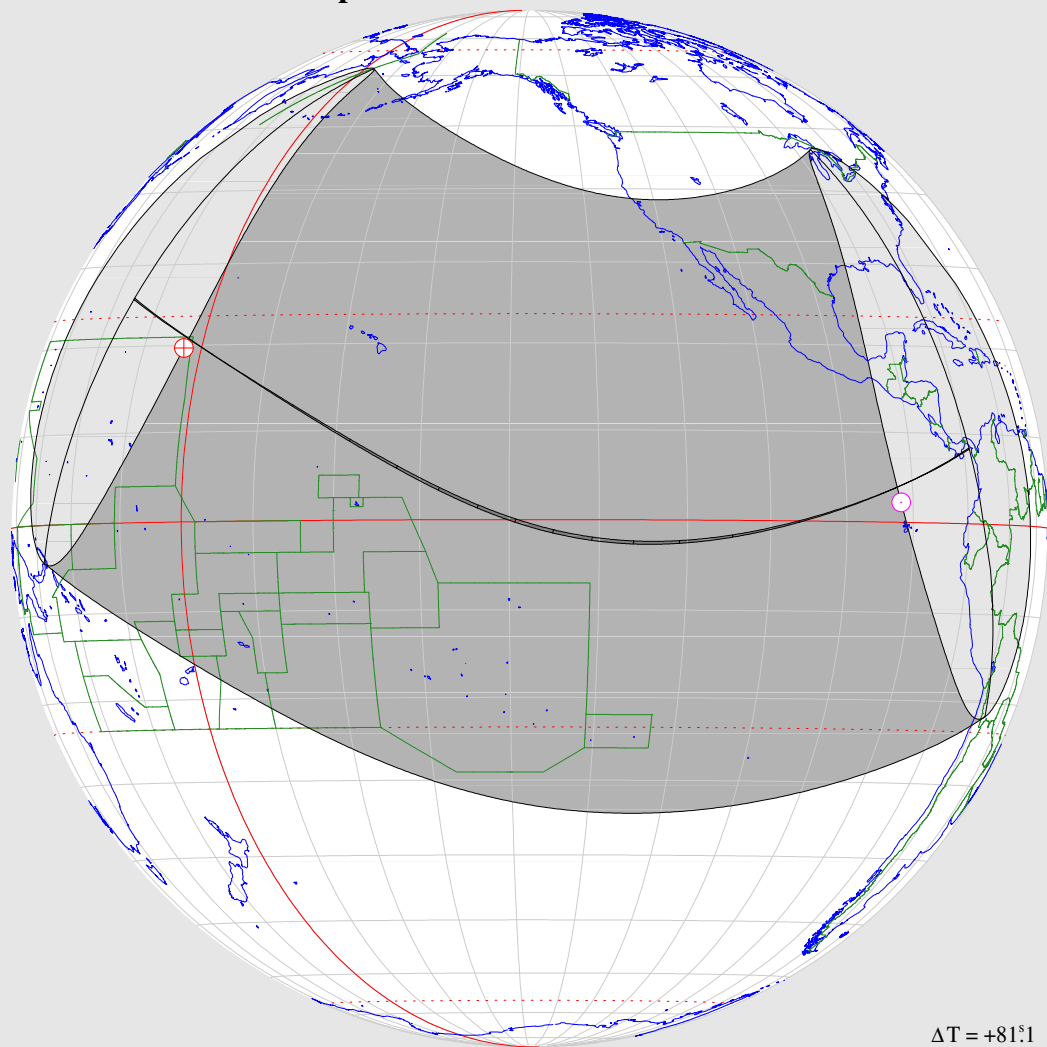


V. - Annular-Total Eclipse of the Sun

2031 November 14



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$\Delta T = +81^s.1$
Globe centred on W 137°7 and S 1°0

Circumstances	Time (UT)		Longitude		Latitude	
	h	m	°	'	°	'
⊕ Eclipse begins; first contact with Earth	18	23.1	E 177	08.4	N 19	41.7
Beginning of centre line; central eclipse begins	19	23.9	E 164	19.7	N 25	47.0
Beginning of northern limit of umbra	19	24.0	E 164	21.5	N 25	52.2
Beginning of southern limit of umbra	19	23.9	E 164	18.0	N 25	41.8
Beginning of southern limit of penumbra	19	29.6	E 152	18.1	S 4	12.4
Beginning of northern limit of penumbra	20	05.5	W 177	09.9	N 61	46.1
Central eclipse at local apparent noon	21	00.8	W 139	05.6	S 0	10.7
End of northern limit of penumbra	22	07.1	W 86	02.7	N 46	24.0
End of southern limit of penumbra	22	42.6	W 66	58.2	S 21	38.9
End of southern limit of umbra	22	48.4	W 78	46.5	N 8	17.6
End of northern limit of umbra	22	48.4	W 78	48.5	N 8	25.6
End of centre line; central eclipse ends	22	48.4	W 78	47.5	N 8	21.6
⊙ Eclipse ends; last contact with Earth	23	49.2	W 91	55.2	N 2	12.9