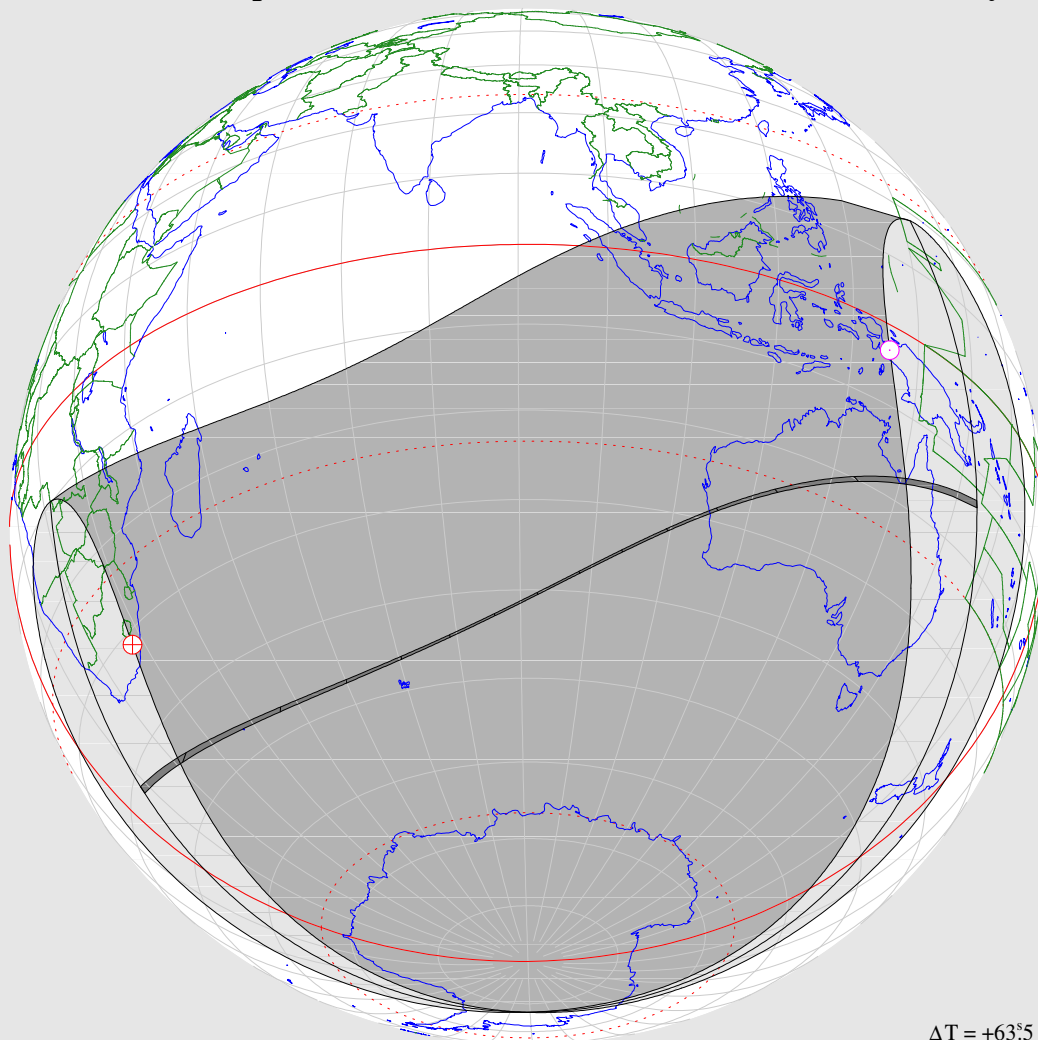


II. - Annular Eclipse of the Sun

1999 February 16



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$\Delta T = +63^s.5$
Globe centred on E 91°1' and S 33°0'

Circumstances	Time (UT)	Longitude	Latitude
	^h ^m	^o /	^o /
⊕ Eclipse begins; first contact with Earth	3 52.0	E 27 46.1	S 31 22.0
Beginning of northern limit of penumbra	4 38.2	E 21 48.2	S 9 44.9
Beginning of northern limit of umbra	4 57.0	E 8 07.4	S 41 08.8
Beginning of centre line; central eclipse begins	4 57.4	E 7 52.1	S 41 31.5
Beginning of southern limit of umbra	4 57.8	E 7 36.6	S 41 54.2
Central eclipse at local apparent noon	6 20.3	E 88 26.3	S 41 54.5
End of southern limit of umbra	8 09.5	E 154 17.7	S 13 57.7
End of centre line; central eclipse ends	8 09.9	E 154 06.8	S 13 35.9
End of northern limit of umbra	8 10.3	E 153 56.0	S 13 14.3
End of northern limit of penumbra	8 28.8	E 142 06.1	N 18 24.2
⊙ Eclipse ends; last contact with Earth	9 15.1	E 135 27.5	S 3 17.8