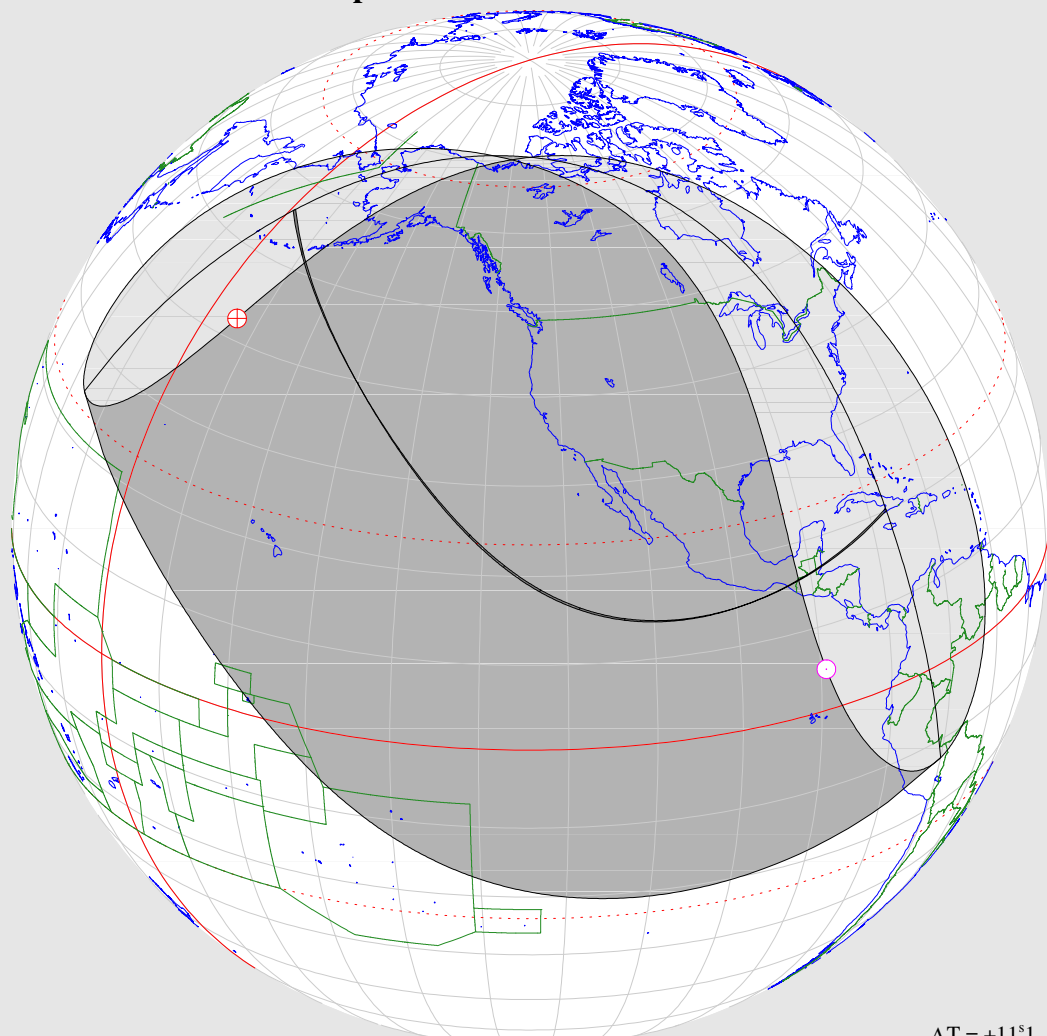


### III. - Annular-Total Eclipse of the Sun

1686 November 15



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$\Delta T = +11^s 1$   
Globe centred on W 124°3 and N 25°3

Circumstances	Time (UT)		Longitude		Latitude	
	h	m	°	'	°	'
⊕ Eclipse begins; first contact with Earth	18	34.1	W174	10.0	N42	21.0
Beginning of southern limit of penumbra	19	26.8	E 163	50.4	N25	15.2
Beginning of southern limit of umbra	19	43.9	W179	15.8	N56	05.6
Beginning of centre line; central eclipse begins	19	44.1	W179	08.2	N56	13.6
Beginning of northern limit of umbra	19	44.2	W179	00.6	N56	21.5
Central eclipse at local apparent noon	20	39.0	W133	27.2	N25	48.8
End of northern limit of umbra	22	25.6	W 77	19.0	N20	13.3
End of centre line; central eclipse ends	22	25.8	W 77	18.1	N20	05.3
End of southern limit of umbra	22	25.9	W 77	17.3	N19	57.4
End of southern limit of penumbra	22	42.8	W 70	00.0	S 12	41.2
⊙ Eclipse ends; last contact with Earth	23	35.6	W 89	16.5	N 4	55.2