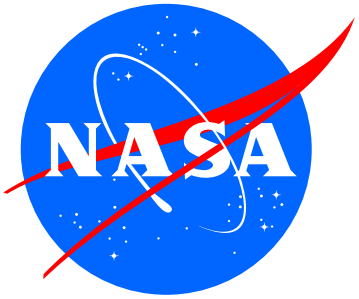
National Aeronautics and Space Administration



Meteorological Products Working Group Meeting

11 September 2006

Summary

JPL

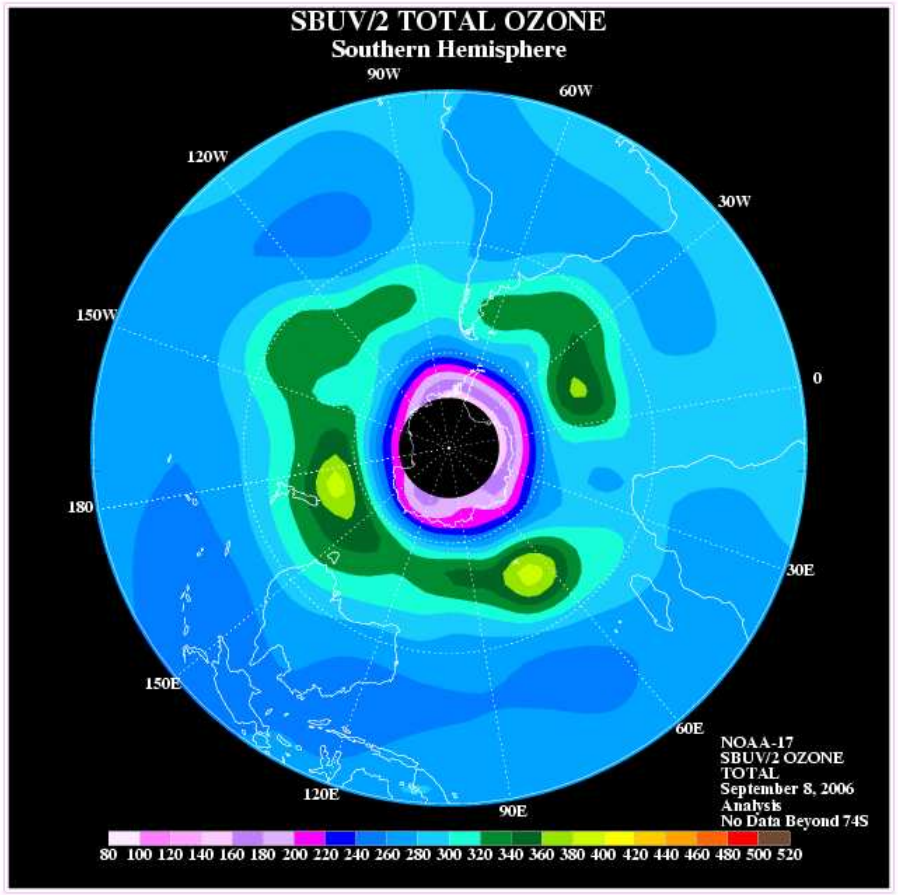
MPWG Agenda

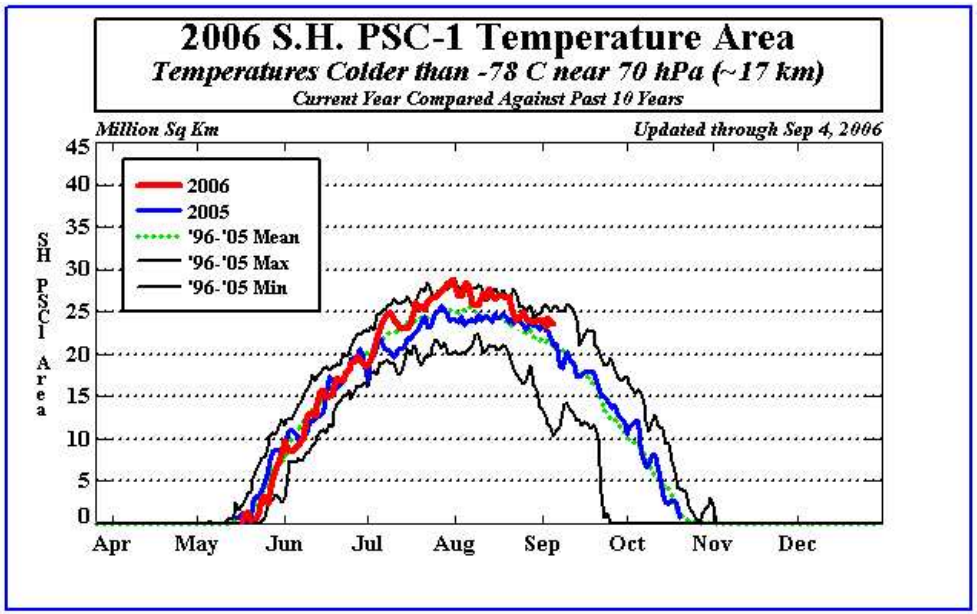
3:00 pm	Introduction, Agenda, Previews	Manney (5 Min)
3:05 pm	NOAA/NCEP Analysis/Forecast Model Update	Long (20 min)
3:25 pm	GMAO Update: GEOS-5	Pawson (20 min)
3:50 pm	Data Center Products Discussion/questions	All (10 min)
4:00 pm	Aura Teams' MP Usage Updates	All (60 min)
	(Brief presentations by () for each team)	
	– HIRDLS (Kinnison)	
	– TES (Osterman)	
	– MLS (Manney)	
	– OMI (Kroon)	
	– Discussion (All)	

NOAA/NCEP Summary

- NCEP Ugrades/initiatives include: Increased resolution, AIRS radiance assimilation, Model concept changes, new computers being installed, etc
- CPC long-term datasets: Discussion of SBUV instruments/platforms, SSU/AMSU temperature climatology
- Three SBUV instruments up on NOAA-16, NOAA-17, NOAA-18; NOAA-17 and NOAA-18 agree well
- Summary/Update on 2006 ozone hole development: relatively large, little wave activity yet, delayed or reduced subsidence could extend longevity

NOAA/NCEP: 2006 Ozone Hole Development

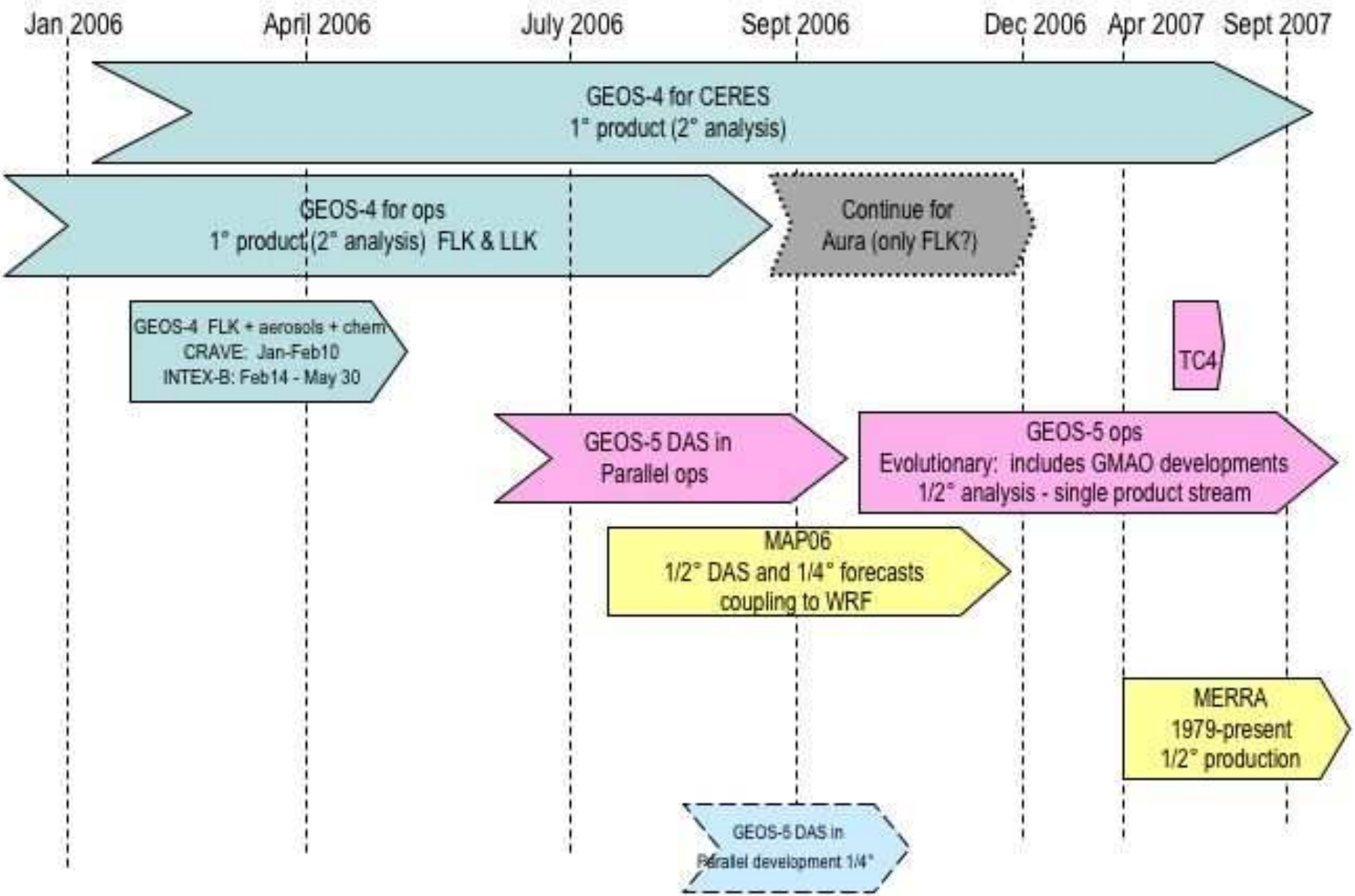




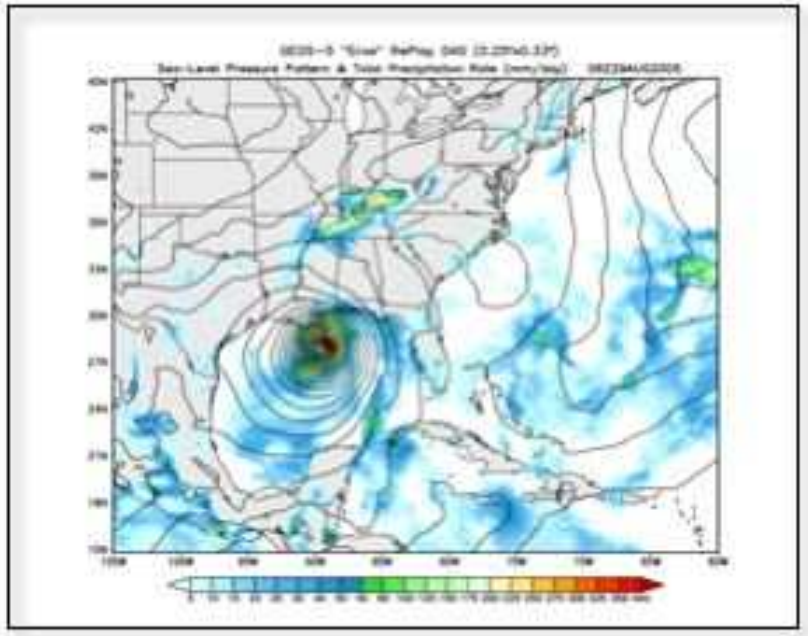
GMAO/GEOS-5 Summary

- GEOS-5 review/highlights: "Best of" previous models (e.g., Finite volume dynamical core) and updated moist processes; 3d-Var analysis; incremental analysis updates for assimilation
- GEOS-5 intercomparisons: With other analyses, lidar
- GEOS-5 cool Katrina example
- GEOS-5 timetable: Critical to HIRDLS, MLS, TES; timeline next page

Timeline for Operations



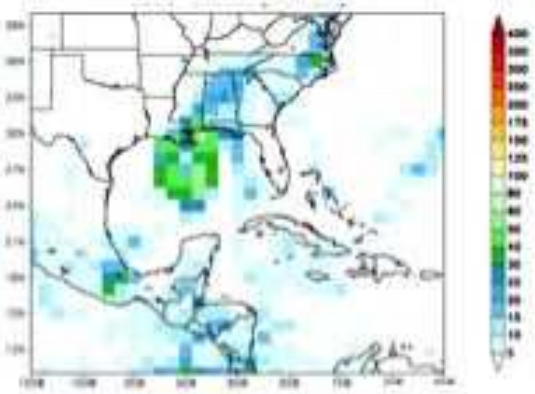
GEOS5 & Katrina: MAP05 vs MAP06



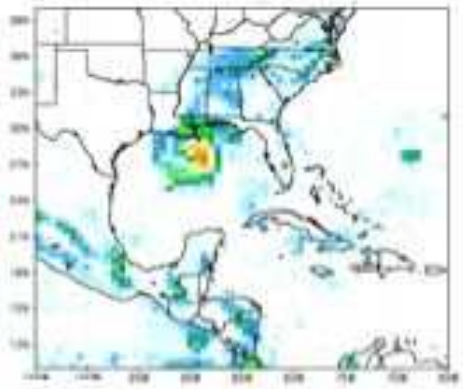
Precipitation Rate

Precipitation Rate (mm/day) (Initialized: 2005 Aug 27, 12z)
00Z29AUG2005

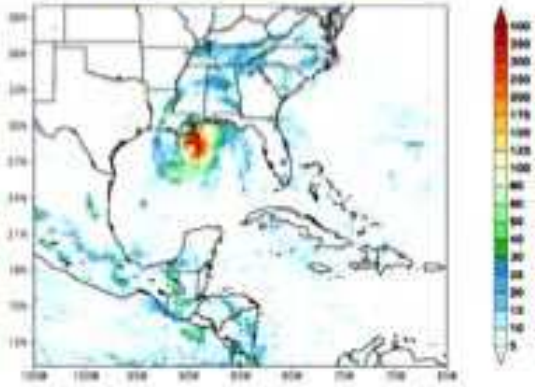
1 degree resolution



0.5 degree resolution



0.25 degree resolution



Sea Level Pressure

Sea-Level Pressure (Initialized: 2005 Aug 27, 12z)
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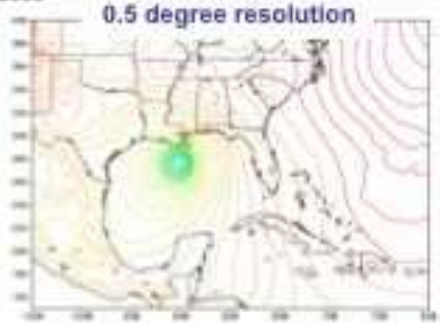
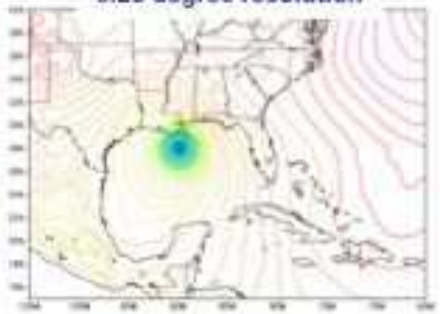
1 degree resolution

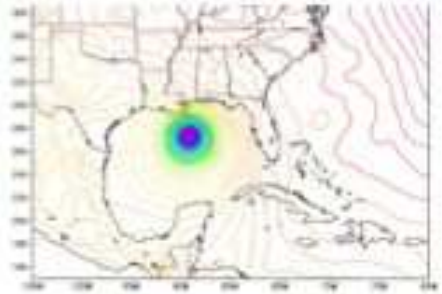
0.5 degree resolution



0.25 degree resolution



Verifying Analysis from NOAA/NCEP



HIRDLS Summary

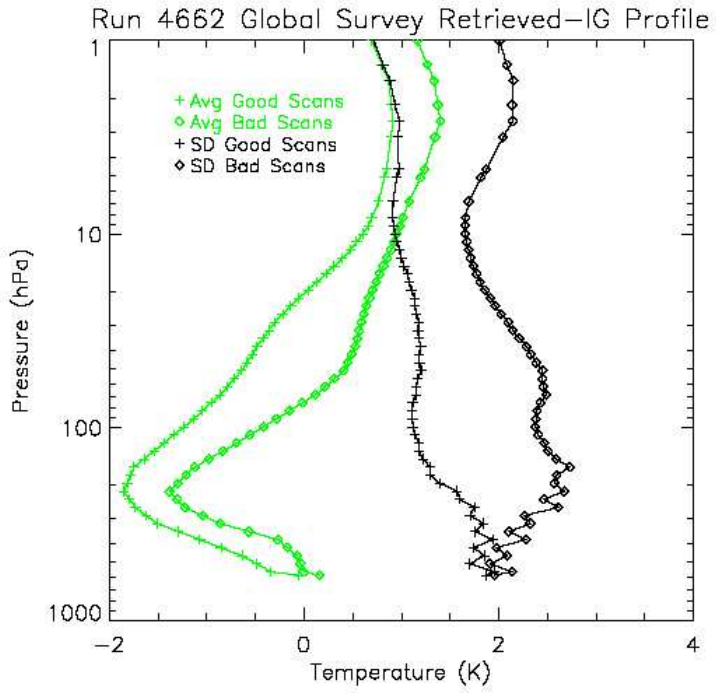
- HIRDLS uses GEOS-4 temperatures for first guess and LOS correction in production process
- Will use GEOS-5 for this, and may also use for LOS correction for O_3 and H_2O
- Several questions related to GEOS-5 processing schedule and logistics
- Need several days of scientifically valid GEOS-5 data between 21 Jan 2005 and present *at least six weeks before* GEOS-4 is discontinued
- HIRDLS will use GEOS-5 to drive CTM for science studies

TES Summary

- TES uses GEOS-4 temperature and water profiles for first guess in retrievals; also uses surfacde pressure and skin temperature
- Will use GEOS-5 in a similar manner in Version 3 (next major reprocessing)
- V3 will have tropospheric column calculated using GEOS-5 tropopause pressures
- Timing of start of V3 processing contingent on GEOS-5 schedule
- Plan to use NCEP temperatures for validation of V2 and V3 limb retrievals and V3 nadir retrievals
- GEOS-5 to be used in further science/validation studies

Example of use of GMAO data in TES TATM Retrieval

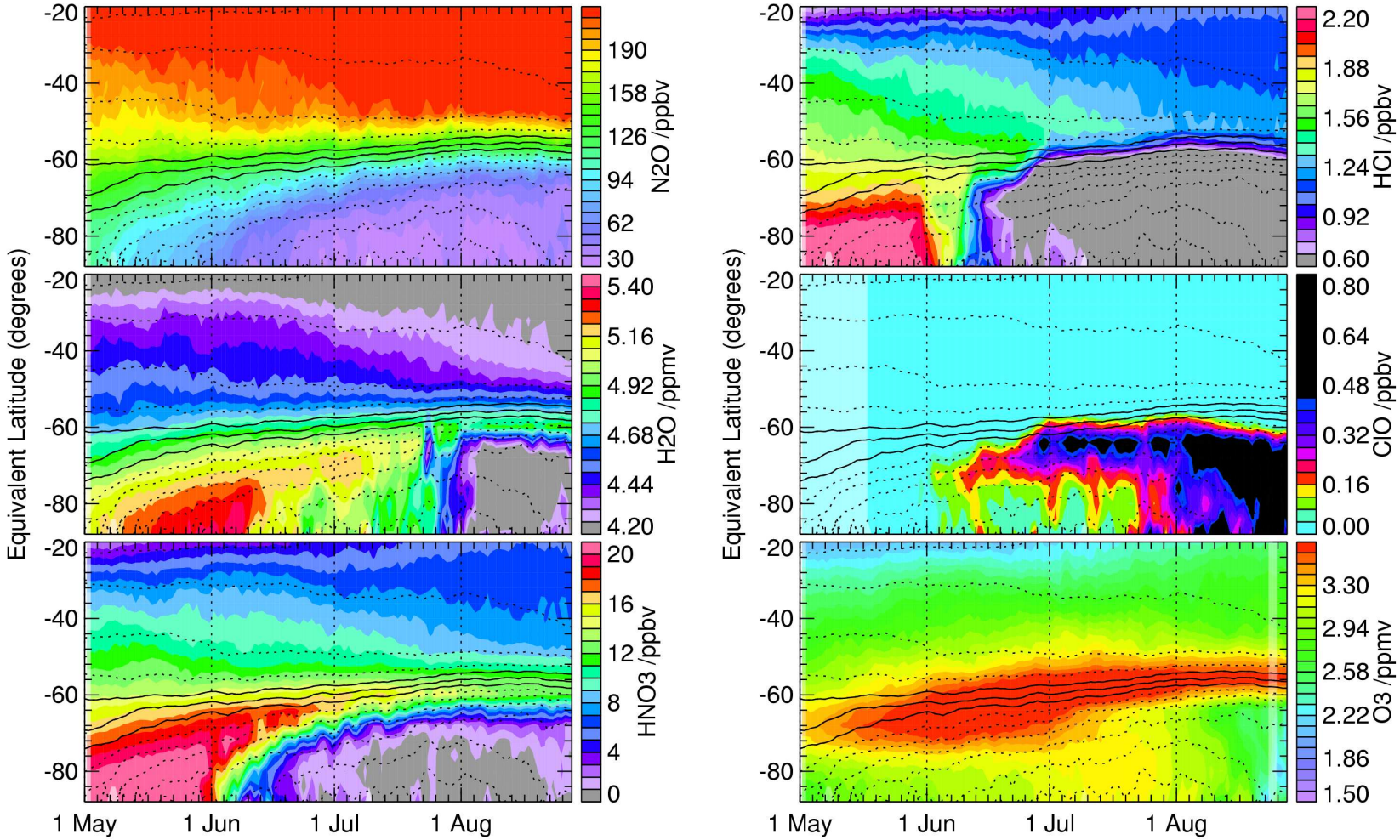
- Average difference for a full TES Global survey between GEOS-4 and TES retrieved TATM.
- Differences in troposphere of up to 2K
- Still working on improving TES temperature retrievals.



MLS Summary

- Meteorological Datasets Downloaded Routinely: GMAO (GEOS-4, 5), NCEP/CPC, Met Office, NCEP/NCAR Reanalysis
- Use in production Processing: GEOS-4 (5) for temperature a priori in V1.5, V2 retrieval software; GEOS-5 temperatures will be use to calculate WMO tropopause heights in V2 for column calculation
- GEOS-4/GEOS-5 Issues: Scheduling with respect to MLS V2 (which requires GEOS-5) rollout is primary issue, working closely with GMAO on this
- Use in regular data inspections: Several plots relying on meteorological datasets posted on MLS website (Knosp poster); weekly UTLS and stratosphere reports including meteorology in relation to MLS data
- Many validation/science studies
- Next page, routine inspection example, shows equivalent latitude (EqL) time series for 2006 SH lower stratosphere (from last week's MLS group meeting)

SH Polar SH Lower Stratosphere (MLS Data Inspection Example)



- EqL-time plots at 520 K in LS, from 1 May 2006 through 30 August 2006, from MLS data and QD-DMPs
- Vortex size near constant for past ~4 weeks, starting to decrease gradually; N_2O indicates slowing descent near vortex edge, mixing from edge into vortex core (where there is no longer evidence of descent)
- H_2O and HNO_3 increased in vortex interior, consistent with increased mixing; PSC frequency/coverage may also be decreasing at temperatures rise (much smaller area now where ice PSCs could form than a week or two ago)

OMI Summary

- Use in retrievals: Temperature and ozone profile climatologies for air mass factors for O_3 and NO_2 retrievals; wind speed climatology for sun glint calculation for aerosols; ECMWF twice-daily temperature profiles for O_3 profile retrieval
- Ozone assimilation and Forecasts: CTM driven with winds, pressure, temperature from ECMWF operational analyses and forecasts
- DOMINO: NRT NO_2 tropospheric column; use CTM simulation, ECMWF temperatures, and assimilation of slant column to estimate stratospheric column that is subtracted from total column

Global ozone field forecasts

The near-real time total ozone columns, derived from observations by SCIAMACHY, are input to a data assimilation program which provides near-real time ozone fields for today and a forecast for the coming days.
Postscript files of these forecasts can be found here

Tropospheric data products

Air pollution monitoring

UV radiation monitoring

Support to Protocol monitoring

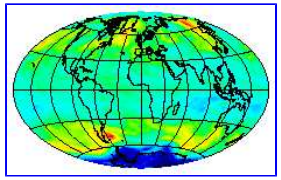
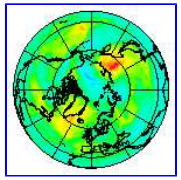
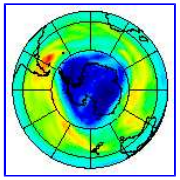
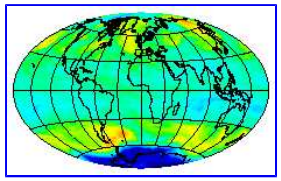
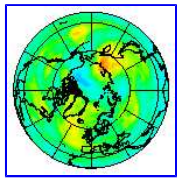
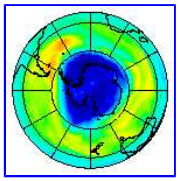
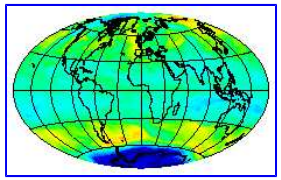
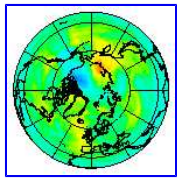
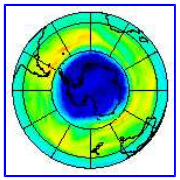
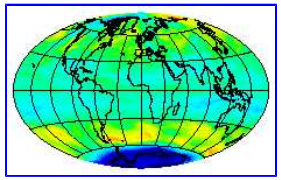
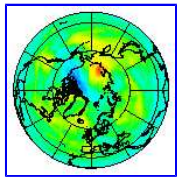
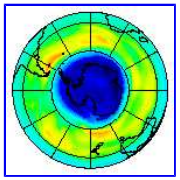
O3
- *total column*
- *global field*

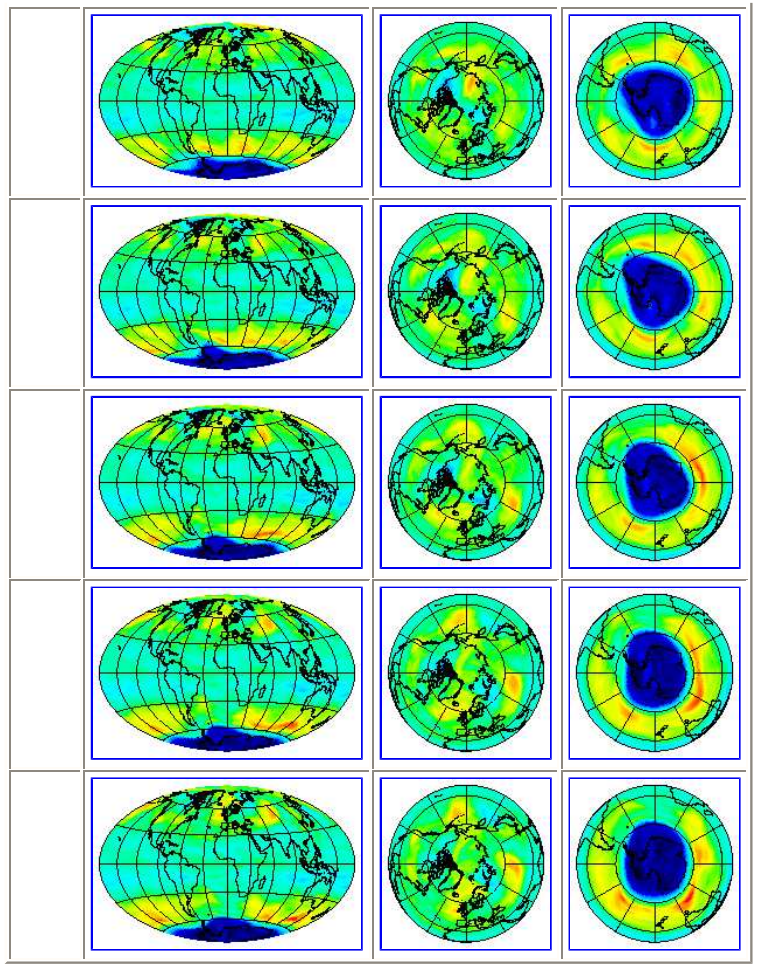
BrO
- *global field*

Support to Aviation control

Contact

page last modified:
April 2005

	global view	*north pole view*	*south pole view*
12 Sep			
13 Sep			
14 Sep			
15 Sep			



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Discussion: GEOS-5 Timeline/Instrument Team Issue

- MLS, TES, HIRDLS all have questions/issues related to GEOS-5 timeline, transition from GEOS-4, and GEOS-5 details
- TES and MLS need continuing GEOS-4 for current versions, GEOS-5 for next retrieval version; MLS scheduled to being V2 in November, TES has not set exact date, but soon thereafter
- HIRDLS needs scientifically valid test GEOS-5 for several days, at least six weeks before GEOS-4 stops
- Schedules for forward and retroprocessing both critical, plus joining of these two streams
- Discussion centered on this, with questions/action items for Steven Pawson to take back to GMAO; will plan telecon sometime in next several weeks with GMAO, MLS, TES, HIRDLS to discuss further

MPWG – Related Presentations

Working Groups:

- Data Systems (Wednesday pm) for discussion of GEOS-5 scheduling
- Air Quality (Monday pm, already over!) for studies involving transport modeling

Validation Sessions:

- Radiance/Forward Model: Reburn (ECMWF data)
- Water and Nitrous Oxide: Read (Water comparisons with assimilated products)
- CO: Yudin (Assimilation of CO radiances into CTM)
- Temperature: Schwartz (Comparison of MLS with assimilated products)
- Clouds and Aerosols: Jiang (MLS comparisons with assimilated products)

Plenary Talks:

- Thursday am: Zhou (MLS/NCEP GDAS comparisons)
- Friday am: Benson (GEOS-4 simulations/Aura data)
- Friday am: Stajner (Tropospheric ozone from assimilation of Aura data)

Posters:

- Session 1: Knosp (New MLS Website)
- Session 2: Bender (PV-theta mapping of Aura data)
- Session 2: Considine (Non-coincident validation using CTM)
- Session 2: Kawa (CTM modeling for CR-AVE)
- Session 2: Manney (Jan/Feb 2006 Stratospheric sudden warming)
- Session 2: Manney (Derived meteorological products for SO instruments)

And all other presentations involving transport modeling using CTMs