tonb	29.25	87.00	29.9368	50.1375	tentative
6.04.08.03	Sophtha I.	Jazīreh-ye Shīf	29.33	88.00	29.0593	50.8782	known

6.04.08.04	Arakia, I. of Alexander	Kharg I.	29.00	90.00	29.2320	50.3037	known
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Table 6. Ptolemy's Objects in Parthia.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.05.01.04	Koronos Mts. (E. end)	Kūh-e Chehel Ghār (2518 m)	39.00	101.00	36.1023	59.3719	duplicate
6.05.01.06	Masdoranon Mts. (S. end)	Kūh-e Boghz (2625 m)	33.33	101.50	33.1415	57.4749	tentative
6.05.02.02	Ambrodax	Aradan	38.33	94.50	35.2493	52.4942	known
6.05.02.03	Oinunia	Nārūmeh Bon Kūh (Nārūheh)	38.67	95.00	35.2726	52.3987	tentative
6.05.02.04	Karipraka	Kashmar, or the nearby Forūtaqeh	38.67	97.25	35.2369	58.4648	tentative
6.05.02.05	Rhoara	Rahvard	38.33	98.50	37.3309	58.4244	known
6.05.02.06	Suphtha	Esfezar (Al-Biruni's Isfizar)	38.50	100.00	32.8639	59.6300	known
6.05.02.07	Arakiana	Faravan	38.00	94.25	35.2165	52.5480	tentative
6.05.02.08	Dordomana	Kardovān	37.67	94.25	35.1830	52.4053	tentative
6.05.02.09	Hekatonpylos	Qumis ancient city	37.83	96.00	35.9534	54.1181	known
6.05.02.10	Sindaga	Damghan (Al-Biruni's Ad-Damghan)	37.00	96.17	36.1665	54.3509	tentative
6.05.02.11	Parbara	Tous (Al-Biruni's Tabaran)	37.50	98.83	36.4798	59.5069	known
6.05.03.01	Mysia	Miana (Māne, Al-Biruni's Miyanchakh)	37.50	100.50	36.8737	60.4057	known
6.05.03.02	Charax	ruins near Garmsar	36.67	94.25	35.1994	52.2750	tentative
6.05.03.03	Apameia	Meybod	36.00	94.25	32.2260	54.0147	tentative
6.05.03.04	Aspa	Yazd	36.33	95.33	31.9017	54.3705	known
6.05.03.05	Semina	Semnan (Al-Biruni's Simnan)	36.67	96.00	35.5763	53.3949	known
6.05.03.06	Marriche	Marchi	36.67	98.00	32.5292	52.1281	tentative
6.05.03.07	Tastache	Tabas (Al-Biruni's At-Tabasayn)	36.33	99.00	33.5962	56.9281	tentative
6.05.03.08	Armiana	Ghourian (Ghōriyān)	36.17	101.00	34.3456	61.4939	duplicate
6.05.03.09	Choana	Qom	35.50	95.25	34.6400	50.8763	duplicate
6.05.04.01	Pasakartia	Pasargadae	35.25	94.25	30.2001	53.1779	known
6.05.04.02	Rhuda	Rafsanjan in the Lut desert (Al-Biruni's Jiruft)	35.00	95.00	30.4040	55.9830	tentative
6.05.04.03	Simpsimida	Saryazd	35.67	96.50	31.6011	54.5277	tentative
6.05.04.04	Artakana	Ardakan	34.50	96.00	32.3207	54.0210	known
6.05.04.05	Appha	Bafq	35.33	98.50	31.6033	55.4022	tentative
6.05.04.06	Rhagaia	Rey	34.33	98.33	35.6007	51.4457	duplicate

Table 7. Ptolemy's Objects in Carmania (including Carmania Deserta).

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.06.01.06	Boundary mark (Carmania, Persia, Carmania Deserta)	Rūdkhāneh-ye Dezhgāh joins Mand R.	31.00	94.00	28.1720	52.1280	tentative
6.06.01.09	Boundary mark (Aria, Drangiana, Gedrosia, Carmania, Carmania Deserta)	Kūh-e Mordār Kūh	29.83	101.00	30.6777	59.9846	unknown
6.08.02.06	Boundary mark (Gedrosia, Carmania)	Patan Maiski Koh	20.00	104.00	25.3630	63.5535	unknown
6.08.04.01	Daras R. mouth	Rūdkhāneh-ye Khowr mouth	28.67	95.25	27.4061	52.6747	known
6.08.04.02	Kathraps R. mouth	Rūdkhāneh-ye Tang-e Khūr mouth, near Charak	27.67	95.50	26.7277	54.2897	known
6.08.04.03	Korios R. mouth	Rūdkhāneh-ye Kor mouth	26.00	96.00	27.0119	55.7624	known
6.08.04.04	Achindanas R. mouth	Rūdkhāneh-ye Shūr mouth	26.00	96.67	27.1679	56.5311	known

6.08.04.05	Andanis R. mouth	Rūdkhāneh-ye Ḥasan Langī	25.00	96.00	27.1377	56.8137	tentative
6.08.04.06	Saganos R. mouth	Rūdkhāneh-ye Zarānī mouth	24.50	95.67	26.8976	56.9532	known
6.08.05.01	Harmuza	Hormuz (Hormoz, Al-Biruni's Hurmuz)	23.50	94.50	27.0944	56.4526	known
6.08.05.02	Cape Harmozon	near Rūdkhāneh-ye Gaz mouth	23.67	94.00	26.4533	57.0458	tentative
6.08.05.03	Cape Karpella	Damāgheh-ye Kūh (Ras al-Kuh)	22.17	94.00	25.7984	57.2998	known
6.08.07.03	Kanthatis	Kangān (Gangān, Zangīān)	22.50	96.00	25.8625	57.4622	tentative
6.08.07.04	Agris	Chāhrū (Hojdān)	23.00	96.50	25.7168	57.9266	tentative
6.08.07.05	Kombana	Kombakou (Kambkū)	23.00	97.50	26.2395	58.2115	tentative
6.08.07.06	Rhogana	Sourgalm (Sūrgalm)	22.50	98.25	25.6558	58.1422	tentative
6.08.07.07	Salaros R. mouth	Rūdkhāneh-ye Jagīn (Jegīn) mouth	22.67	98.50	25.5788	58.2444	tentative
6.08.07.08	Masin	Mishnu (Mīshū)	22.67	99.00	25.6866	58.3836	known
6.08.07.09	Samydake	Karpāsī, Sirmach, Rāpch (abandoned)	22.67	99.50	25.5232	59.2417	tentative
6.08.08.01	Samydaches R. mouth	Khovr-e Rāpch inlet, the former mouth of Rūdkhāneh-ye Rāyej	22.33	100.50	25.4432	59.2509	tentative
6.08.08.02	Samydaches R. sources	Rūdkhāneh-ye Rāyej (Rūdkhāneh-ye Govāsh) source	25.00	104.50	26.7043	59.7413	tentative
6.08.08.03	Tisa	Tis (Tīs)	22.00	101.17	25.3567	60.6209	known
6.08.08.04	Kaudriakes R. mouth	near Tis	21.67	101.25	25.3556	60.6072	tentative
6.08.08.05	Cape Bagia	Ra's-e Chābahār	21.00	101.00	25.2869	60.6083	known
6.08.08.06	Kyiza harbor	Beris (Berīs-e Bālā)	20.67	101.25	25.1357	61.1900	tentative
6.08.08.07	Cape Alambater	Ra's-e Fāsteh, near Pasabandar	20.00	101.00	25.0610	61.4228	known
6.08.09.01	Moderanibela	Rīmdān-e-bangul	20.17	101.50	25.3998	61.4517	known
6.08.09.02	Kophanta harbor	Gavāter (Gowatr)	20.00	101.50	25.1638	61.4998	known
6.08.09.03	Zorombas R. mouth	Kaur R. mouth	20.00	102.50	25.2152	61.7018	tentative
6.08.09.04	Badara	Gwadar	20.17	103.00	25.1313	62.3250	known
6.08.09.05	Musarna	Miski	20.17	103.25	25.4026	63.5021	duplicate
6.08.10.01	Boundary mark (Gedrosia, Carmania)	Patan Maiski Koh	20.00	104.00	25.3630	63.5535	duplicate
6.08.11.04	Mt. of Semiramis or Strongylon (middle)	Jazīreh-ye Hormoz	23.00	94.50	27.0668	56.4593	tentative
6.08.11.06	Mts. from which the rivers run westward as the Samydaches (middle)		26.00	99.00	26.7641	58.4531	tentative
6.08.13.02	Portospana	Khonj	28.75	96.00	27.8911	53.4343	tentative
6.08.13.03	Karmana	Kerman	29.00	100.00	30.2832	57.0787	known
6.08.13.04	Thaspis	Fasa	27.67	98.00	28.9330	53.6400	known
6.08.13.05	Nipista	Nīān	26.00	97.50	27.5495	56.8282	tentative
6.08.13.06	Chodda	Chagardak (Chegerdak)	25.00	101.50	27.0880	59.1190	tentative
6.08.13.07	Taruana	Karīān (Kariyān)	24.50	96.00	26.9577	57.2173	tentative
6.08.14.01	Alexandria	Fahraj	24.33	99.00	28.9459	58.8850	known
6.08.14.02	Sabis	Sadar	24.50	97.50	26.9479	57.4692	tentative
6.08.14.03	Throaska	Sardasht	23.67	99.67	26.4557	57.9027	tentative
6.08.14.04	Ora	Bampur (Bampour)	23.67	102.33	27.2013	60.4474	tentative
6.08.14.05	Kophanta	Fanuj (Fannūj)	23.00	102.25	26.5752	59.6414	tentative
6.08.15.03	Sagdana I. in which is Zinnober (Cinnabar)	Kish I. (Al-Biruni's Khisn Ibn Umara)	27.25	94.00	26.5655	53.9753	tentative
6.08.15.05	Vorochtha I.	Qeshm I.	25.50	94.33	26.7726	55.8155	known
6.08.16.02	Polla I.		19.00	98.00	25.6268	58.0157	tentative
6.08.16.03	Karminna I.		18.00	102.00	25.1432	61.7500	tentative
6.08.16.04	Liba I.	Gwadar Head (Koh Batal, Koh-e-Batil)	19.00	104.00	25.1049	62.3196	tentative

Table 8. Ptolemy's Objects in Hyrcania.

<i>Ptolemy ID</i>	<i>Ptolemy Name</i>	<i>Modern Name</i>	<i>Ptol. Lat.</i>	<i>Ptol. Lon.</i>	<i>Mod. Lat.</i>	<i>Mod. Lon.</i>	<i>Status</i>
6.09.01.05	Oxos R. mouth	ancient mouth of Amu Darya R.	43.00	100.00	39.9746	53.5685	known
6.09.02.01	Saramanne	Royan (Al-Biruni's Ar-Ruyan)	40.50	94.75	36.5688	51.9630	tentative
6.09.02.02	Maxeras R. mouth	Rūdikhāneh-ye Tajan mouth	41.50	97.33	36.8132	53.1154	tentative
6.09.02.03	Maxeras R. sources	Rūdikhāneh-ye Tajan sources (Sar Kūh (2797 m))	38.67	98.00	36.2635	53.9420	tentative
6.09.02.04	Sokandas R. mouth	Rūdikhāneh-ye Gorgān mouth	42.00	97.50	36.9724	53.9957	tentative
6.09.02.05	Oxos R. mouth	ancient mouth of Amu Darya R.	43.00	100.00	39.9746	53.5685	known
6.09.02.06	Oxos R. sources	Amu Darya R. source (Lake Zorkul)	39.00	119.50	37.4511	73.5725	known
6.09.06.02	Barange	Tasharvat (Al-Biruni's Balkhan)	42.00	99.00	39.7518	54.3681	known
6.09.06.03	Adrapsa	Gomishtappeh (Al-Biruni's Abaskun)	41.50	98.50	37.0700	54.0770	tentative
6.09.06.04	Kasape	Kastan	40.33	99.50	37.4826	56.4002	tentative
6.09.06.05	Abarbina	Babol	40.50	97.50	36.5386	52.6765	known
6.09.06.06	Sorba	Sari (Al-Biruni's Sariya)	40.50	98.00	36.5659	53.0586	known
6.09.07.01	Sinika	Sankhvāst (Sankhast)	40.50	100.00	37.0989	56.8517	tentative
6.09.07.02	Amarusa	Amol (Al-Biruni's Amul)	40.00	95.00	36.4704	52.3467	known
6.09.07.03	Hyrcania	Gonbad-e Kavus (Al-Biruni's Jurjan)	40.00	98.50	37.2581	55.1690	known
6.09.07.04	Sake (Sale)	Nātel (Natal, Al-Biruni's Natil), near the modern Selā Katī (Salyakoti)	39.50	94.25	36.5003	52.0226	tentative
6.09.07.05	Asmurna	Gorgan (Al-Biruni's Astrabad)	39.50	97.50	36.8384	54.4349	tentative
6.09.07.06	Maisoka	Qal'eh Marz (Al-Biruni's Mazduran (Marz-Turan) Pass)	39.50	99.00	37.5286	57.4756	tentative
6.09.08.02	Talka I.	Ashuradeh I. (Ashūradeh, Ashooradeh)	43.08	95.00	36.9067	54.0150	known

Table 9. Ptolemy's Objects in Margiana.

<i>Ptolemy ID</i>	<i>Ptolemy Name</i>	<i>Modern Name</i>	<i>Ptol. Lat.</i>	<i>Ptol. Lon.</i>	<i>Mod. Lat.</i>	<i>Mod. Lon.</i>	<i>Status</i>
6.10.01.05	Oxos R. crosses the border of Bactria and Margiana	Amu Darya R.	44.00	103.00	39.3495	61.3706	tentative
6.10.01.11	In Saripha Mts., boundary mark (Aria, Bactria, Margiana)	Kōh-e Sar Galah-ye Chukhak (3393 m)	39.00	109.00	35.4158	64.4246	tentative
6.10.01.13	Margos R. sources	Murgab R. sources	39.00	105.00	34.7870	66.0934	known
6.10.01.14	Margos R. joins Oxos R.	Murgab R. joins Amu Darya	43.50	102.67	39.3122	60.8537	known
6.10.03.02	Ariaka	Abiverd (Al-Biruni's Abivard), near the modern Kaka (former Kaakhka)	43.50	103.00	37.3925	59.5649	tentative
6.10.03.03	Sena	Sarakhs (Al-Biruni's Serahs)	42.33	102.50	36.5350	61.1660	tentative
6.10.03.04	Aratha	near Peski Archa-Agasi-Kum	42.50	103.50	37.8313	61.8497	tentative
6.10.03.05	Argadina	Tejen	41.67	101.33	37.3802	60.4998	tentative
6.10.03.06	Iasonion	Dandanakan Kalesi (Al-Biruni's Dandanaqan)	41.50	103.50	37.3919	61.3453	tentative
6.10.04.03	In Saripha Mts, sources of nameless tributary of Margos R.	Daryā-ye Koshk (Kushk R., Gusgy Deryasy)	39.00	103.00	34.6209	62.7430	known
6.10.04.05	Rhea	Rahvard	40.50	102.00	37.3309	58.4244	duplicate
6.10.04.06	Antiocheia Margiane	Merv	40.67	106.00	37.6642	62.1746	known

6.10.04.07	Guriane	Gonur Tepe	40.17	104.00	38.2134	62.0375	known
6.10.04.08	Nisaia	Nisa	39.17	105.25	37.9514	58.2105	known

Table 10. Ptolemy's Objects in Bactriana.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.11.01.07	Boundary mark (Aria, Bactria, Paropanisades)	Qulah (4158 m)	39.00	111.00	35.1325	66.1409	unknown
6.11.01.10	Oxos R. sources	Amu Darya R. source (Lake Zorkul)	39.00	119.50	37.4511	73.5725	duplicate
6.11.02.03	Ochos R. sources	Jar-e Ōsh sources	39.00	110.00	35.5613	66.5970	known
6.11.02.04	Dargomanes R. sources	Balkh R. (Daryā-ye Band-e Amir) sources	36.67	116.50	34.7810	67.3717	known
6.11.02.05	Zariaspes R. sources	Zeravshan Glacier	39.00	113.00	39.5268	70.6716	known
6.11.02.06	Artames R. sources	Pereval Gissarskiy, 27.5 km from Alpomish Mt. (4668 m)	39.00	114.00	39.0294	67.9303	known
6.11.02.07	Dargoidos R. sources	Kunduz R. source (20 km SW from Bāmyān)	39.00	116.00	34.6809	67.4673	known
6.11.02.08	Dargoidos R. joins Oxos R.	Daryā-ye Kunduz (Kunduz R.) joins Amu Darya	44.00	116.50	37.0031	68.2641	known
6.11.03.01	Artames R. confluence with Zariaspes R.	Kshtut R. (has Artuch R. as tributary) joins Zeravshan R.	40.00	113.00	39.4552	68.0517	known
6.11.03.02	Zariaspes R. joins Oxos R.	Zeravshan (Zarafshon) R. used to join Amu Darya R. here	44.00	112.50	39.0855	63.6789	known
6.11.04.01	Dargomanes R. and Ochos R. join together	Jar-e Ōsh joins Daryā-ye Band-e Amir	40.17	109.00	35.5004	66.5850	tentative
6.11.04.02	Dargomanes R. joins Oxos R.	Balkh R. (Daryā-ye Band-e Amir) used to join Amu Darya R. here	44.33	109.00	37.3210	66.2812	tentative
6.11.05.01	Paropanis Mts. (W. end)		39.00	111.50	35.2068	66.2805	tentative
6.11.05.02	Paropanis Mts. (E. end)		39.00	119.50	35.8236	68.7631	tentative
6.11.07.03	Charracharta	Türkmenabat, former Char-dzhou (Al-Biruni's Amuya, Amul)	44.17	110.00	39.0724	63.5779	known
6.11.07.04	Zariaspa	Sarazm archaeological site	44.00	115.00	39.5078	67.4603	known
6.11.07.05	Choana	Chāh Āb (Chah Aab)	42.00	117.00	37.3973	69.8144	known
6.11.07.06	Suragana	Surkh Kotal	40.50	117.50	36.0361	68.5891	tentative
6.11.07.07	Phratrua	Vrang	39.33	119.00	36.9828	72.3189	tentative
6.11.08.01	Alikodra	Andkhoy (Al-Biruni's Antakhud, Andakhud)	43.50	107.50	36.9515	65.1263	tentative
6.11.08.02	Chomara	Ghalmin (Sar-e Ghalmin, Al-Biruni's Shurmin)	42.50	106.50	34.8355	65.3168	tentative
6.11.08.03	Kuriandra	Khulm, Kholm (Al-Biruni's Khulm)	42.17	109.50	36.6965	67.6991	tentative
6.11.08.04	Kauaris	Khvalej do Kuh	43.00	111.33	36.8280	65.6237	tentative
6.11.08.05	Astakana	Taleqan, Taloqan (Al-Biruni's At-Talaqan, Talaqan)	42.67	112.00	36.7327	69.5393	tentative
6.11.08.06	Ebusmuanassa	Bādghīsī (Al-Biruni's Badghis)	41.17	108.33	35.9154	64.4922	tentative
6.11.08.07	Menapia	Maymana (Al-Biruni's Al Maymana, Jakhu-zan)	41.33	113.00	35.9178	64.7755	tentative
6.11.08.08	Eukratidia	Dilberjin Tepe (Delbarjin) ancient city	42.00	115.00	37.0225	66.5264	tentative
6.11.09.01	Bactra	Balkh	41.00	116.00	36.7675	66.9012	known
6.11.09.02	Estobara	Sar-e Pol (Al-Biruni's Anbir, Anbar)	39.67	109.50	36.2137	65.9317	tentative
6.11.09.03	Marakanda	Maykatta	39.25	112.00	39.5204	67.7656	tentative

6.11.09.04	Marakodra	Madar, Madr (Al-Biruni's Madar)	39.67	115.67	35.3994	67.8119	tentative
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Table 11. Ptolemy's Objects in Aria.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.17.01.08	Bagoon Mts. (E. end)		34.00	111.00	34.2502	68.0000	unknown
6.17.01.09	Bagoon Mts. bend		32.00	105.00	32.9061	61.1697	unknown
6.17.01.12	Paropanisos Mts. (S. end)		36.00	111.00	34.4112	67.0208	tentative
6.17.01.13	Paropanisos Mts. (N. end)		39.00	111.50	35.2068	66.2805	duplicate
6.17.01.14	Paropanisos Mts. (E. end)		39.00	119.50	35.8236	68.7631	duplicate
6.17.02.01	Areios R. sources in Paropanisos Mts.	Hari R. sources	38.25	111.00	34.5982	66.7134	known
6.17.02.02	Areios R. sources in Saripha Mts.	Darah-ye Karukh sources	38.67	103.00	34.6312	63.0626	known
6.17.02.04	Aria Lake	Solonchakovyye Vpadiny Unguz	36.00	108.67	38.6956	59.8844	known
6.17.04.02	Dista	Buzhgan (Al-Biruni's Al Buzjan)	38.25	102.50	35.1808	60.7492	tentative
6.17.04.03	Nabaris	Darah-ye Būm (Al-Biruni's Baun)	38.33	105.67	35.0863	63.4634	tentative
6.17.04.04	Taua	Khaval (Khawāl)	38.75	109.00	35.7657	65.7254	tentative
6.17.04.05	Augara	Gulran (Golran)	38.00	102.00	35.0991	61.6672	tentative
6.17.04.06	Bitaxa	Bihisht	38.00	103.67	35.0499	61.1166	known
6.17.04.07	Sarmagana	Saryamah	38.17	105.33	34.3645	63.5378	tentative
6.17.04.08	Siphare	Sākharī	38.25	107.25	35.3895	63.4141	tentative
6.17.04.09	Rhaugara	Gharluli archaeological site	38.17	109.50	35.7615	64.8414	tentative
6.17.05.01	Zamuchana	Zuzan in Razavi Khorasan (Al-Biruni's Zauzan)	37.00	102.00	34.3555	59.8769	known
6.17.05.02	Ambrodax	Āsyā-ye Bādak (Asia Badak)	37.75	103.50	35.0076	61.4930	tentative
6.17.05.03	Bogadia	Badgah	37.67	104.25	34.5202	65.4829	tentative
6.17.05.04	Varpna	Marwa (Mārwā, Marveh)	37.00	105.50	34.2504	62.8998	tentative
6.17.05.05	Godana	Bamyan	37.50	110.50	34.8215	67.8273	tentative
6.17.05.06	Phoraua	Sēwak-e Dahan Waras	37.00	110.00	34.2341	66.8811	tentative
6.17.05.07	Khatrikhe	Karukh (Karokh)	36.33	103.00	34.4812	62.5862	tentative
6.17.05.08	Chaurina	Chalkhi (Chow Garmī)	36.33	104.33	35.1847	61.5512	tentative
6.17.06.01	Orthiana	Kowarzān	36.33	105.25	34.2917	62.1274	tentative
6.17.06.02	Taukiana	Taywarah (Teyvareh)	36.00	106.17	33.5211	64.4211	tentative
6.17.06.03	Astanda	Aqtāshhā	36.00	107.67	33.8696	63.1436	tentative
6.17.06.04	Artikaudna	Dahan-e Akhtah Khānah	36.17	109.33	34.5095	65.1698	tentative
6.17.06.05	Alexandria in Aria	Herat	36.00	110.00	34.3431	62.1956	known
6.17.06.06	Babarsana	Rahzanak	35.33	103.33	34.4594	61.4347	tentative
6.17.06.07	Kapotana	Kamānah	35.50	104.50	34.3656	61.6222	tentative
6.17.07.01	Aria	Ghōriyān	35.00	105.00	34.3456	61.4939	known
6.17.07.02	Kaske	Khamsarā	35.33	107.33	34.1301	63.3376	tentative
6.17.07.03	Soteira	Sāghar	35.17	108.67	33.6786	63.8665	tentative
6.17.07.04	Orbitane	Obe (Öbêh, Awbeh)	35.50	109.33	34.3696	63.1763	tentative
6.17.07.05	Nisibis	Nazeran (Nāzīrān)	35.33	111.00	34.5881	66.1338	tentative
6.17.07.06	Parakanake	Pyazdarak (Pīāz Dārak)	34.33	105.50	34.0821	63.0346	tentative
6.17.07.07	Sariga	Sangān	34.67	106.67	33.5809	64.9952	tentative
6.17.08.01	Darkama	Gardana (Gardanah)	34.67	111.00	34.0450	65.6959	tentative
6.17.08.02	Kotake	Kōtak	33.67	107.50	34.8161	67.1077	known
6.17.08.03	Tribazina	Tagāw-e Birinjī (Birinjī)	33.00	106.00	34.1938	64.8636	tentative
6.17.08.04	Astasana	Adraskan	33.00	105.00	33.6448	62.2682	known

6.17.08.05	Zimyra	Zīrān	33.25	102.50	31.9724	60.4742	tentative
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Table 12. Ptolemy's Objects in Paropanisadae.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.18.01.07	Boundary mark (Arachosia, India before the Ganges, Paropanisadae)		32.67	119.00	34.4243	69.4372	tentative
6.18.02.04	Sources of a nameless tributary of Koas R.	Kabul R. sources	34.50	115.00	34.3392	68.4525	known
6.18.04.01	Parsiana	Shāh-e Parī	38.75	118.50	35.9053	70.8936	tentative
6.18.04.02	Barzaura	Barfak	37.50	114.00	35.3467	68.1597	tentative
6.18.04.03	Artoarta	Andarab (Al-Biruni's Andarab)	37.50	116.50	35.6181	69.2127	tentative
6.18.04.04	Baborana	Charikar (Al-Biruni's Parwan)	37.33	118.00	35.0129	69.1711	known
6.18.04.05	Kapisa	Alexandria of the Caucasus ruins	37.50	118.67	34.9927	69.3106	known
6.18.04.06	Niphanda	Nīlāw	37.00	119.00	35.2310	70.2862	tentative
6.18.04.07	Drastoka	Kunduz (Qunduz, Al-Biruni's Walwalij)	37.50	116.00	36.7169	68.8607	known
6.18.04.08	Gazaka	Ghāzi Khān Khēl	36.25	118.50	34.7190	69.6729	tentative
6.18.05.01	Naulibis	Liwān	35.50	117.00	34.4621	68.8391	tentative
6.18.05.02	Parsia	Farza (Farzah) district, coordinates of Deh Now-e Farzah adopted	35.00	113.50	34.7890	69.0413	known
6.18.05.03	Locharna	Kulangar (Kolangar) in Logar province	34.00	118.00	34.0394	69.0233	tentative
6.18.05.04	Daroakana	Hadda archaeological site near Jalalabad (ancient Nagarhara, Adinapur, Al-Biruni's Dunpur)	34.75	118.75	34.4102	70.4433	known
6.18.05.05	Kabura = Ortospana	Kabul	35.00	118.00	34.5053	69.1915	known
6.18.05.06	Tarbakana	Bar Kana	33.67	114.33	34.9622	72.7467	tentative
6.18.05.07	Bagarda	Ghorband	33.67	116.67	34.9169	72.6455	tentative
6.18.05.08	Arguda	Gunday	33.50	118.75	34.3709	72.0085	tentative

Table 13. Ptolemy's Objects in Drangiana.

Ptolemy ID	Ptolemy Name	Modern Name	Ptol. Lat.	Ptol. Lon.	Mod. Lat.	Mod. Lon.	Status
6.19.01.06	Border mark (Arachosia, Drangiana, Gedrosia)		28.00	111.50	28.5479	65.8898	unknown
6.19.02.02	Sources of nameless tributary of Arbis R.	Source of Farah R. near Kōh-e Safēd (3059 m)	32.50	109.00	33.9967	64.4348	tentative
6.19.04.02	Prophthasia	Farah archaeological site (Al-Biruni's Farah Wazyrgan)	32.33	110.00	32.3819	62.1118	known
6.19.04.03	Rhuda	Rangin Castle	31.50	106.50	32.3026	61.3883	tentative
6.19.04.04	Inna	Lāsh-e Juwayn (Al-Biruni's Guwayn, Juwayn)	31.50	109.00	31.7136	61.6240	known
6.19.04.05	Arikada	Gereshk	31.33	110.33	31.8218	64.5708	tentative
6.19.05.01	Asta	Shahr-e Ghulghulah ruins (Al-Biruni's Khisn at-Tak)	30.67	107.50	30.5768	62.0903	tentative
6.19.05.02	Xarxiare	Zaranj	29.25	106.33	30.9604	61.8533	known
6.19.05.03	Nostana	Mastung (Al-Biruni's Mastang)	29.67	108.00	29.7996	66.8455	tentative
6.19.05.04	Pharazana	Loy Radzay (Lōy Rāzay, Rāzay, Al-Biruni's Razdan, Ruzdan)	30.00	110.00	31.4459	62.6908	known
6.19.05.05	Bigis	Qal'ah-ye Bust (Qala-e Bost, Qila-i-Bust)	29.67	111.00	31.5030	64.3567	known
6.19.05.06	Ariaspe	Ayrkap (Ērkap)	28.67	108.67	30.0443	61.3948	tentative
6.19.05.07	Arana	Kharan	28.25	111.00	28.5834	65.4146	known

Table 14. Ptolemy's Objects in Arachosia.

<i>Ptolemy ID</i>	<i>Ptolemy Name</i>	<i>Modern Name</i>	<i>Ptol. Lat.</i>	<i>Ptol. Lon.</i>	<i>Mod. Lat.</i>	<i>Mod. Lon.</i>	<i>Status</i>
6.20.01.06	Border mark (Arachosia, Gedrosia, India before the Ganges)		28.00	119.00	31.3428	69.9320	unknown
6.20.02.02	Sources of a nameless tributary of Indus R.	Kurram R. (Kurrama R.) sources	32.50	114.00	33.6170	69.3186	tentative
6.20.02.03	Nameless tributary joins Indus R.	Kurram R. (Kurrama R.)	27.50	122.50	32.6205	71.3651	duplicate
6.20.02.04	Arachotos Spring, a lake		29.67	115.00	29.9851	61.5398	tentative
6.20.04.02	Ozola	Khōst	32.25	114.25	33.3394	69.9203	tentative
6.20.04.03	Phoklis	Charsadda	32.17	118.25	34.1482	71.7406	duplicate
6.20.04.04	Alexandria Arachosia	Alexandria Arachosia archaeological site near Ghrêh Kalāchah	31.00	114.00	31.6028	65.6590	known
6.20.04.05	Rhizana	Rawdza (Rawza, Rowzah, Rauza, Al-Biruni's Riwsaran)	31.17	115.00	33.5817	68.4539	known
6.20.04.06	Arbaka	Wardak (Tangī Girōy Wardak) in Ghazni province	31.33	118.33	33.6572	68.2156	known
6.20.04.07	Sigara	Sardaran (Sardārān)	30.00	113.25	31.5395	65.4584	known
6.20.04.08	Choaspa	Ghazni (Al-Biruni's Ghaznin, Ghazna)	30.17	115.25	33.5580	68.4243	known
6.20.05.01	Arachotos	Qalāt-e Ġilzay	30.33	118.00	32.1114	66.9081	known
6.20.05.02	Asiake	Essa Chah (Al-Biruni's Ispid-Khak)	29.33	112.33	29.5849	65.5293	known
6.20.05.03	Gammake	Burmal (Al-Biruni's Farmal)	29.33	116.33	32.7153	69.2824	tentative
6.20.05.04	Maliana	Miāni tribal area	29.33	118.00	32.0297	69.9733	known
6.20.05.05	Dammana	Maiwand (Al-Biruni's Maymand)	28.67	113.00	31.6232	65.0539	known

Table 15. Ptolemy's Objects in Gedrosia.

<i>Ptolemy ID</i>	<i>Ptolemy Name</i>	<i>Modern Name</i>	<i>Ptol. Lat.</i>	<i>Ptol. Lon.</i>	<i>Mod. Lat.</i>	<i>Mod. Lon.</i>	<i>Status</i>
6.21.01.07	Boundary mark (Gedrosia, India before the Ganges)	Gadani Hill (87 m)	20.00	109.00	25.1144	66.7195	duplicate
6.21.02.03	Arbis R. mouth	Basol R. mouth	20.25	105.00	25.3091	64.2302	known
6.21.02.04	Arbis R. sources	Basol R. (Abgir Kaur) sources	27.50	110.00	25.8974	64.2667	known
6.21.02.06	Nameless tributary joins Arbis R.	Abgir Kaur joins Chetrao Kaur	25.00	107.67	25.6663	64.3526	tentative
6.21.02.07	Rhagiraua	Ormara (Al-Biruni's Arma'il)	20.00	106.00	25.2101	64.6362	known
6.21.02.08	Harbor of Women	Kund Malir	20.25	107.00	25.3940	65.4625	tentative
6.21.02.09	Koiamba	Kot Bala ruins (Al-Biruni's Kanbala)	20.00	108.00	25.4473	66.7273	known
6.21.02.10	Rhizana	Gadani	20.25	108.67	25.1186	66.7326	tentative
6.21.02.11	Boundary mark (Gedrosia, India before the Ganges)	Gadani Hill (87 m)	20.00	109.00	25.1144	66.7195	tentative
6.21.03.02	Arbita Mts. (W. end)	Abgir Mt. (708 m) in Abghir Band	22.00	107.00	25.7557	64.2953	known
6.21.03.03	Arbita Mts. (E. end)	Rango hill (1355 m)	26.50	113.00	27.6832	66.0766	tentative
6.21.03.07	Source of the nameless tributary of Indus R. in Arbita Mts.	Mula R. source	25.50	111.00	28.6241	67.4921	duplicate
6.21.05.02	Kuni	Kuhak in Sistan and Baluchestan province, Iran	27.00	110.00	27.1326	63.2445	tentative

6.21.05.03	Badara	Phadden (Phadan)	27.00	113.00	27.7305	66.0534	tentative
6.21.05.04	Musarna	Khuzdar (Al-Biruni's Kuzdar)	27.50	115.00	27.8103	66.6101	tentative
6.21.05.05	Kottobara	Gandava (Gandawah, Al-Biruni's Kandabil)	27.50	118.00	28.6131	67.4856	known
6.21.05.06	Soxstra	Sehwan (Al-Biruni's Sadusan, Sivastan)	27.75	118.50	26.4334	67.8609	known
6.21.05.07	Oskana	Bela	26.00	115.00	26.2268	66.3111	tentative
6.21.05.08	Parsis	Panjgur	23.50	106.50	26.9717	64.0945	known
6.21.05.09	Omiza	Omrāri tribal area	23.50	110.00	26.3314	66.0126	tentative
6.21.05.10	Arbis	Abgir	20.50	105.33	25.7334	64.3004	known
6.21.06.02	Asthaia I.	Astola I.	18.00	105.00	25.1227	63.8483	known
6.21.06.03	Kodane I.	Churma I. (Churna I.)	17.00	107.50	24.8975	66.6058	known