

HIGH RESOLUTION DYNAMICS LIMB SOUNDER

Originator: Joanne Loh

Date: 12/17/2012

Subject/Title: **HIRDLS Version History**

Document listing all versions of HIRDLS Data. Includes Date
Delivered, DISC Version #, HIRDLS Internal Version #, Dates Run,
Changes Implemented, Products Delivered.

Keywords:

Purpose of this Document:

Reviewed by:			
Date (yy-mm-dd):			

**Oxford University
Atmospheric, Oceanic &
Planetary Physics, Clarendon
Laboratory,
Parks Road,
OXFORD OXI 3PU,
United Kingdom.**

**University of Colorado at Boulder
Center for Limb Atmospheric
Sounding,
3450 Mitchell Lane, Bldg. FL-0,
Boulder, Colorado,
80301-2296,
United States of America.**

EOS

Date Delivered	DISC Version #	HIRDLS Internal Version #	Dates Run	Changes Implemented	Products Delivered
30-Jun-06	v001	v2.00	May 5 - 31, 2006		Delivered T, O3, HNO3 and cloud tops to AVDC and DAAC.
17-Jul-06	V001	v2.01	Apr 25 - May 4, 2006	Added de-oscillation for ST22.	Delivered T, O3, HNO3, and cloud tops to AVDC.
2/13/2007 - May 4 2007	V002	v2.02.07	314 days, Jan 22/05 to Mar 6/07	<ul style="list-style-type: none"> - Improvements in cloud detection. - Space elev and correction translation input files adjusted to values more consistent w/ new TOA values. - Added S/C lat/lon and more temp sensor values, correctly fills scan # field in HIRDLS1 files, and changes solar elev angle field to 32-bit float. - New nominality gap, radiometric gain and radiometric non-linearity input values (Sep 24, 2006 values by T. Eden). - De-oscillator for ST23 and 13. - Radiance adjustments based on L1C 3.3.1 and TOA square bug fix. - L2 Build 80-85. - Fixed a bug that applied channel 1's K-term to all 21 channels. - Added channel dependent altitude offsets, removed creation of HIR1CAL file, add/change fields in HIRDLS1 output file. - Contains Rs9A.he5 kapton correction file in support directry. - Added new geolocation fields to HIRDLS1 file that are req'd by the in-development L2PP. - Added logic to "denominalize" uncorrectable scans, removes them from further processing. - Temp fix to handle scans with missing values. 	Delivered T, O3, HNO3 and cloud tops to DAAC.

Date Delivered	DISC Version #	HIRDLS Internal Version #	Dates Run	Changes Implemented	Products Delivered
2-Nov-07	V003	v2.04.09	21-Jan-05 to 30-Nov-07 Excludes partial days and non-nominal scans.	<ul style="list-style-type: none"> - Added check for missing packets and incorrect time gaps, and marks as not nominal. - checks for unprocessable scan tables and short scans and marks affected scans as not nominal. - Added IDL cloud detection (L2CLD v1.7). - Re-written L2PP, radiance adjustment as fcn of altitude (all latitudes). - Incorporated kapton and de-oscillation correction consistent with radiances generated with the newer cal constants and k-term bug fix, and compatible with L1X v7.x.x - Updated kapton correction EOF substitution to be consistent with new cal constants and k-term bug fix. - Updated channel dependent altitude offset calculation (corrects sense of rotation) for more precise geolocation. - L2 updated to Build 88. - Uses GEOS 5.0.1 	Delivered T, O3, HNO3 and cloud tops to DAAC. NOTE: V2.04.08 was used for some JGR papers (v2.04.09 is same as v2.04.08 but w/ bug fix for de-oscillator).
1-Sep-08	V004	v2.04.19	Jan 2005 to Feb 2008 (exclude partial days and non-nominal scans)	<ul style="list-style-type: none"> - Changed OrbAscFlag to be tied to scan latitude rather than S/C latitude. - Added 2km shift as angular offset to L1X (accommodates misalignment of HIRDLS on Aura). - Updated OAF values. - Included OOF correction, and made kapton and deoscillation correction consistent with OOF-corrected radiances. - L2 Build 89. - Improved cloud detection using O3 channels. - Uses GEOS 5.0.1 for v2.04.19 and GEOS 5.1.0 for v2.04.19a/b (but rad adj still based on GEOS 5.0.1) 	Delivered to the DISC. Data products to include: T, O3, HNO3, cloud tops, F11, F12, and cloud extinction.
28-Apr-10	V005	5.00.00	Re-processed mission	CHANGES SINCE V004 ARE LISTED BELOW	Delivered to the DISC. Data products to include: T, O3, HNO3, cloud tops, F11, F12, cloud extinction and GPH.
<p>L1PP</p> <ul style="list-style-type: none"> - includes packet checksum check L1X - uses HIRDLS time to do chopper frequency check, 500 +/- 0.1Hz - updates solar beta angle calc & fixes a bug that caused previous versions of L1X to not write SBA value for some non-nominal scan tables - fixes bug that over-rounded rad error values - decreases tangent pt altitude by 250m - changes rad scale factors, adds radiance scale offsets, adds "Radiance Scale Offsets" field to HIRDLS1 file - changes radiance storage from short to unsigned short - changes error values to use NoiseFac3 (consistent with latest OAF values) - includes logic to exclude scans during times with maneuvers (to allow processing of all days) -- 37 missing days: L2 cannot find usable scans for 4 PU days; chopper issues for 33 days 					

Date Delivered	DISC Version #	HIRDLS Internal Version #	Dates Run	Changes Implemented	Products Delivered
				<ul style="list-style-type: none"> L1C - incorp. Dec 19, 2008 OAF values - incorp. Apr 30, 2008 deoscillation EOF values - Rbar calc for each HIRDLS polar orbit - elev angle tie-on with +4-2 interpolation - checks for invalid scan geolocation values and if found, removes them (handles FMU anomaly days) - reformats into 4 sub-processes <ul style="list-style-type: none"> L1C-W (wave deoscillation) L1C-K (katpon correction) L1C-A (area correction) L1C-E (error adjustment) - corrects C++ de-oscillator - adjusts altitude range that the boresight must cover (to allow processing of ST30) - adds ability to read/apply/write radiances using new rad scale factors & offsets, changes scaled rad read/write to unsigned short - corrects descaling/scaling of radiance errors <ul style="list-style-type: none"> L2PP - radiance adjustments based on GEOS 5.1.0; uses rad adj file v24 - corrected OrbAscFlag - code clean-up (improved diagnostics) - adds capability to allow radiance adjustment by channels - adds OrbitNumber and SpacecraftDayFlag fields to HIRRADNC file - fills missing values into the Radiance, RadianceError and JitterError fields where the scan tops are below 120km (allows processing of ST30) - changes extraction of values @ nominal altitude from closest value to linearly interpolated value - adds smoothed tangent height field to HIRRADNC file - adds ability to read/apply/write radiances using new rad scale factors & offsets, changes scaled rad read/write to unsigned short - radiance adjustments done on all channels except 7, 8, and 9 (HNO3 and CFCs not adjusted) <ul style="list-style-type: none"> L2CLD - looks for clouds at lower altitude if too many negative radiances - fine tunes modifications made to eliminate the false cloud tops when radiances approach zero <ul style="list-style-type: none"> L2 - includes Build 91 <ul style="list-style-type: none"> -- makes H2Main-Aero delivery for use in the aerosol runs -- turns off creation of HIRDLS2 (this will be post-processed) -- changes to support NAG compilation -- upgrades to toolkit 5.2.15 -- upgrades to Fortran compiler 10.1.015 -- bug fixes - corrected problem with percent missing metadata calculation - changes made to allow reporting of GPH values - uses GMAO temp in apriori - includes Build 94 <ul style="list-style-type: none"> -- potential temp now being calculated and written to HIRPROF and HIRDLS2 -- FM and PrdGas list now included in retrieval divergence messages -- allows for use of GMAO O3 and H2O in apriori 	

Date Delivered	DISC Version #	HIRDLS Internal Version #	Dates Run	Changes Implemented	Products Delivered
<ul style="list-style-type: none"> -- adds OrbitNumber - Build 95 (smoothing of GMAO is now done inside L2 and is controlled by the config flag) - Build 96 (reduces number of dropouts) -- radiance & retrieval ranges are specified in altitude (instead of pressure) in the control files -- raised the top of temp retrieval to 120km -- reduces number of dropouts substantially, and improves temp retrievals in the lower mesosphere - Build 97 (mods to handle retrievals of water using both channels 18 & 20, or 18 only or 20 only) - Build 98 (capability to use 72 level GMAO files; calc for GPH now performed in the last step of the retrieval; metadata updated to incl GPH) - Build 100 (capability to adjust apriori error <= cloud tops or 10km, whichever is higher) - Build 101 (adds new Raw & Smoothed GPH calculation; AprErrAdj = 2K for temp; Upper pressure limit = 0.01hpa; uses Toolkit 5.1.6) - AprErrAdj = 0.1 (2K deg) for temp, 0.25 (75%) for O3 and 1.0 (no change) for rest of species - Applies geoid corrections for GPH calculations. 					
2-Aug-11	V6	6.00.00, 6.00.01 (allows processing of Scan Tables 13 & 30), 6.00.02 (improves Scan Table 30 results)	mission	Changes since V5: <ul style="list-style-type: none"> - changes radiance error value to use Nov 16/10 error values generated by Bruno (in v5.05.00) - removes radiance error bandpass reduction (in v5.05.00) - uses WACCM93 / MLS v3.33 / Mozart for contaminants (in v5.05.00) - corrected gamma_e value (in v5.05.00) - latest GPH algorithm - uses upscan 2x2 (no substitution) kapton correction - new deoscillation 25-fcn EOF files and algorithm (single window fitting for atmospheric EOFs and ST23 EOF set selection) - uses radiance adjustment file v26 cycle 6 (lower top level in rad adj, turns off adj for channels 15,16, 17, 18, 20) - Incorporated changes in L2 algorithm and new L3 algorithm to output daily zonal means of day/night NO2 and N2O5 as well as NO2 stratospheric columns. - Producing monthly means of Ice Water Content (IWC). 	Data products to include: T, O3, HNO3, cloud tops, F11, F12, cloud extinction, GPH. New products are: daily zonal means of daytime and nighttime NO2 and N2O5, stratospheric columns of NO2, and monthly mean of cirrus IWC.

Date Delivered	DISC Version #	HIRDLS Internal Version #	Dates Run	Changes Implemented	Products Delivered
14-Dec-12	V7	<p>H2O & ClONO2 before 2006d310: 7.00.00-most days, except 7.00.01-problems w/ aero channel13 7.00.02-ephemeris problem 7.00.03-ephemeris problems/no MLS data 7.00.10-no MLS data</p> <p>H2O & ClONO2 on or after 2006d310: 7.00.05-most days, except 7.00.06-problems w/ aero channel13 7.00.07-ephemeris problems</p> <p>All other species: 7.00.00-most days, except 7.00.01-problems w/ aero channel13 7.00.02-ephemeris problem 7.00.03-ephemeris problems/no MLS data 7.00.10-no MLS data</p>	mission	<p>Changes since V6: L1X - opened up chopper freq screening criterion to 7.5Hz, to allow more days to be processed L1C - deleted some unused fields; updated bad date/time excl; handles 25EOF deoscillation; added 13pt triangular filtered spaceview radiances before calculating tie-on; kapton correction tie-on in elev angle space; kapton correction EOF coeff generation uses smoothed scan radiances; uses several PU days to calculate means to handle temporal variations thru mission; remove -ve radiances, SV=0; handles ST13 & 30 L2PP - adds logic to smooth tangent ht alt; incorporates radiance adjustment file v27c19 L2 - updated GPH routine; extended NO2 retrieval top to 65km; implemented aerosol correction (retrieves ch 6 aero extinction in each block & uses aero spectral model to obtain approx. aero ext. for channels involved); retrieves all products w/ FM1 in stage 1 and FM2 in stage 2; uses MLSColloc 2.5 (WACCM daily instead of MOZART monthly mean for contaminants) L3 - added code to produce additional zonal mean coeff and gridded maps</p>	<p>Updated products: T, O3, HNO3, cloud tops, CFC11, CFC12, cloud extinction, GPH, stratospheric col NO2, monthly mean of cirrus IWC. New products: NO2, N2O5, ClONO2, H2O, N2O and L3 ascending, descending, combined Zonal Fourier Coefficients.</p>