

TSE2008: 01 August 2008 Total Solar Eclipse

A Flight into The Darkness of the Lunar Umbral Shadow

2m 51s ±10s of Totality in the Stratosphere

From the Pristine, Clear, and Particulate Free Skies of the High Polar (81°—83°) North from 35,000+ feet

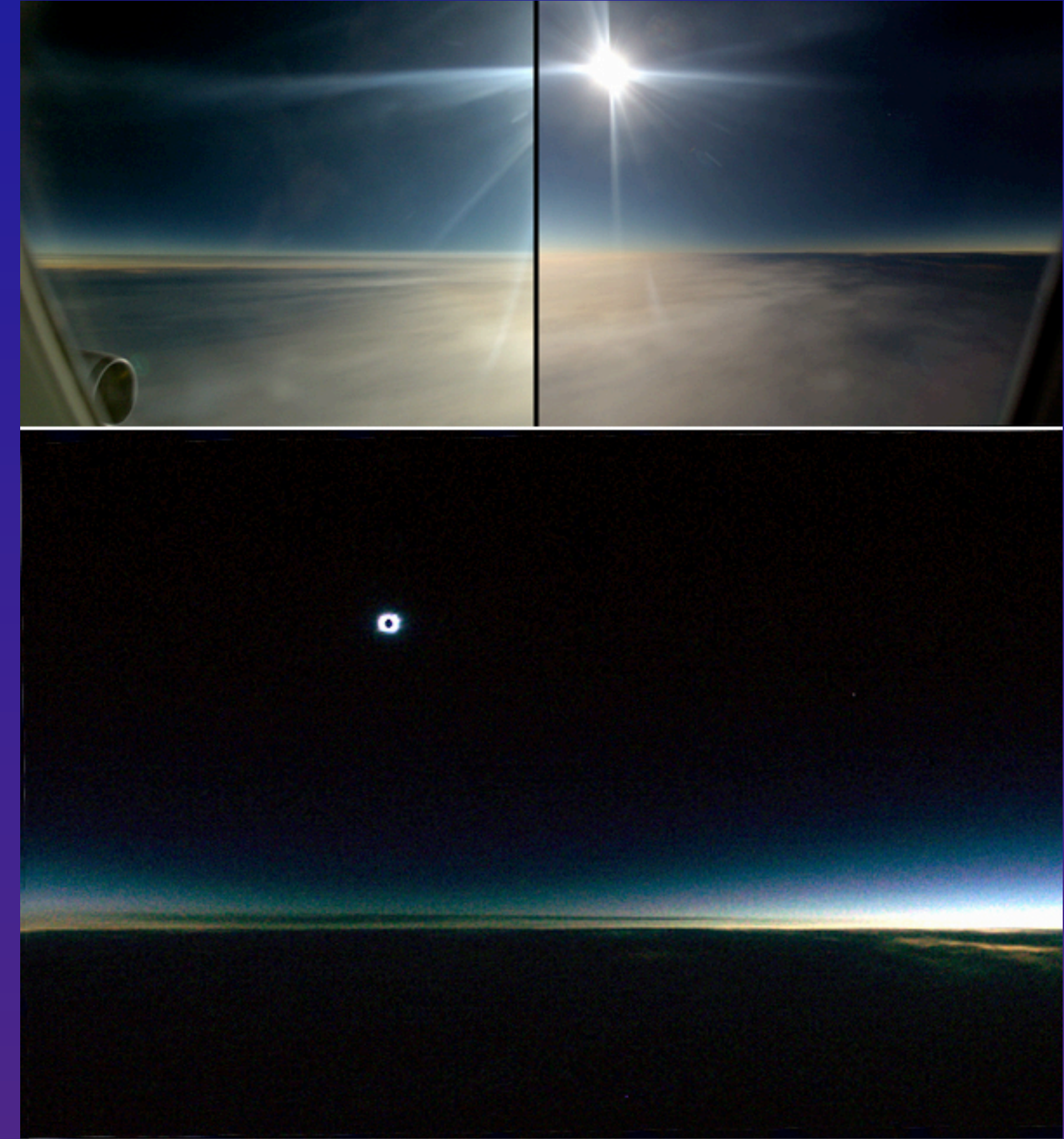
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TOP 10 REASONS FOR A POLAR STRATOSPHERIC FLIGHT

DEPLOYMENT FLEXIBILITY To Find the BEST Spot in the Area of Operations	CLOUD OBSURATION AVOIDANCE Polar Summer Stratosphere: 99.99% - Virtually Assured
TOTALITY PROLONGATION Aircraft Speed Extends the Duration of Totality	ENHANCED SKY TRANSPARENCY Significantly Improved — Low Particulate Scattering
SKY DARKNESS Much Higher Contrast, More Distant Coronal Visibility	IMPROVED ASTRONOMICAL SEEING "r_naught" Decreases with Increasing Altitude
REDUCED ATMOSPHERIC TURBIDITY Vorticity & Sheer Decline Above Tropopause	PANCHROMATIC VISIBILITY IR and UV "Windows" Open Up or are Enhanced
HORIZON REACH & VISTA Apparent Horizon 367 km, depressed 3.3° @ 35kft	ESTHETIC, ETHERIAL EXPERIENCE There is <i>nothing</i> quite like it...

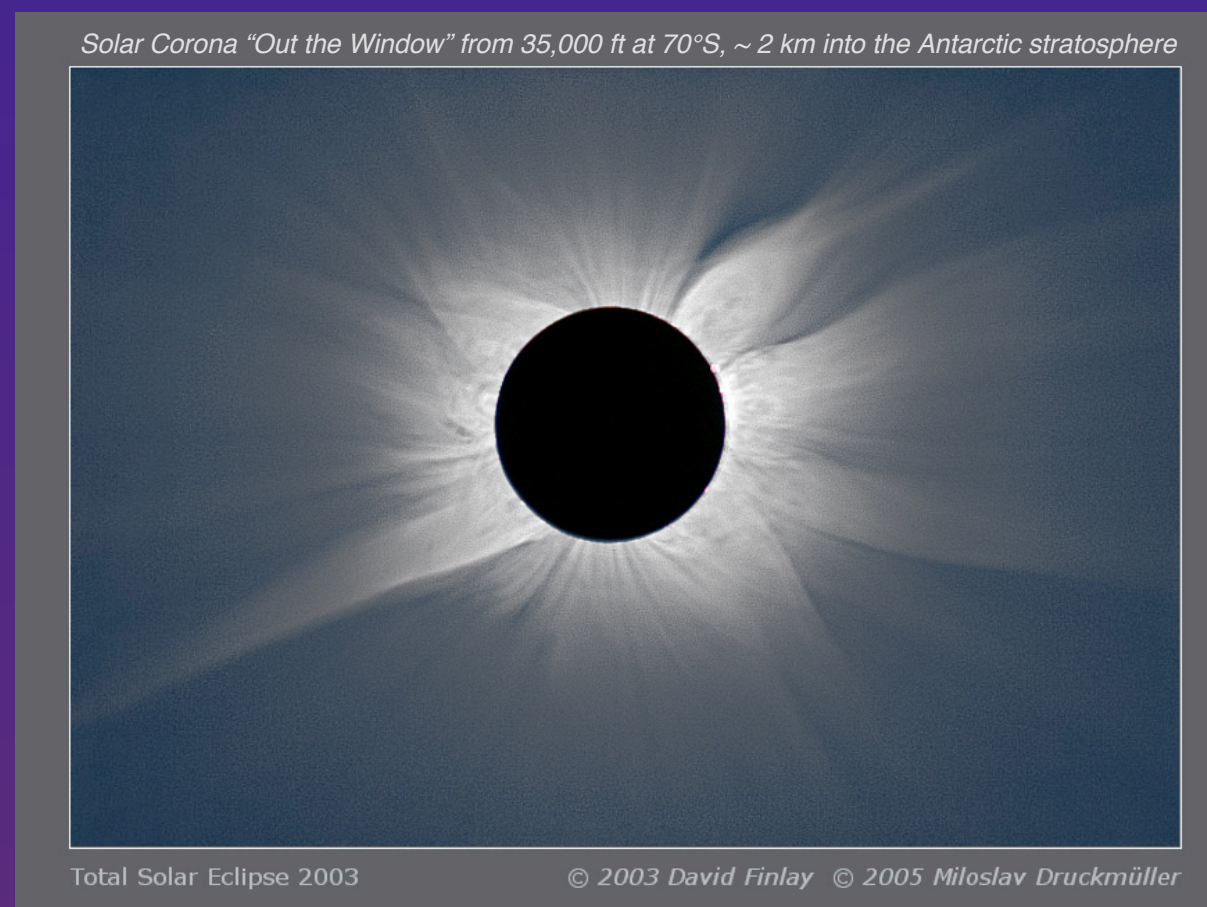
THE MOON'S SHADOW @ 35,000 ft



The view of a TSE, and the sweep of the Moon's umbral shadow as it races across (and above) the Earth as seen from such a lofty height, is magnificent. Photographs from the 35,000 ft. TSE2003 flight at 70°S by C. Roberts ~ 1 minute before and after totality (top), and J. Pasachoff at mid-eclipse (bottom) illustrate how the the high reflectivity of the polar ice below accentuates the stark contrast between the eclipse-darkened regions within umbral shadow, and those illuminated by the Sun beyond the shadow's periphery. Looking along the apex of the lunar umbral cone, toward mid-totality eclipsed Sun, the curvature of the distant umbral shadow boundary (i.e., the "shadow ellipse") is readily apparent.

THE "WEATHER" — ACUNA MATATA

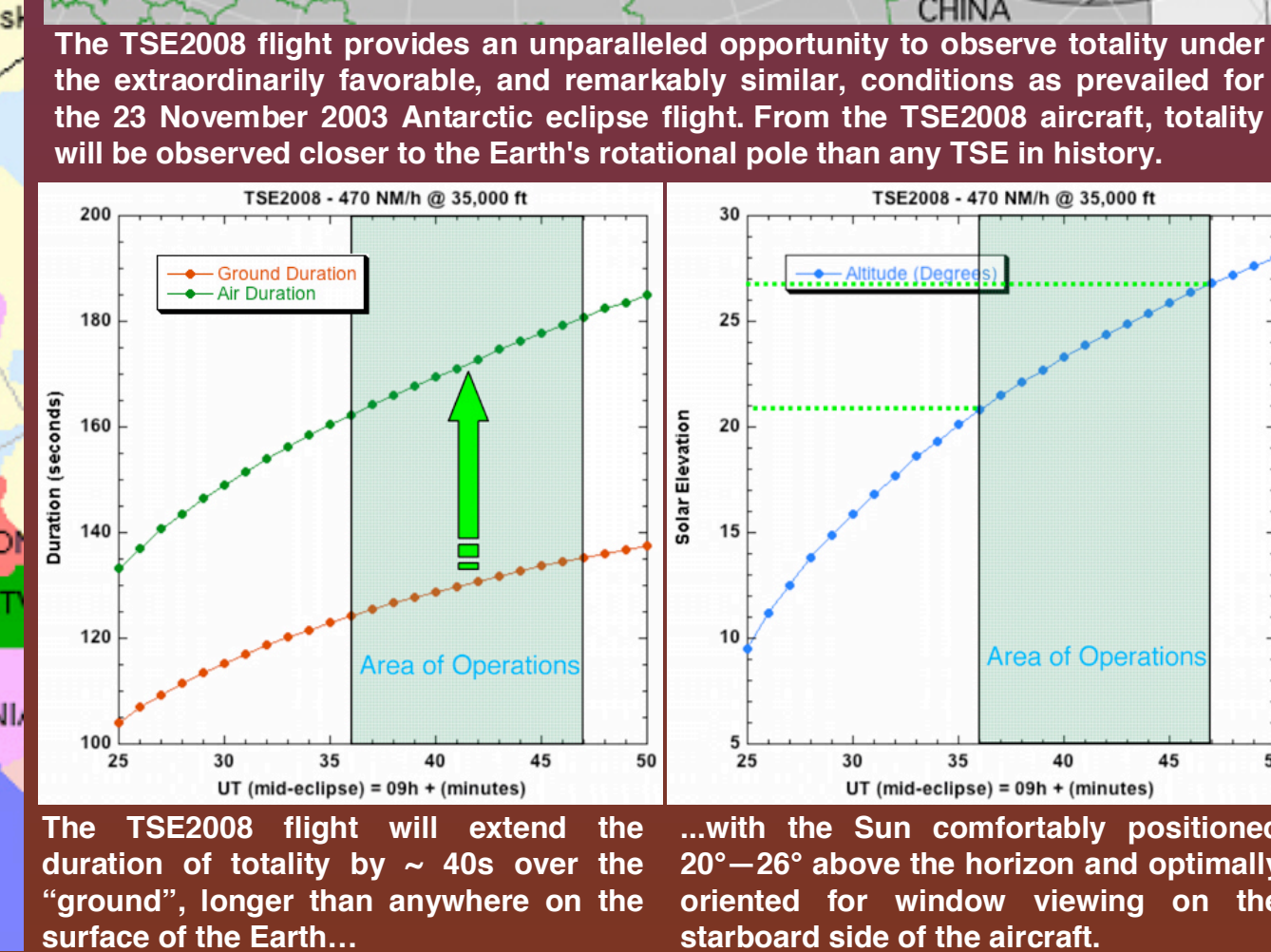
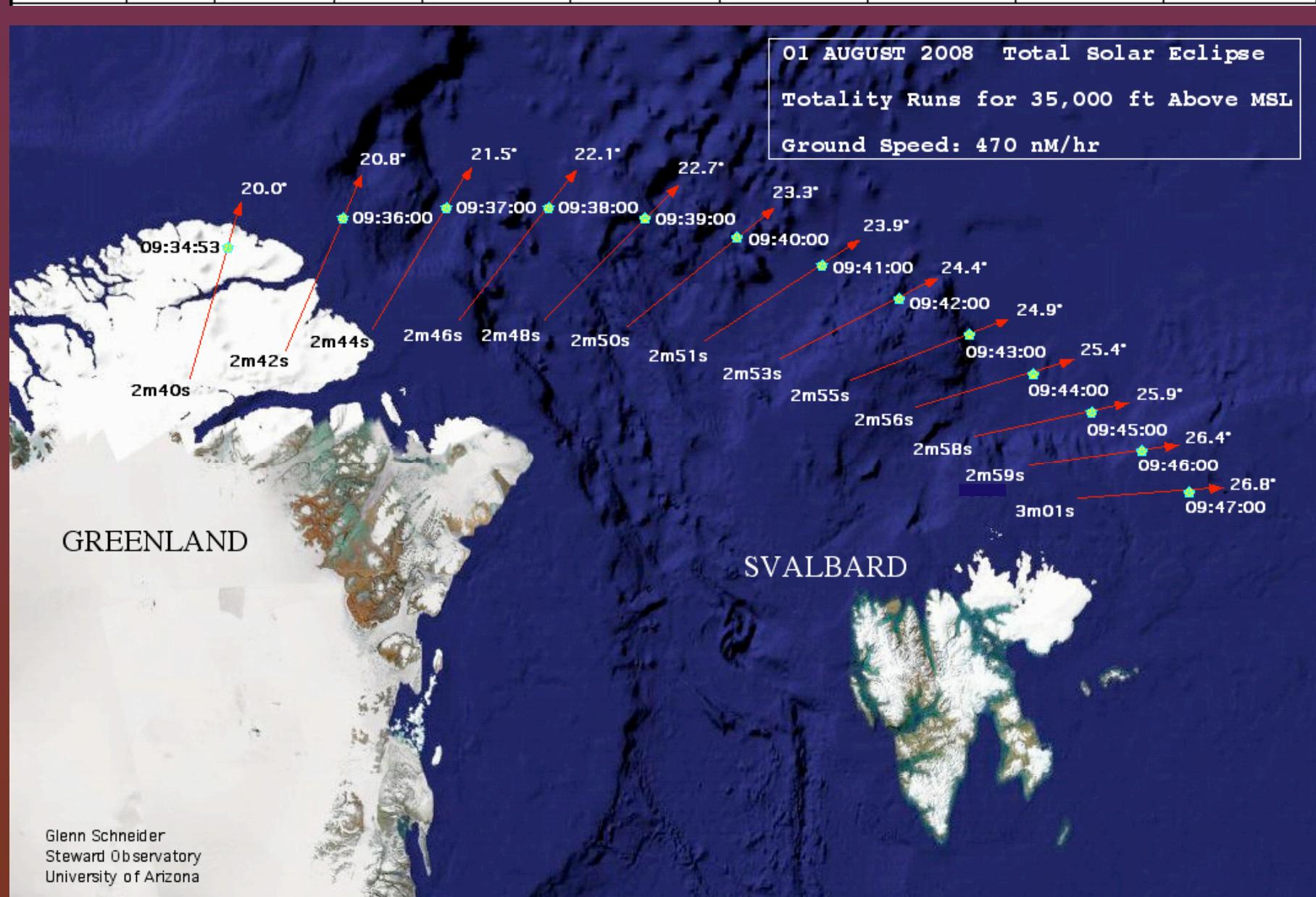
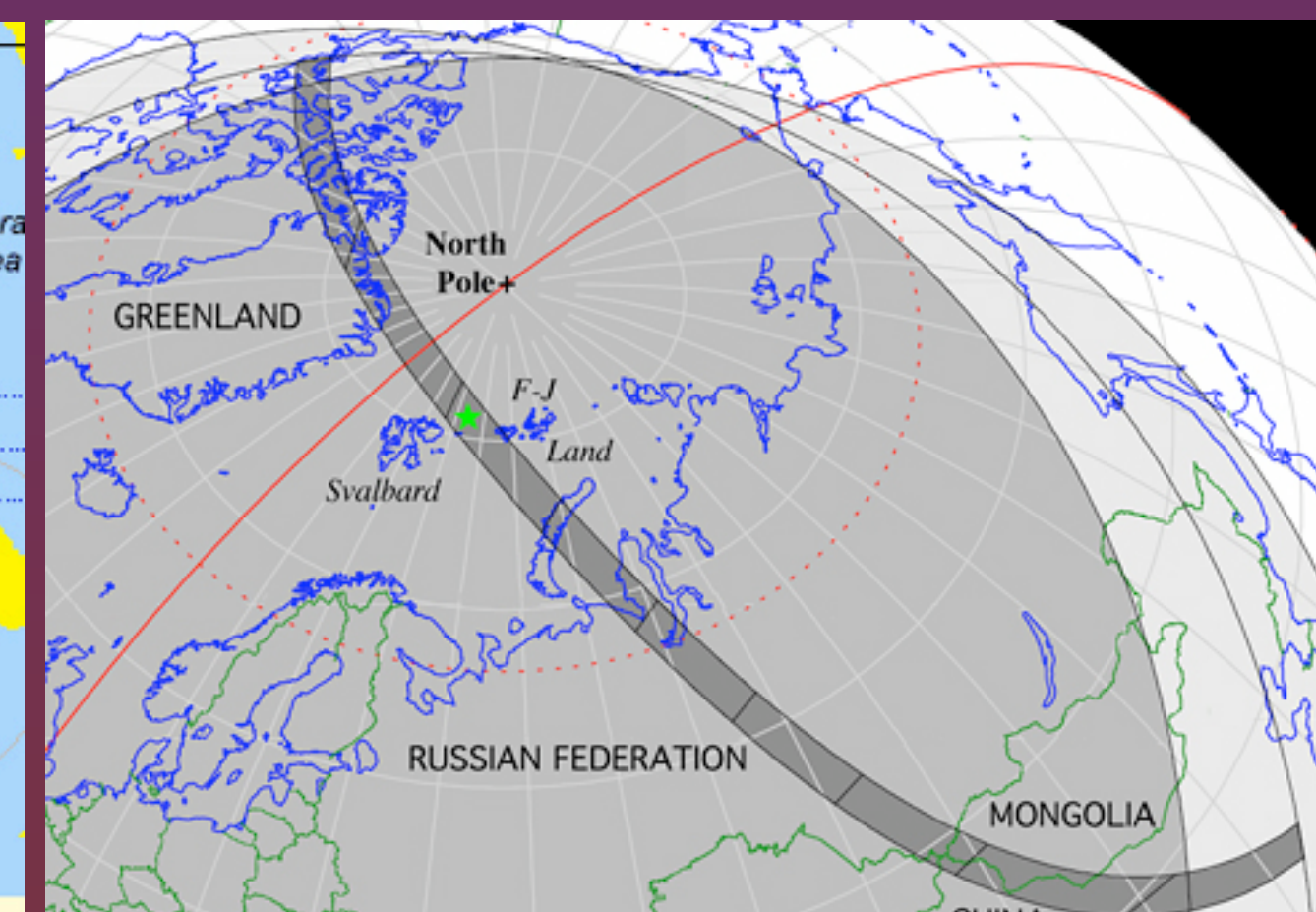
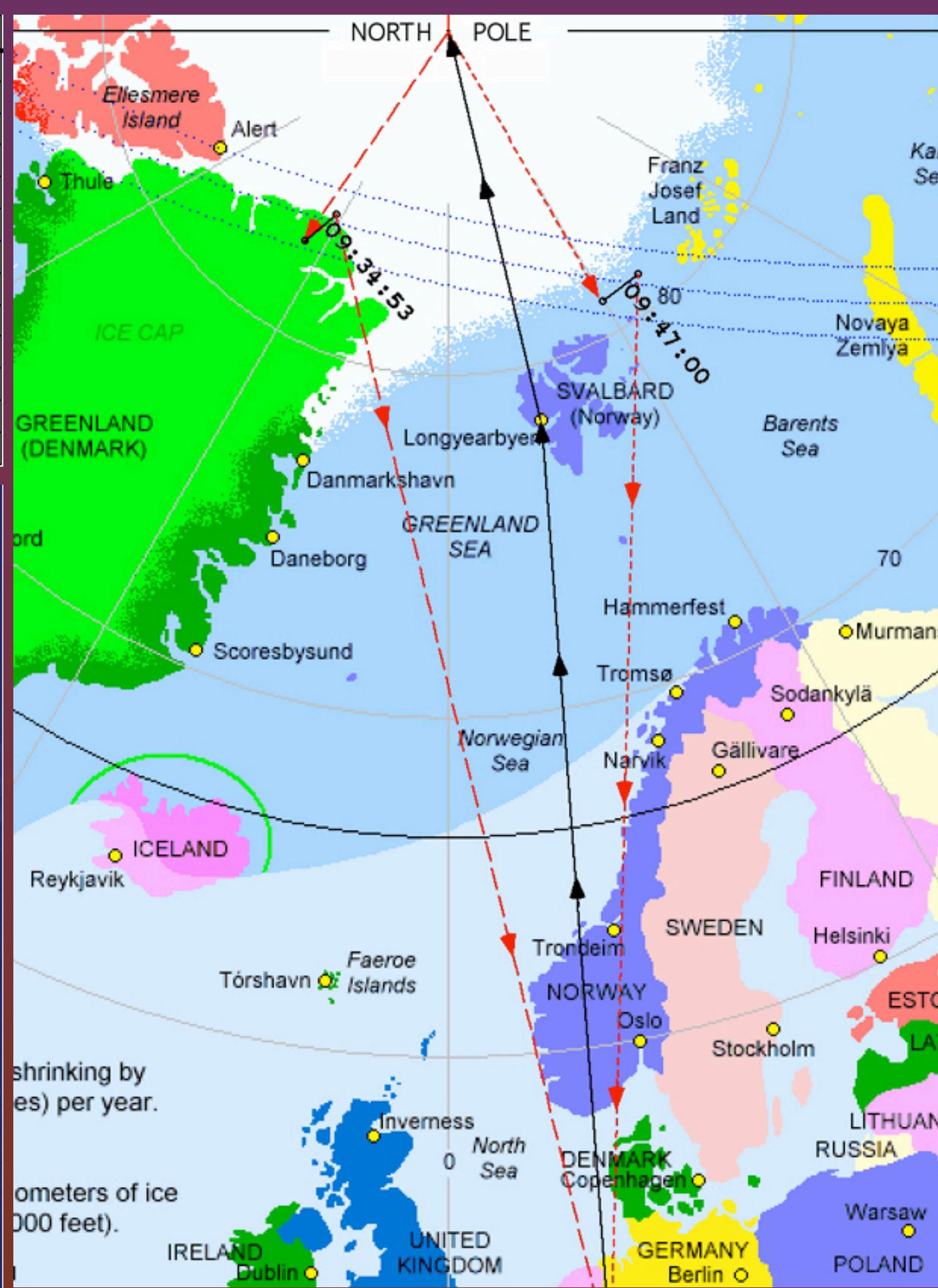
At high polar latitudes, such the 81°—83° N point of mid-eclipse intercept, the tropopausal boundary between the troposphere below (where "weather occurs") and the stratosphere has typical heights of only ~ 8 km above mean sea level (compared to 12—17 km at mid and low latitudes). Polar stratospheric (nacrecous) clouds are *extremely* rare and only form at very low temperatures (< -78° C) during the polar winter, making the probability of cloud-free eclipse viewing nearly 100% at the minimum TSE2008 flight altitude of 35,000 ft (~10.7 km) in its area of operations. There, aerosol scattering of sunlight by airborne particulates is extremely low, giving rise to an exceptionally dark sky during totality, enabling eclipse viewing with significantly enhanced image contrasts. Moreover, the airmass along the line-of-sight to the Sun is significantly reduced (by ~ 75%), resulting in exceptional sky transparency, greatly reduced atmospheric turbidity, and better astronomical "seeing".



THE 01 AUGUST 2008 NORTH POLAR TOTAL SOLAR ECLIPSE FLIGHT: LTU 9999

The airborne venue of the TSE2008 polar flight, ~ 3 km above the high Arctic summer tropopause, removes the usual meteorological risks and logistical uncertainties which plague eclipse-chasers. From the high polar north, less than 7—9° from the North geographic Pole, TSE2008 will be observed from the pristine, dark, and cloud-free skies 35,000+ ft. above sea level. Flying above 3/4^{ths} of the Earth's otherwise murky atmosphere, at Mach 0.85, the duration of totality will be extended to ~ 2m 51s ± 10s. We will launch a dedicated, round-trip, and non-stop eclipse observation flight from a major, and easily accessible, airport in central Europe, with the value-added attractions of (nominally) pre-totality overflights of Longyearbyen/Svalbard and the North geographic pole. The flight will depart from the Köln/Bonn airport in Germany at 0200 UT on 01 August 2008 and take to the sky with an LTU Airways A330-200 aircraft on a dedicated mission to centrally intercept the Moon's fleeting shadow as it whisks across the Arctic Ocean. Flying northward from Germany, after about four hours, we will descend to low-altitude for a unique "flightseeing" opportunity over Longyearbyen and the west coast of Svalbard. We will then cruise onward to overfly and circumnavigate the geographic North Pole before flying on to our precision rendezvous with the Moon's shadow.

U.T.	Alt.	Dur.	Az.	Lat_Mid	Lon_Mid	Lat-9m	Lon-9m	Lat+3m	Lon+3m
09:34:53	20.0	2m 40.1s	107.6	83 20 10.0	-32 24 01.8	82 12 35.6	-35 00 53.9	83 42 35.2	-31 26 12.2
09:36:00	20.8	2m 42.2s	115.9	83 32 20.9	-24 30 31.6	82 27 59.8	-28 25 07.1	83 53 34.7	-23 04 10.8
09:37:00	21.5	2m 44.0s	123.4	83 37 25.8	-17 23 50.7	82 36 59.0	-22 25 37.8	83 57 13.2	-15 33 15.4
09:38:00	22.1	2m 46.0s	130.8	83 37 17.7	-10 24 50.3	82 41 35.7	-16 26 53.1	83 55 20.9	-08 13 05.0
09:39:00	22.7	2m 47.8s	137.9	83 32 21.8	-03 42 28.4	82 42 03.7	-10 34 22.2	83 48 28.0	-01 13 54.4
09:40:00	23.3	2m 49.6s	144.6	83 23 10.9	+02 36 17.9	82 38 41.1	-04 53 08.0	83 37 11.5	+05 16 45.9
09:41:00	23.9	2m 51.1s	150.9	83 10 16.6	+08 27 05.9	82 31 49.0	+00 32 41.2	83 22 11.2	+11 14 40.9
09:42:00	24.4	2m 52.9s	156.7	82 54 16.5	+13 48 01.4	82 21 50.3	+05 40 07.9	83 04 05.8	+16 38 33.3
09:43:00	24.9	2m 54.7s	162.0	82 35 41.7	+18 39 09.4	82 09 08.3	+10 27 27.6	82 43 30.6	+21 29 18.3
09:44:00	25.4	2m 56.2s	166.8	82 15 01.1	+23 01 55.6	81 54 05.4	+14 54 01.2	82 20 56.1	+25 49 13.5
09:45:00	25.9	2m 57.8s	171.2	81 52 39.2	+26 58 32.2	81 37 02.7	+19 00 00.8	81 56 47.9	+29 41 17.1
09:46:00	26.4	2m 59.3s	175.2	81 28 56.6	+30 31 32.1	81 18 19.0	+22 46 15.8	81 31 26.7	+33 08 38.5
09:47:00	26.8	3m 00.8s	178.8	81 04 10.1	+33 43 30.2	80 58 10.8	+26 13 58.6	81 05 09.3	36 14 21.4



For additional technical details see: http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_08/TSE2008_EFLIGHT.html, contact: gscneider@mac.com

For information on limited sun-side window-row reservations and flight bookings contact Travel Quest International (travel@tq-international.com), and see: <http://www.tq-international.com/NorthPoleFlight2008/NPFlightHome.htm>



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