

Celestial Sphere Models 3

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Table of Contents

1. Instructions	1
2. Greek Alphabet	2
3. Constellations	2
4. Spherical Biangles	4
5. Panels (Isoceles Trapezoids and Triangles)	8
6. Copying	12
6.1. GNU General Public License	12
6.2. GNU Free Documentation License	23

Instructions

PLEASE NOTE! The author has tried to ensure that the following plans are correct, but as of September 6, 2021, he has not tested them yet himself. As mentioned above, this material is distributed **without a warranty**. I recommend that users check it themselves before investing a lot of time and effort into cutting out the paper models.

Any corrections will be gratefully received by the author. Contact information can be found on the title page.

The two models include the 200 brightest stars, except for Polaris, which would have been at an inconvenient location on the models, namely at the north pole.

The separate file [clstsph1_a4.pdf](#) in DIN A4 format contains data for the stars on the models.

The first model is made up of spherical biangles. They should not be folded but rather bent and attached to each other using the tabs on the left side, forming a sphere.

The second model uses “panels”. While the left and right sides of the sections appear to be curved, they are in fact made up of straight lines. The sections should be folded on the horizontal lines (declination) and again attached using the tabs. The result is an irregular polyhedron approximating a sphere.

The longitudes of the stars are found by rotating counter-clockwise from right ascension 0h 0' 0". I believe that the result of this is that the model represents the celestial sphere as seen by an observer looking at it from the outside. I hope someone will correct me if I'm wrong. The famous early star atlas of Johannes Hevelius from 1690 also shows the stars in this way¹.

However, in principle it wouldn't be difficult to reverse the representation. The difficulty would be in reversing the labels, but I think this problem could be solved.

The plans could also be generated for larger or smaller models. In addition, the limit of 200 stars is arbitrary and was chosen to correspond to the size of these versions of the models (sphere radius 7cm). As of October 15, 2021, the database table containing the star data has entries for over 1400 stars. However, not all of the entries contain all of the necessary data yet. If you want to make models of a different size and/or with a different number of stars, please send an email to the author at the address listed above.

Greek Alphabet

α	alpha	ν	nu
β	beta	ξ	xi
γ	gamma	\omicron	omicron
δ	delta	π, ϖ	pi
ϵ, ε	epsilon	ρ, ϱ	rho
ζ	zeta	σ, ς	sigma
η	eta	τ	tau
θ, ϑ	theta	υ	upsilon
ι	iota	ϕ, φ	phi
κ	kappa	χ	chi
λ	lambda	ψ	psi
μ	mu	ω	omega

Constellations

Full name, genitive, abbreviation.

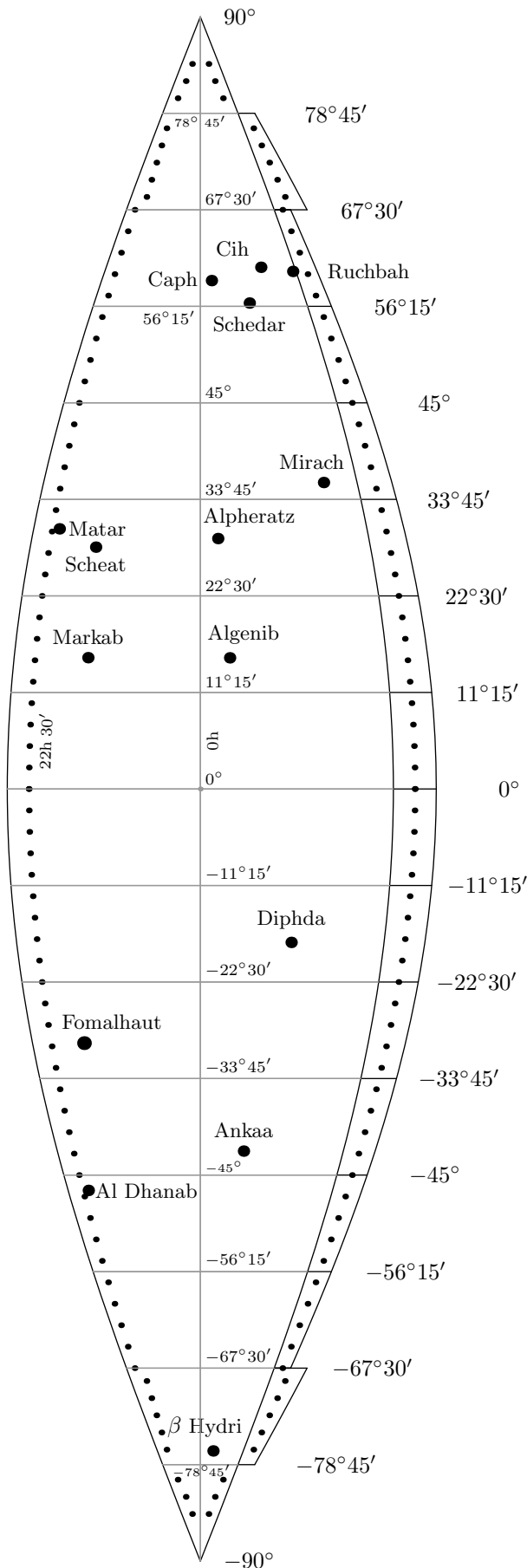
- | | |
|--|--|
| 1. Andromeda , Andromedae, And | 15. Canis Minor , Canis Minoris, CMi |
| 2. Antlia , Antliae, Ant | 16. Capricornus , Capricorni, Cap |
| 3. Apus , Apodis, Aps | 17. Carina , Carinae, Car |
| 4. Aquarius , Aquarii, Aqr | 18. Cassiopeia , Cassiopeiae, Cas |
| 5. Aquila , Aquilae, Aql | 19. Centaurus , Centauri, Cen |
| 6. Ara , Arae, Ara | 20. Cepheus , Cephei, Cep |
| 7. Aries , Arietis, Ari | 21. Cetus , Ceti, Cet |
| 8. Auriga , Aurigae, Aur | 22. Chamaeleon , Chamaeleontis, Cha |
| 9. Boötes , Boötis, Boo | 23. Circinus , Circini, Cir |
| 10. Caelum , Caeli, Cae | 24. Columba , Columbae, Col |
| 11. Camelopardalis , Camelopardalis, Cam | 25. Coma Berenices , Comae Berenices, Com |
| 12. Cancer , Cancri, Cnc | 26. Corona Borealis , Coronae Borealis, CrB |
| 13. Canes Venatici , Canum Venaticorum, CVn | 27. Corona Australis , Coronae Australis, Cra |
| 14. Canis Major , Canis Majoris, CMa | 28. Corvus , Corvi, Crv |

¹ Menzel, Donald H. and Pasachoff, Jay M., *Stars and Planets. Peterson Field Guides*, p. 21.

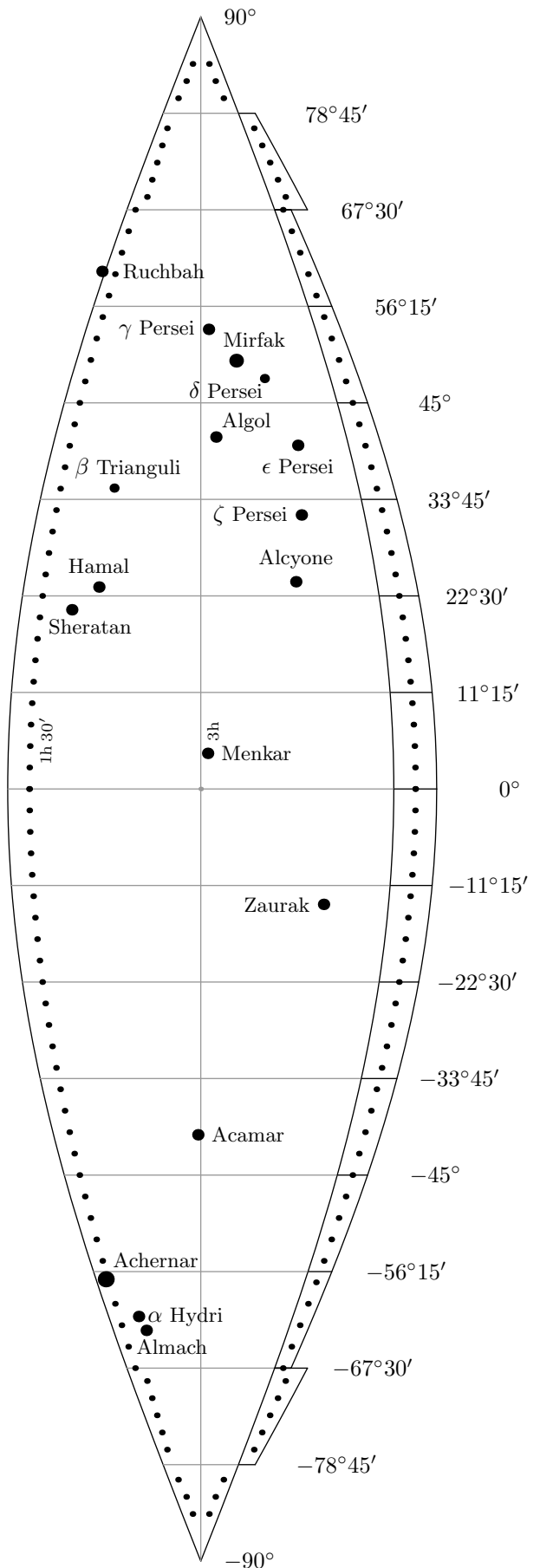
29. **Crater**, Crateris, Crt
 30. **Crux**, Crucis, Cru
 31. **Cygnus**, Cygni, Cyg
 32. **Delphinus**, Delphini, Del
 33. **Dorado**, Doradus, Dor
 34. **Draco**, Draconis, Dra
 35. **Equuleus**, Equulei, Equ
 36. **Eridanus**, Eridani, Eri
 37. **Fornax**, Fornacis, For
 38. **Gemini**, Geminorum, Gem
 39. **Grus**, Gruis, Gru
 40. **Hercules**, Herculis, Her
 41. **Horologium**, Horologii, Hor
 42. **Hydra**, Hydrae, Hya
 43. **Hydrus**, Hydri, Hyi
 44. **Indus**, Indi, Ind
 45. **Lacerta**, Lacertae, Lac
 46. **Leo**, Leonis, Leo
 47. **Leo Minor**, Leonis Minoris, LMi
 48. **Lepus**, Leporis, Lep
 49. **Libra**, Librae, Lib
 50. **Lupus**, Lupi, Lup
 51. **Lynx**, Lyncis, Lyn
 52. **Lyra**, Lyrae, Lyr
 53. **Mensa**, Mensae, Men
 54. **Microscopium**, Microscopii, Mic
 55. **Monoceros**, Monocerotis, Mon
 56. **Musca**, Muscae, Mus
 57. **Norma**, Normae, Nor
 58. **Octans**, Octantis, Oct
 59. **Ophiuchus**, Ophiuchi, Oph
 60. **Orion**, Orionis, Ori
 61. **Pavo**, Pavonis, Pav
 62. **Pegasus**, Pegasi, Peg
 63. **Perseus**, Persei, Per
 64. **Phoenix**, Phoenicis, Phe
 65. **Pictor**, Pictoris, Pic
 66. **Pisces**, Piscium, Psc
 67. **Piscis Austrinus**, Piscis Austrini, PsA
 68. **Puppis**, Puppis, Pup
 69. **Pyxis**, Pyxidis, Pyx
 70. **Reticulum**, Reticuli, Ret
 71. **Sagitta**, Sagittae, Sge
 72. **Sagittarius**, Sagittarii, Sgr
 73. **Scorpius**, Scorpii, Sco
 74. **Sculptor**, Sculptoris, Scl
 75. **Scutum**, Scuti, Sct
 76. **Serpens**, Serpentis, Ser
 77. **Sextans**, Sextantis, Sex
 78. **Taurus**, Tauri, Tau
 79. **Telescopium**, Telescopii, Tel
 80. **Triangulum**, Trianguli, Tri
 81. **Triangulum Australe**, Trianguli Australis, TrA
 82. **Tucana**, Tucanae, Tuc
 83. **Ursa Major**, Ursae Majoris, UMa
 84. **Ursa Minor**, Ursae Minoris, UMi
 85. **Vela**, Velorum, Vel
 86. **Virgo**, Virginis, Vir
 87. **Volans**, Volantis, Vol
 88. **Vulpecula**, Vulpeculae, Vul

Spherical Biangles

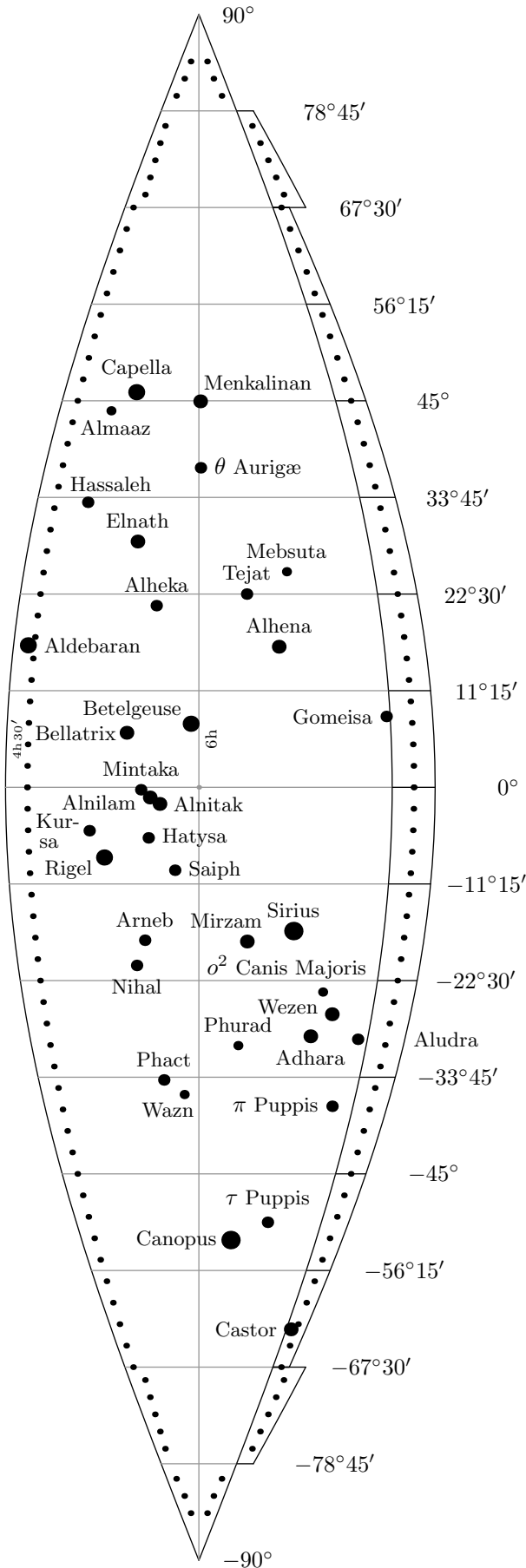
Radius 7.5cm



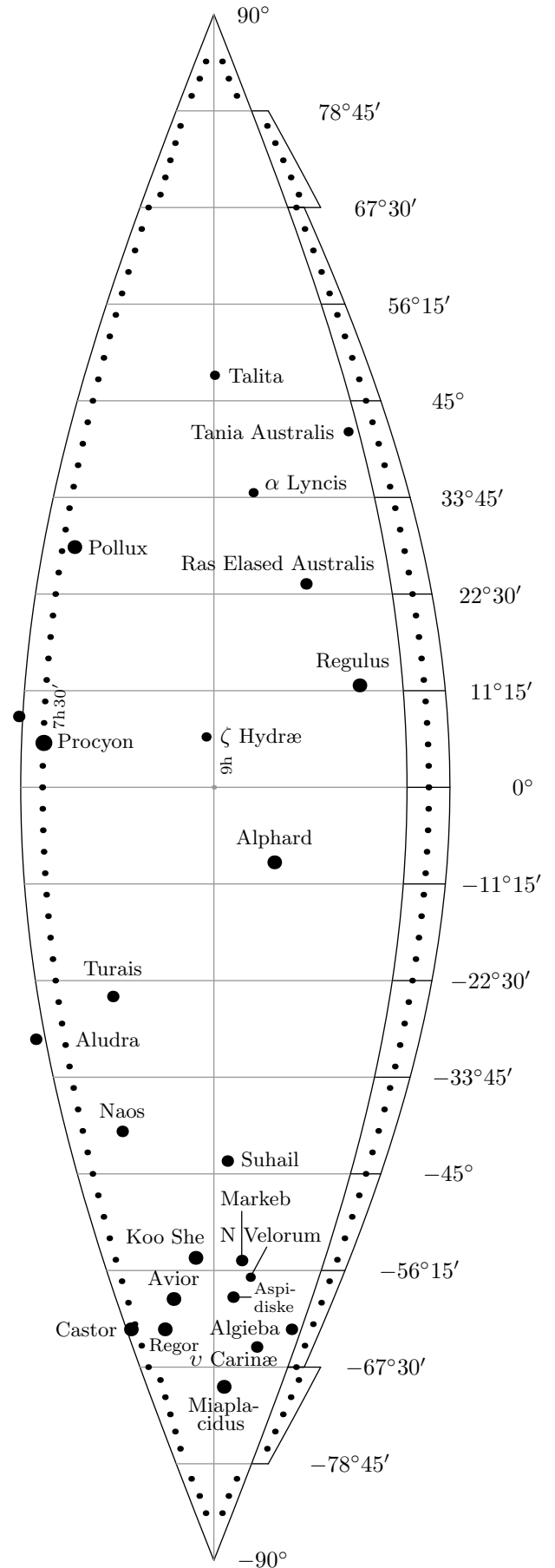
1
 RA 22h 30' 0h 1h 30'
 337.5° 0° 22.5°



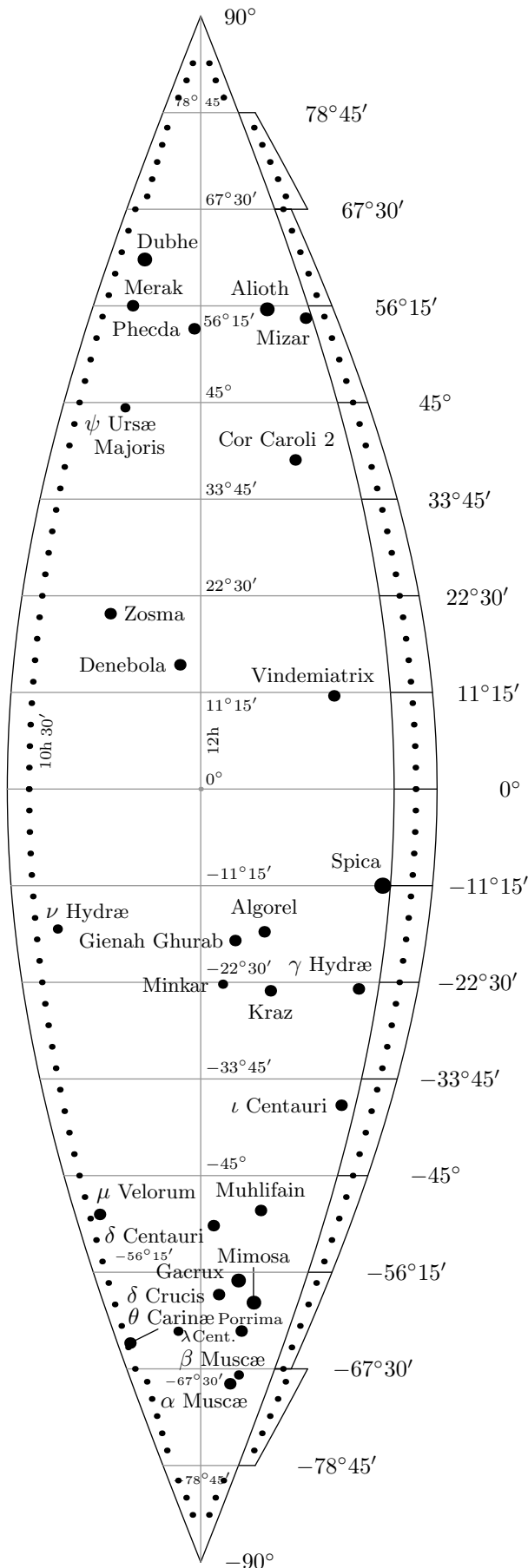
2
 RA 1h 30' 3h 4h 30'
 22.5° 45° 67.5°



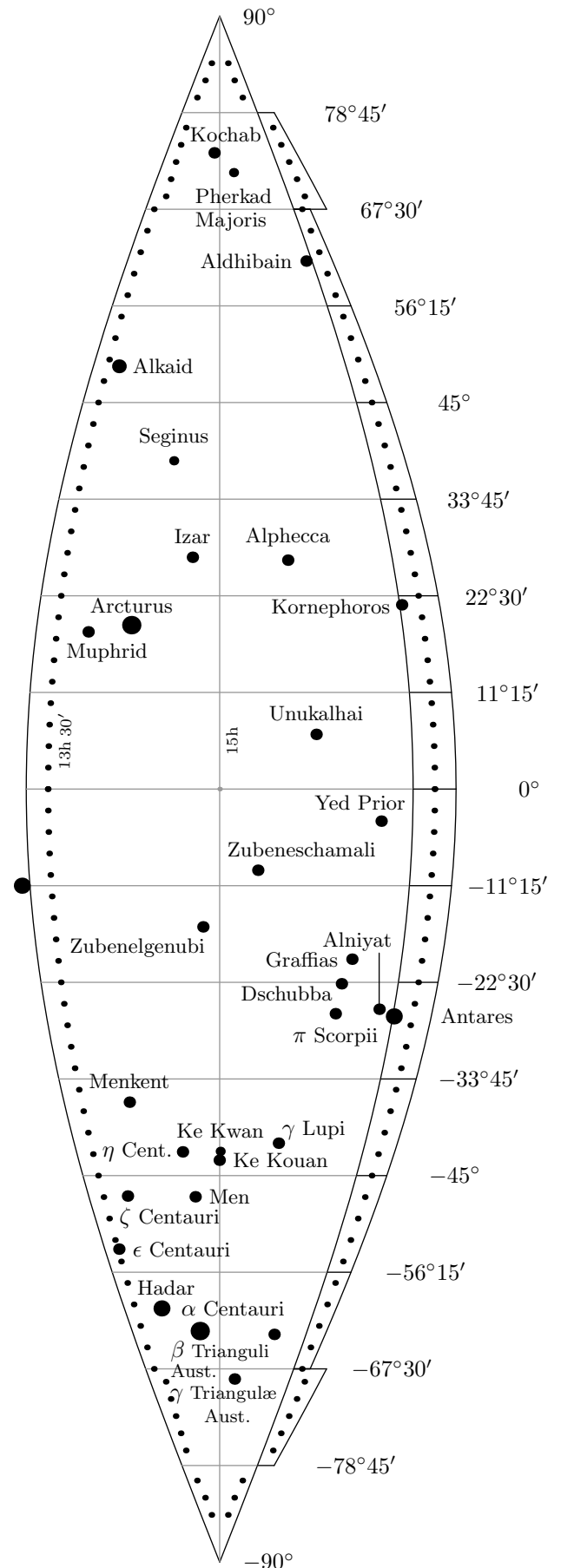
3
 RA 4h 30' 6h 7h 30'
 67.5° 90.0° 112.5°



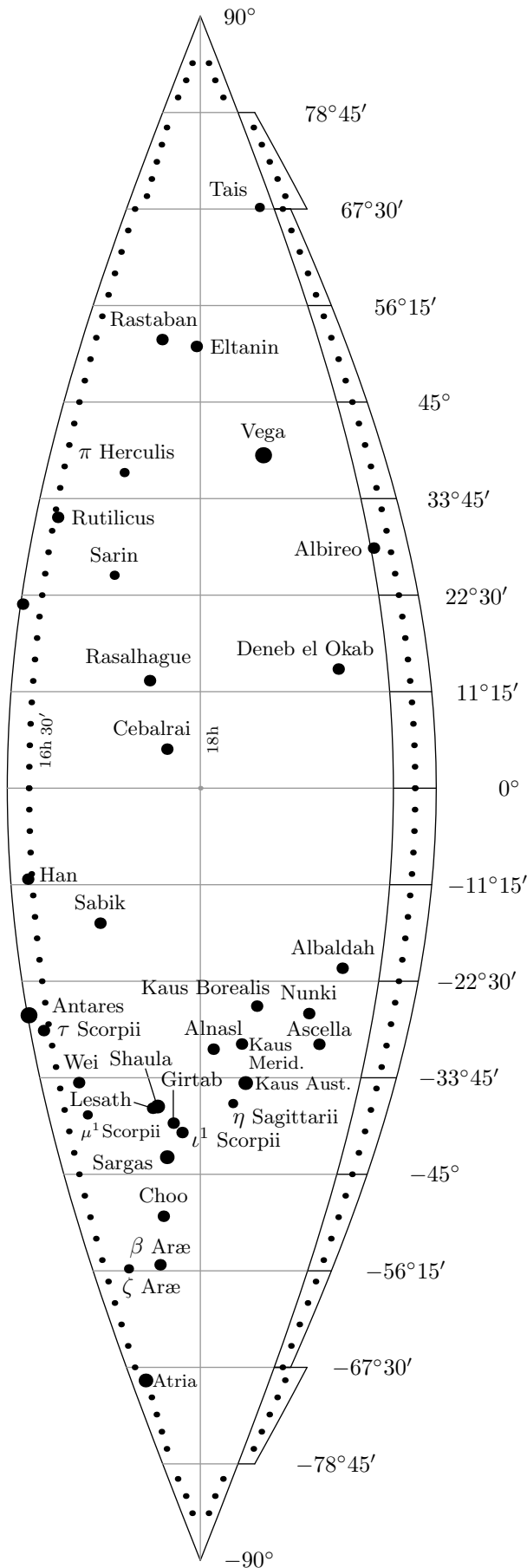
4
 RA 7h 30' 9h 10h 30'
 112.5° 135° 157.5°



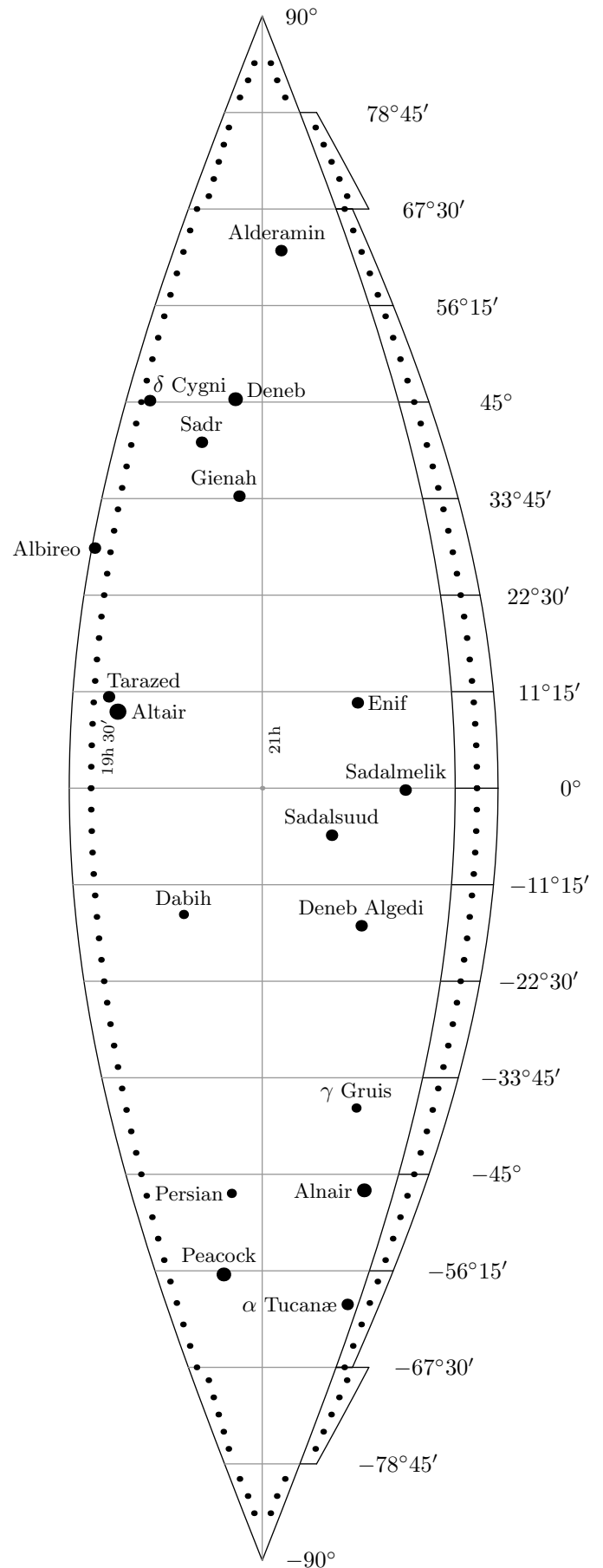
5
 RA 10h 30' 12h 13h 30'
 157.5° 180° 202.5°



6
 RA 13h 30' 15h 16h 30'
 202.5° 225° 247.5°

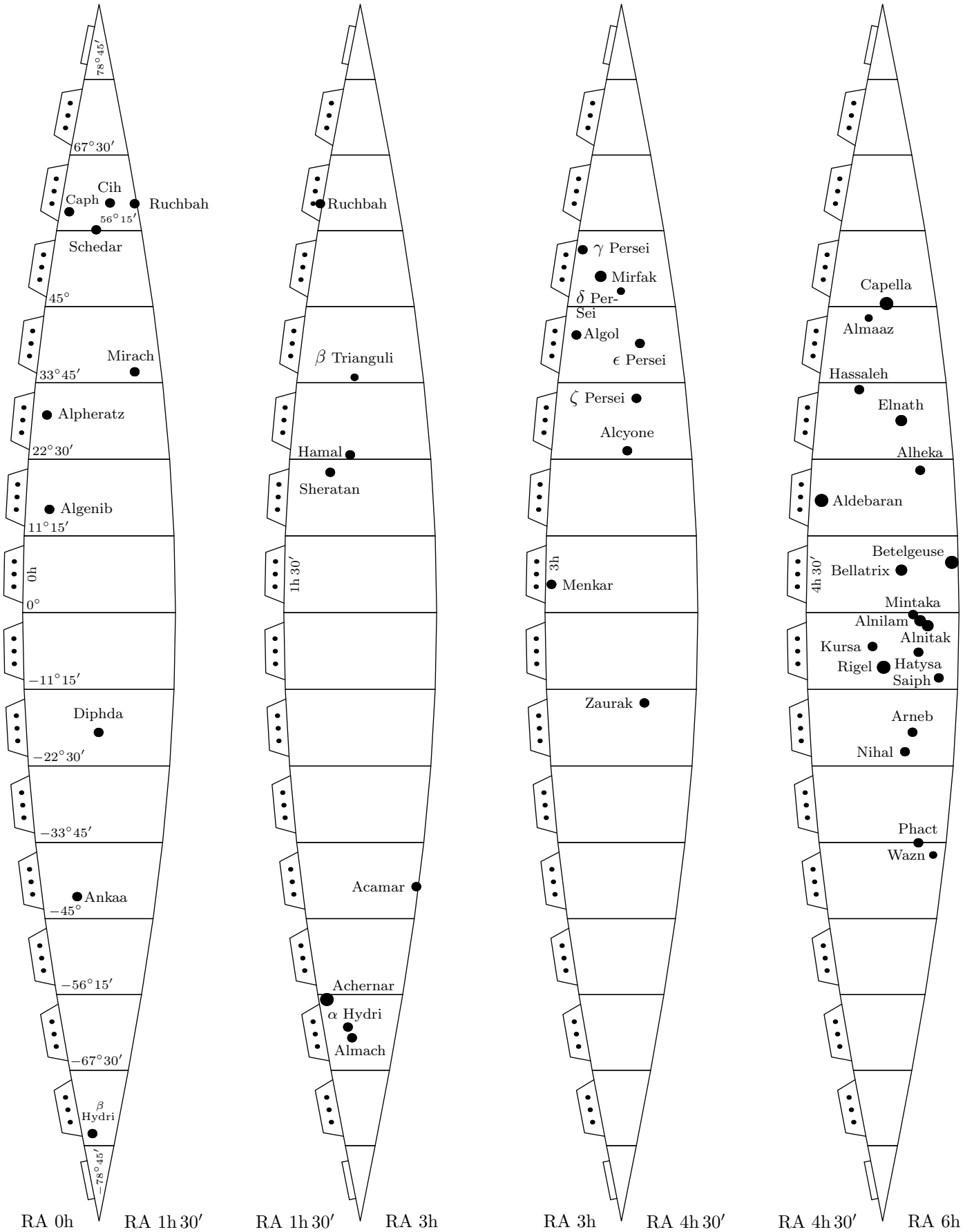


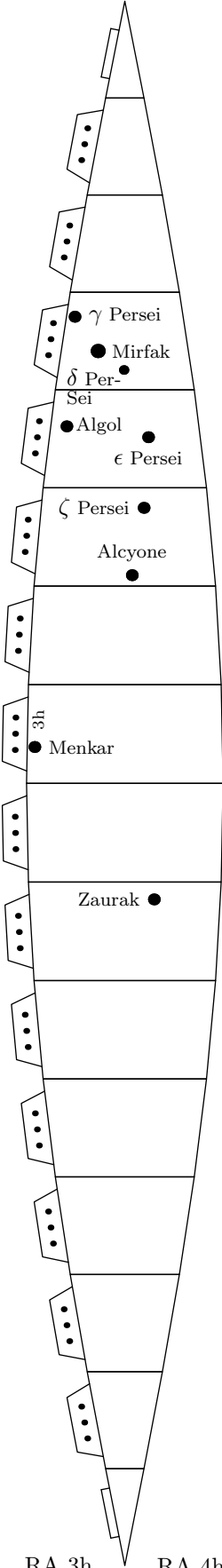
7
 RA 16h 30' 18h 19h 30'
 247.5° 270° 292.5°



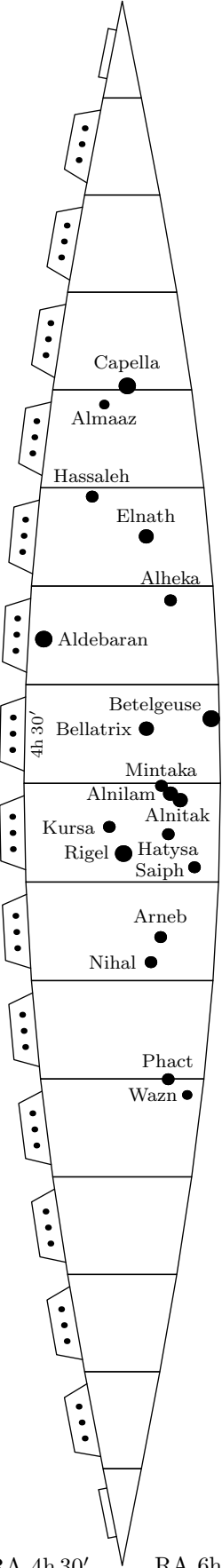
8
 RA 19h 30' 21h 22h 30'
 292.5° 315° 337.5°

Panels (Isoceles Trapezoids and Triangles)

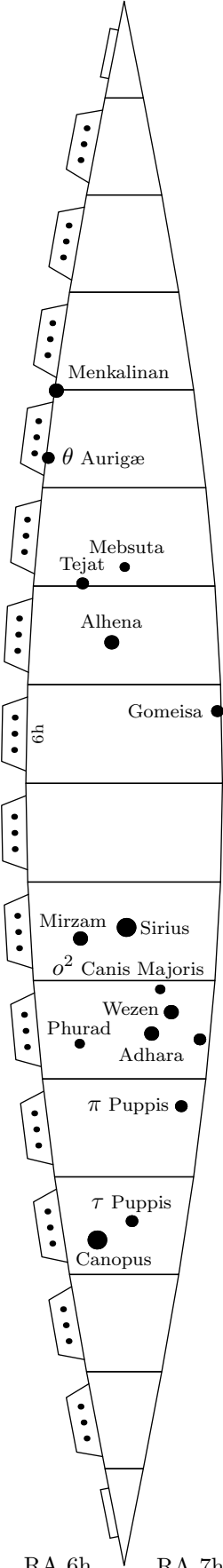




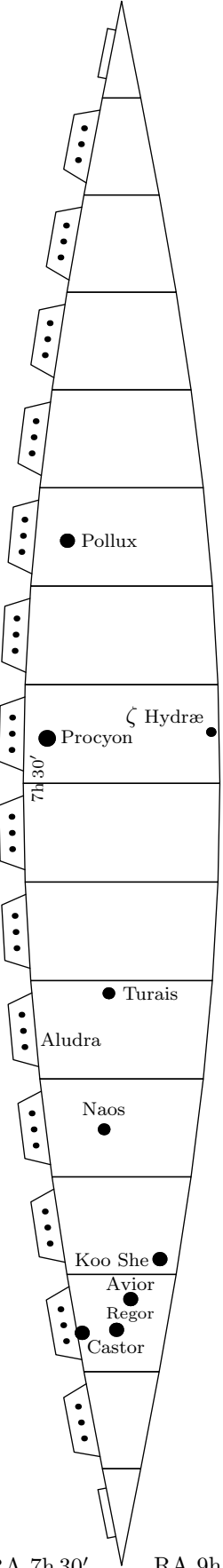
RA 3h RA 4h 30'



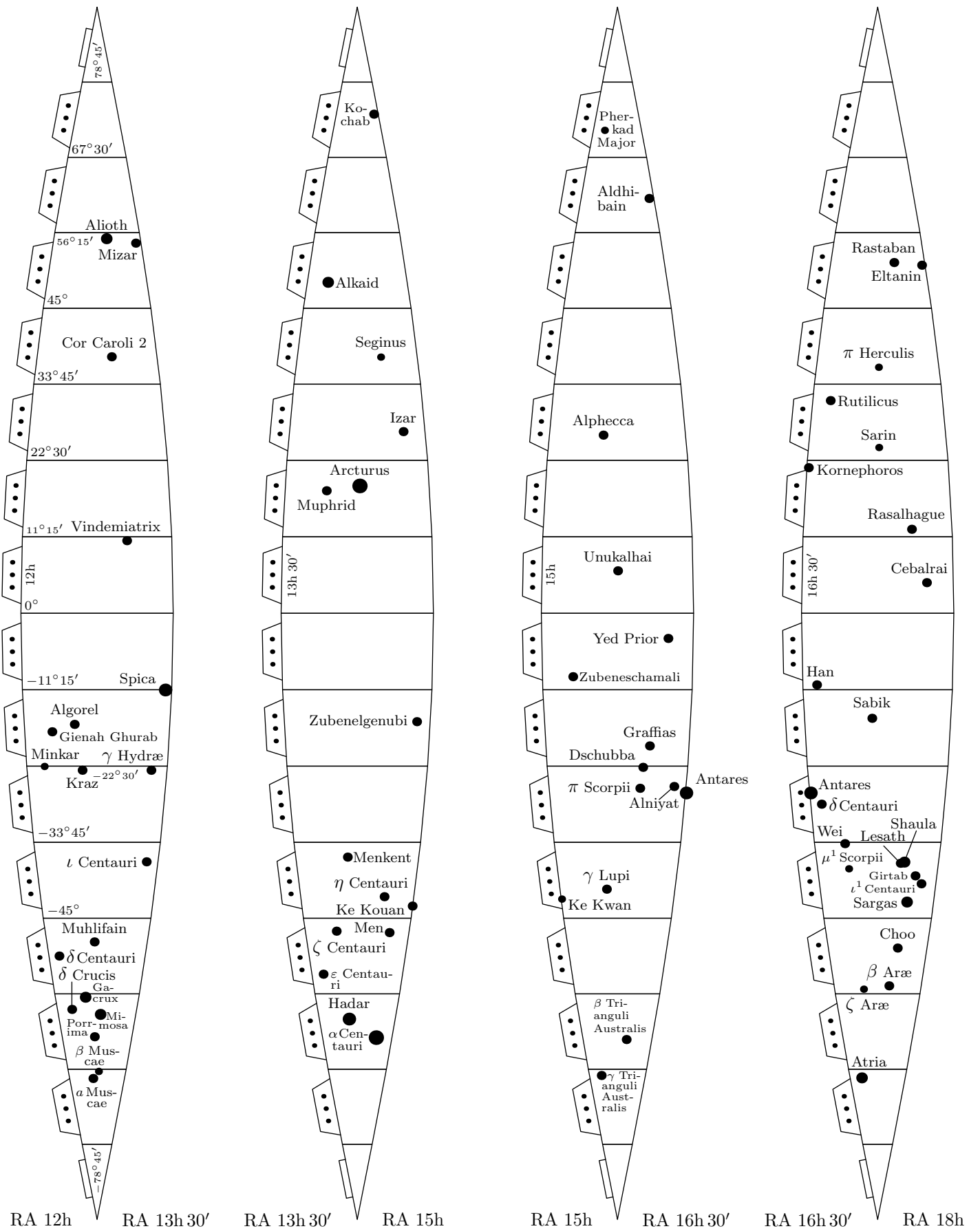
RA 4h 30' RA 6h

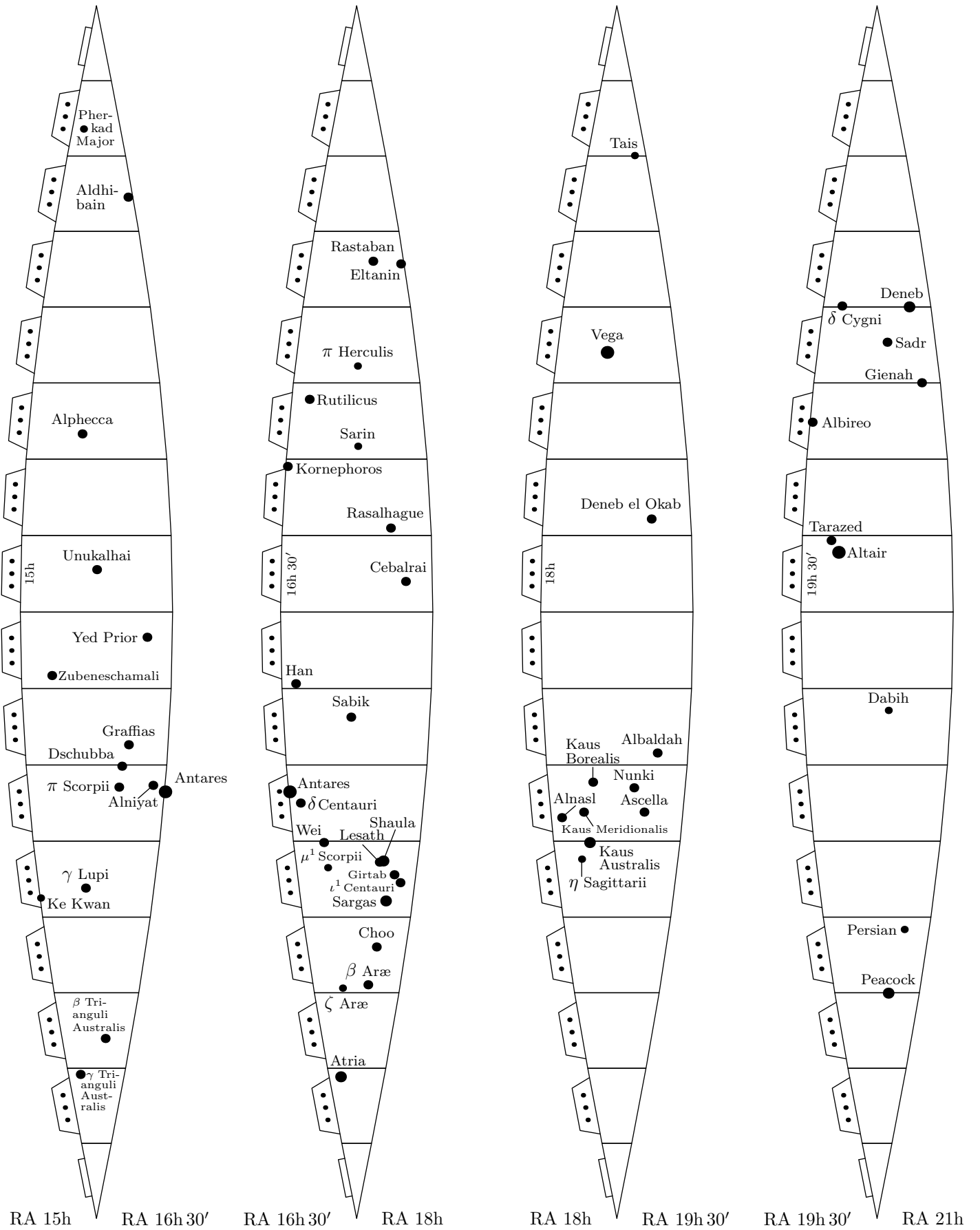


RA 6h RA 7h 30'



RA 7h 30' RA 9h





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Version 3, 29 June 2007

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