Polar Aura Validation Experiment

Mark Schoeberl
NASA/GSFC
Eric Jensen
NASA/Ames

http://www.espo.nasa.gov/ave-polar

Overview

- Experiment Goals
- Payload
- Logistics
- Flight Plans

Experiment Goals

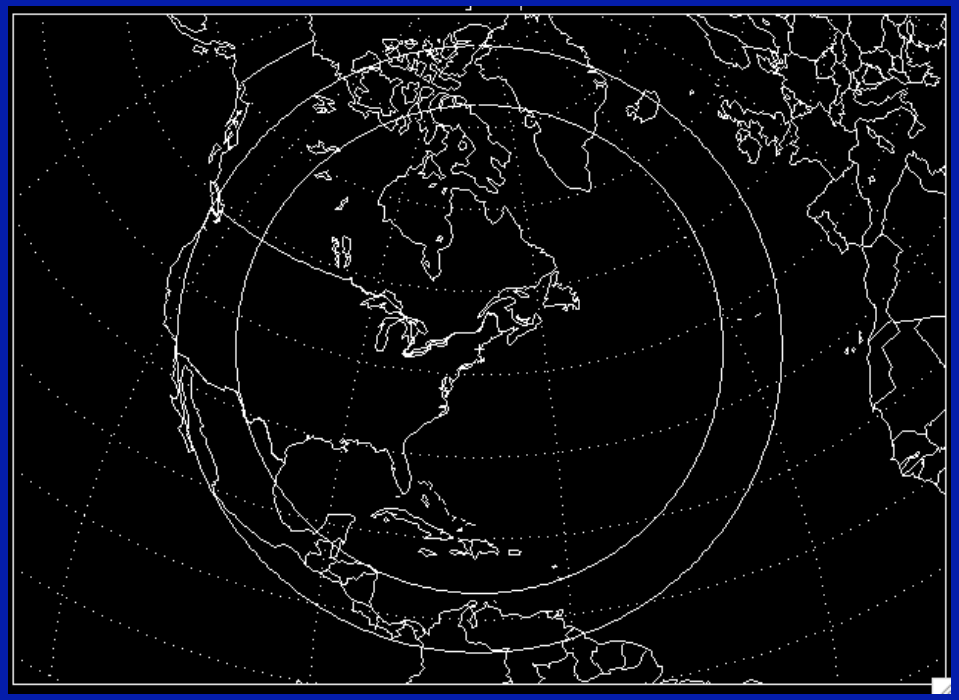
- Validation of Aura measurements
  - Daylight underflights for OMI
  - Day/Night underflights for TES & MLS
    - Locations of high gradients in stratospheric trace gases
  - Flight planning for HIRDLS is TBD
- Other science goals
  - Lower stratospheric constituents/ strat-trop exchange
  - Outflow of the North American continent

PAVE Payload

Aura Measurement	PAVE Validation Measurement	Instrument	PI - Institution
O3 Profile *MLS,TES*	O3 Profile In situ O3	AROTAL (above) DIAL (above and below) FastOz	McGee - GSFC Browell - LaRC Avery - LaRC
Column ozone *OMI*	Column ozone above aircraft	FTIR CAFS	Coffey - NCAR Shetter - NCAR
T Profile *MLS, TES*	T Profile In situ T	AROTAL MTP ICATS	McGee - GSFC Mahoney - JPL *Facility - DFC*
ClO, HCl, N2O, HNO3, CO *MLS*	R ClO, HCl, N2O Column HCL, N2O, HNO3 In sity N2O, CO	ASUR FTIR DACOM	Notholt - U. Bremen Coffey - NCAR Diskin - Langley
NO2 *OMI*	In situ NO2 Column NO2	TD-LIF FTIR	Cohen - U. C. Berkley Coffey - NCAR
Aerosols OMI, TES	Aerosol Profile	AROTAL (above) DIAL (above and below)	McGee - GSFC Browell - LaRC
HNO3 *MLS, TES*	In situ HNO3 Column HNO3	Mist chamber FTIR	Dibb - UNH Coffey - NCAR
H2O *MLS, TES*	In situ H2O	DLH	Podolske - LaRC
UV-Vis Flux *OMI*	UV-Vis Flux	CAFS	Shetter - NCAR
CH4 *TES*	Column CH4 In situ CH4	FTIR DACOM	Coffey - NCAR Diskin - LaRC

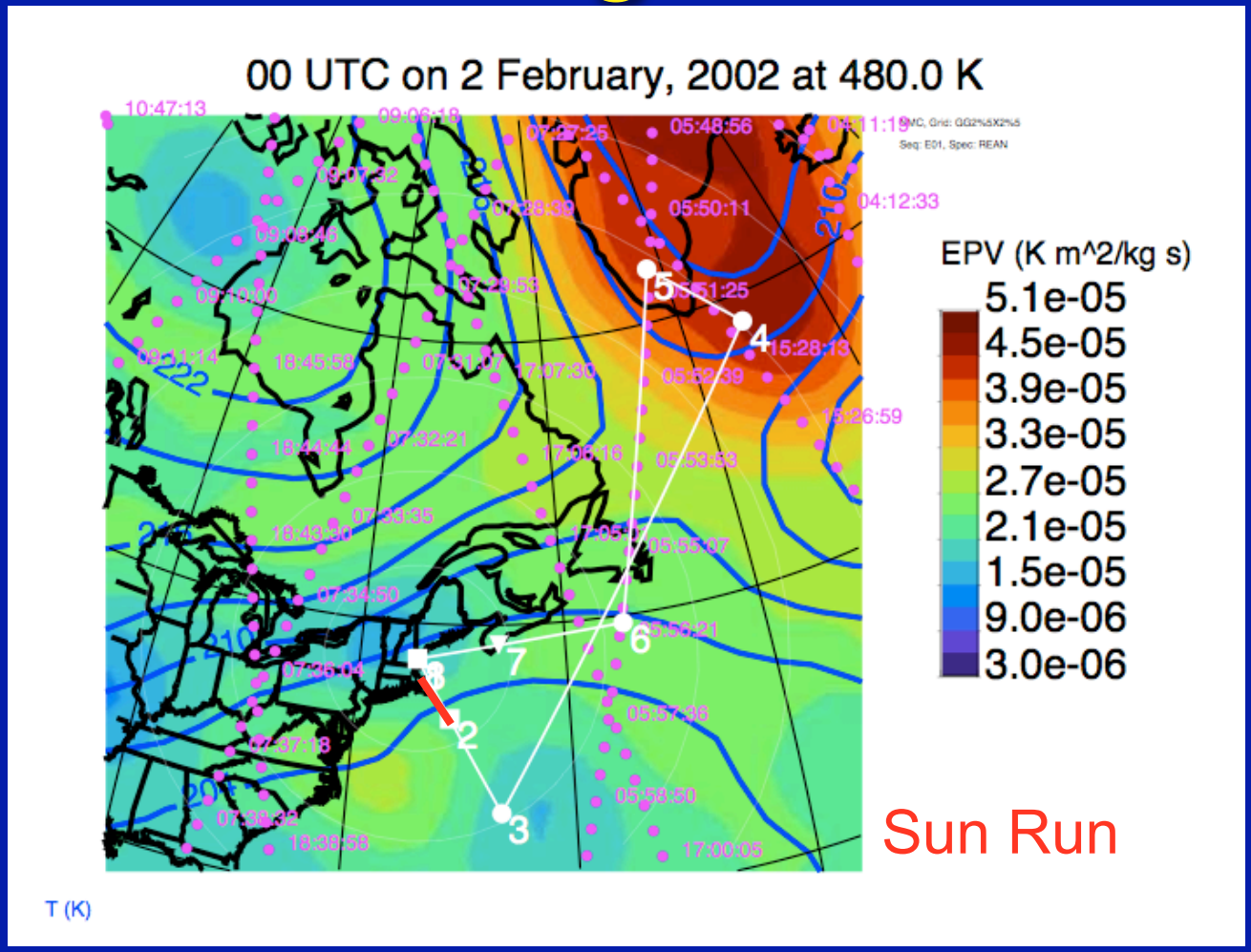
Logistics

- DC-8, 8-10 hour flights from Pease AFB, Portsmouth, NH
- Mission dates Jan 24-Feb 9
- Total 5-6 flights - 2 transit, 3 test



Inner ring - ~8 hr range
Outer ring - ~10 hr range

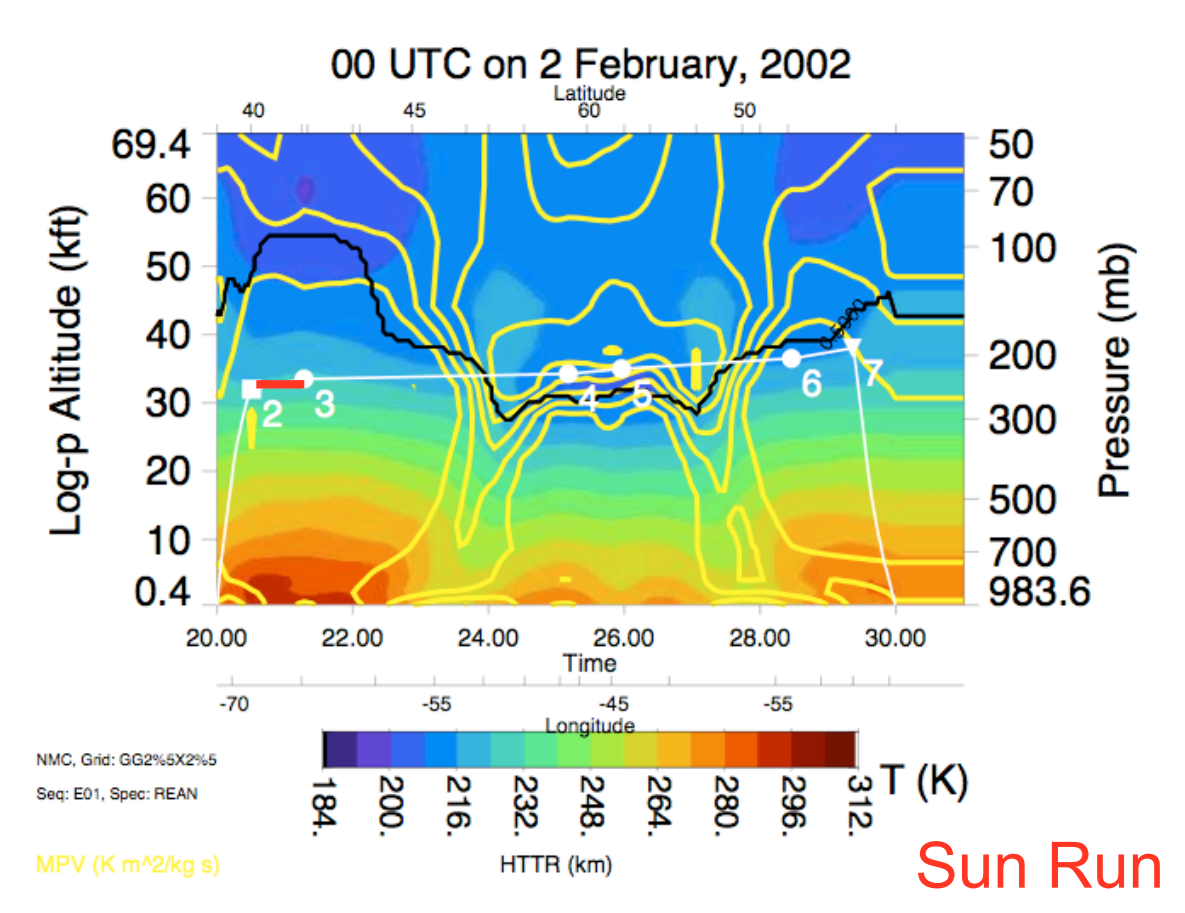
Flight Plan A



Sun run segment, flight to vortex fragment, Aura underpass, return

Polar vortex flight

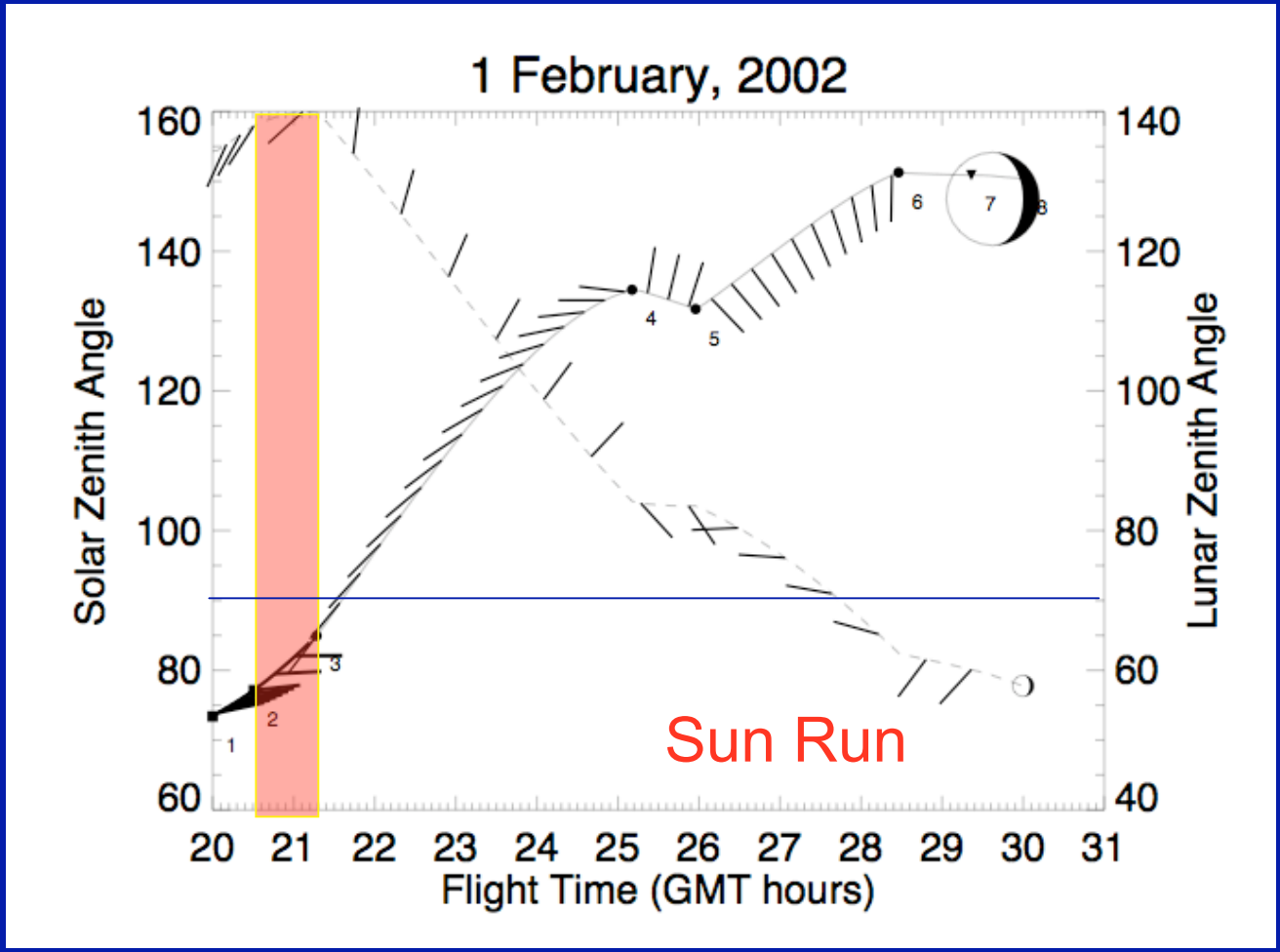
Flight Plan A



Sun run segment, flight to vortex fragment, Aura underpass, return

Polar vortex flight

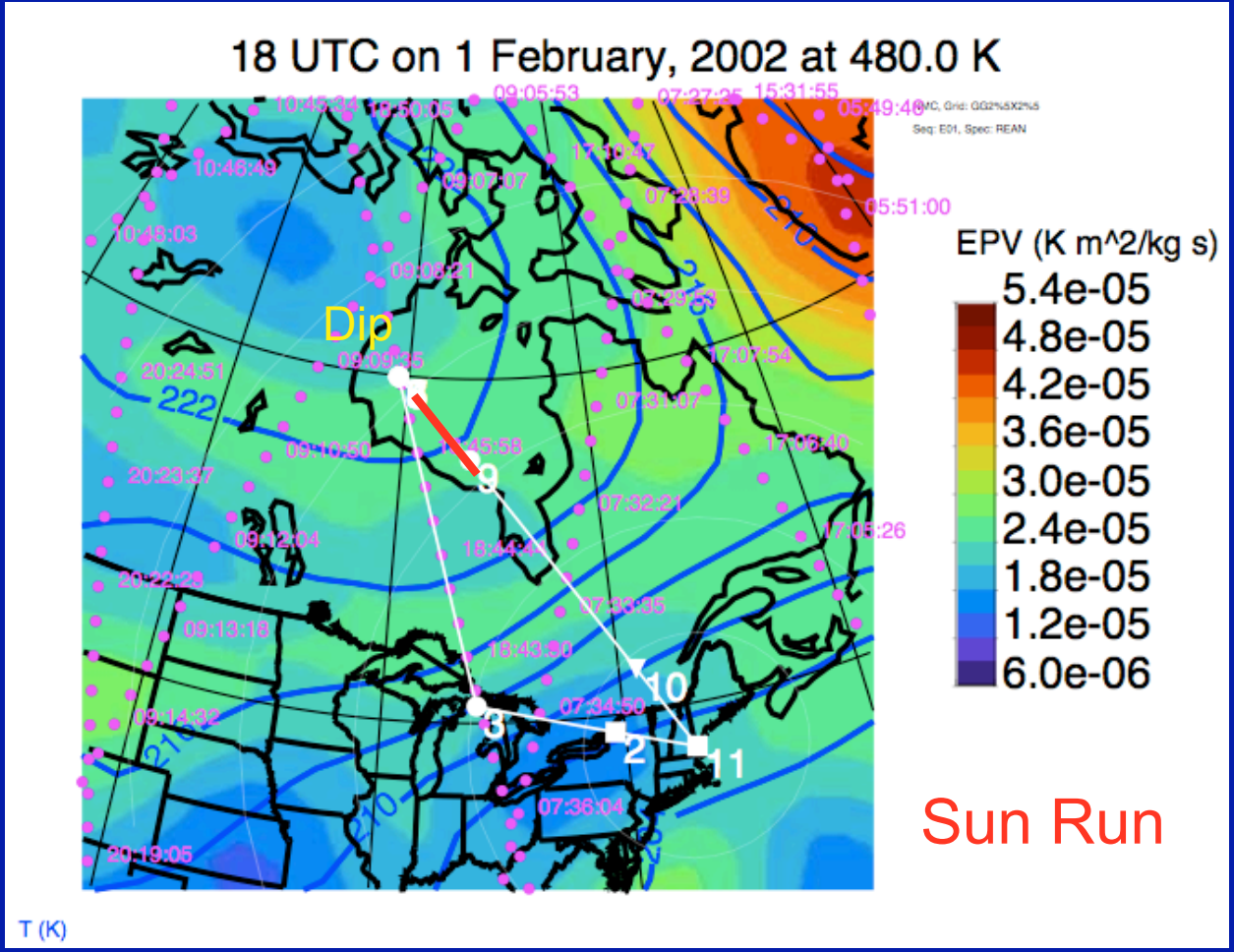
Flight Plan A



Sun run segment, flight to vortex fragment, Aura underpass, return

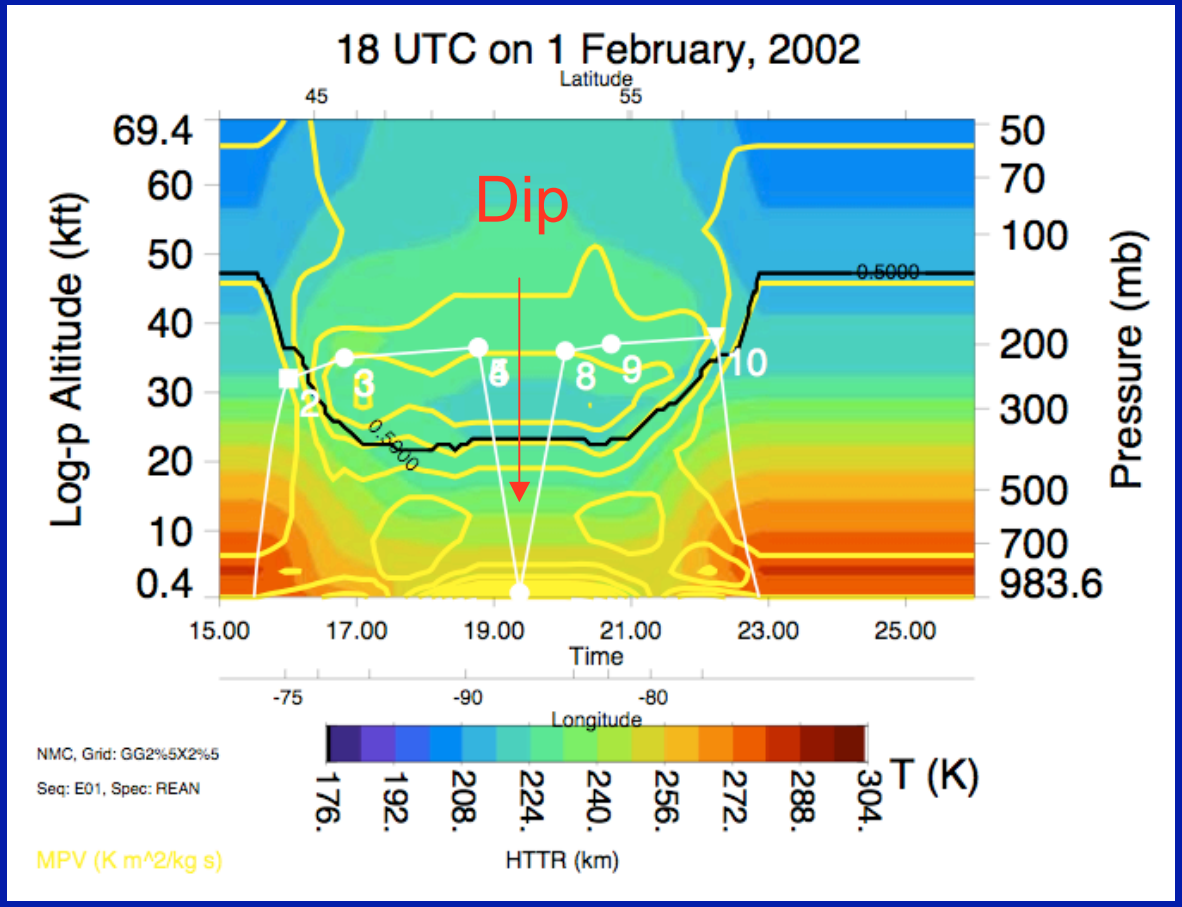
Polar vortex flight

Flight Plan B



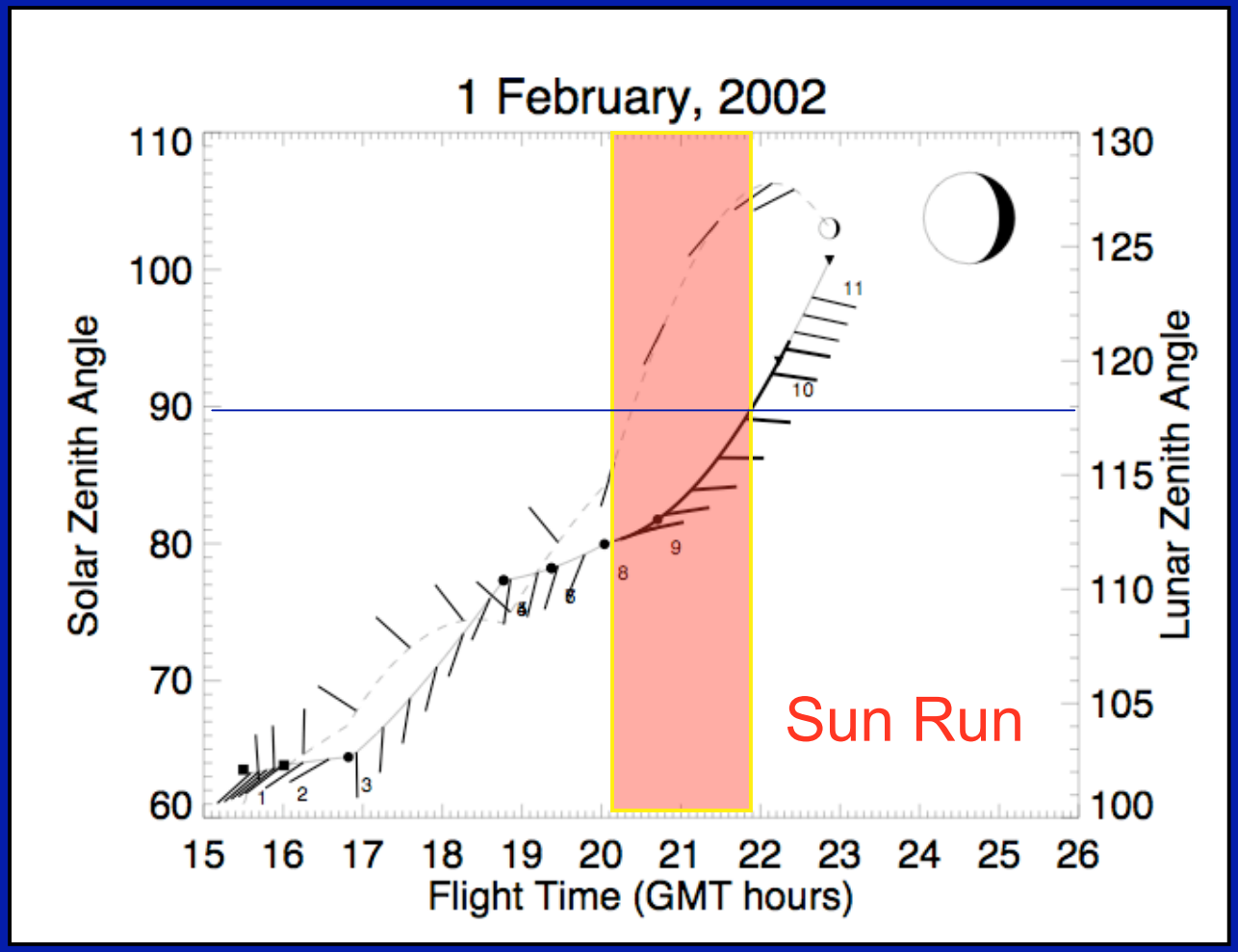
Flight to start of Aura underpass, high latitude dip, sun run and return

Flight Plan B



Flight to start of Aura underpass, high latitude dip, sun run and return

Flight Plan B



Flight to start of Aura underpass, high latitude dip, sun run and return

Comments

- Many other flight plans will be considered
- We do not plan to fly and/or land in Iceland or Europe