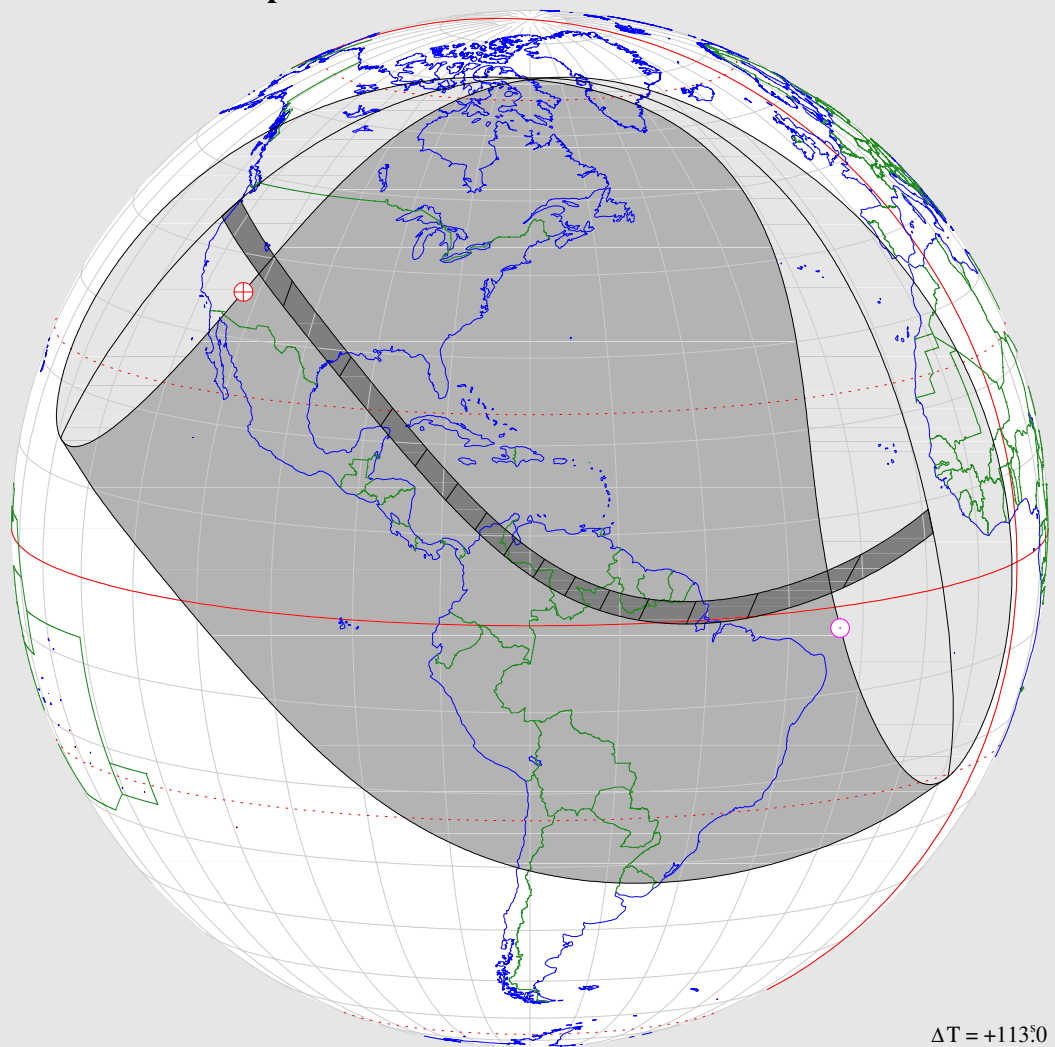


III. - Annular Eclipse of the Sun

2077 November 15



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$\Delta T = +113^s.0$
Globe centred on W 70°0 and N 10°8

Circumstances	Time (UT)		Longitude		Latitude	
	h	m	°	'	°	'
⊕ Eclipse begins; first contact with Earth	14	11.3	W112	42.4	N35	24.2
Beginning of southern limit of penumbra	15	20.1	W138	58.5	N14	06.4
Beginning of southern limit of umbra	15	22.2	W125	25.0	N43	46.1
Beginning of centre line; central eclipse begins	15	23.1	W124	45.1	N45	02.8
Beginning of northern limit of umbra	15	24.2	W124	03.3	N46	20.0
Central eclipse at local apparent noon	16	46.0	W 75	19.5	N11	22.4
End of northern limit of umbra	18	48.1	W 18	57.1	N 9	00.0
End of centre line; central eclipse ends	18	49.1	W 18	43.8	N 7	38.5
End of southern limit of umbra	18	50.0	W 18	29.8	N 6	18.1
End of southern limit of penumbra	18	51.9	W 8	06.5	S23	57.5
⊙ Eclipse ends; last contact with Earth	20	00.9	W 33	12.8	S 2	26.8