

original_species_N2O (v005 only)

original_constraintVector_N2O (v005 only)

averagingKernel_N2O: averaging kernel from N₂O product

observationErrorCovariance_N2O: observationErrorCovariance from N₂O product

species_N2Ocorrected = CH₄ corrected by

$$N_2O = e^{\ln(\text{species_}) + \ln(\text{constraintVector_N2O}) - \ln(\text{species_N2O})}$$

variabilityCH4_qa = standard deviation of CH₄ below 200 mb / mean of CH₄ below 200 mb

variabilityN2O_qa = standard deviation of N₂O below 350 mb / mean of N₂O below 350 mb

stratosphere_qa = fraction of the sensitivity in the stratosphere for the 562 hPa level for CH₄.

B.5 Version update log

Version v02: July, 2012

Prepend “grid_” to variables that define dimensions in netcdf file. Change levels variables to have actual pressures. Grid variable names are now: grid_pressure_fm, grid_pressure, grid_pressure_composite (HDO only), and grid_targets (just an index array counting # of targets)

Add two variables to NH₃ file:

Thermalcontrastinitial = surface temperature – lowest atmospheric temperature

Thermalcontrast: same, except from retrieved values

For HDO, check that water value below 200 mb initial values are > 1e-16, and value is not more than 1000x times larger than the level below it. If these conditions are not met, then speciesretrievalquality is set to 0 for this case.

For CH₄ add stratosphere_qa, which is fraction of the sensitivity in the stratosphere for the 562 hPa level.

Added H₂O lite product. (H₂O is also found in the HDO lite product).

Version v03: August, 2012 (L2v005_Litev003)

Update levels to include retrieval levels close to the surface pressure

NH₃ and CH₄ RTVMR updates: update RTVMR indexing to be fill-first when applicable.

Fix an indexing bug in H₂O, CO, O₃, TATM lite products that caused a fraction of targets to be skipped and a fraction of targets to be included twice.

Version v04: September, 2012 (L2v005_Litev004)

Update grid pressure value to be consistent with target pressures

All v5 data processed after 2005

CO₂ added fields for matching CarbonTracker values (version CT2011): ct_pressure, ct_co2, ct_latitude, ct_longitude, ct_yearfloat

Version v05: September, 2012 (L2v005_Litev005): complete TES dataset for GS

Updated CH₄ RTVMR to use the corrected CH₄ results and move original results to original_species, and put N₂O corrected CH₄ values into "species". The N₂O prior is now corrected by the formal R13 climatology.

Version v06: November, 2012 (L2v005_Litev06): complete TES dataset

Complete TES dataset (through present)

Updated HDO files: add separate entries for H₂O and HDO profile values. Intersperse fill rather than putting fill all at the front. So HDO always starts at index 0 and H₂O always starts at index 17.

Added fields ct_co2, ct_co2_ak, ct_pressure, etc. to TES CO₂ products. These are the CT2011 CO₂ fields matching TES locations. Ct_co2_ak has the TES observation operator applied and is on TES pressure levels. Other quantities are on the CT2011 native pressure grid. Added fields for bias correction: bias_global, bias_time, bias_2010, bias_spatial to represent bias corrections from the different sources for each observation. Added ncep_temperature and ncep_pressure with matching NCEP temperature values.

Version v07: Sept, 2013 (L2v005_Litev07): complete TES v5 dataset.

Updates for CO₂ fields to set species to corrected CO₂ values and CarbonTracker fields to CT2011oi.

Version v08: Sept, 2013 (L2v006_Litev08):

HDO bias updated (see HDO section). HDO: take out fields HDO and H₂O. Use the stacked "species" field to get HDO and H₂O. Add field HDO_H₂O, which is a duplicate of field species.

Add species CH₃OH and HCOOH which have same fields as NH₃ (v006 TES output only).

O3IRK update mapping to fix NaN's

Change YYYYMMDD variable to *not* contain day fraction

Version v09:

Change GlobalSurvey to GlobalSurveyFlag.

B.6 References

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