

Dimensions	Name			
	time			
	nj			
	ni			
Variables	Name	Dimensions	Units	Comment
	jul_date	time	days	reference time at start of datafile in seconds Julian Date
	lat	nj, ni	degrees_north	Pixel centre latitude in decimal degrees north
	lon	nj, ni	degrees_east	Pixel centre longitude in decimal degrees east
	dtime	nj, ni	seconds	time difference from reference time in seconds
	LST	nj, ni	K	LST
	LST_uncertainty	nj, ni	K	total LST uncertainty
	QC	nj, ni	unitless	Quality control flags (see Table)
	satze	nj, ni	degree	satellite zenith viewing angle
	sataz	nj, ni	degree	satellite azimuth angle

Dimensions	Name			
	channel			
	nj			
	ni			
	ch_length			
Variables	Name	Dimensions	Units	Comment
	channel	ch_length, channel	unitless	channel description
	emis	channel, nj, ni	unitless	channel emissivity
	lcc	nj, ni	unitless	land cover classification (biome)
	fv	nj, ni	unitless	fractional vegetation cover
	tcwv	nj, ni	kg m ⁻²	total column water vapour
	NDVI	nj, ni	unitless	normalised difference vegetation index
	solze	nj, ni	degree	solar zenith angle
	solaz	nj, ni	degree	solar azimuth angle
	lwm	nj, ni	unitless	land-water mask
	LST_unc_noise	nj, ni	K	radiometric noise
	LST_unc_atm	nj, ni	K	uncertainty due to atmospheric effects
	LST_unc_sfc	nj, ni	K	uncertainty due to surface effects
	LST_unc_geo	nj, ni	K	uncertainty in geolocation
	LST_unc_dlst	nj, ni	K	uncertainty in model fitting
	t2m	nj, ni	K	corresponding 2m air temperature from reanalysis
	sh2m	nj, ni	unitless	corresponding 2m specific humidity from reanalysis
	ws2m	nj, ni	m s ⁻¹	corresponding 2m wind speed from reanalysis
	albedo	nj, ni	unitless	albedo
	elevation	nj, ni	m	elevation of land surface

CCMIRS, Reading, 11-12 Jun 2019

Dimensions	Name			
	time			
	lat			
	lon			
Variables	Name	Dimensions	Units	Comment
	time	Time	unitless	Diurnal index; day should have the value 0, night should have the value 1
	lat	lat	degrees_north	Grid cell centre latitude in decimal degrees north
	lon	lon	degrees_east	Grid cell centre longitude in decimal degrees east
	LST	time, lat, lon	K	Mean LST of the grid cell from cloud cleared input pixels
	LST_uncertainty	time, lat, lon	K	Grid cell LST uncertainty
	n	time, lat, lon	unitless	the total number of equivalent whole pixels assigned to the grid cell in the production of the averaged dataQuality control flags (see Table)
	ncl	time, lat, lon	unitless	the total number of equivalent whole pixels assigned to the grid cell in the production of the averaged data that are identified as cloud contaminated by the product's cloud clearing algorithm
	LST_variance	time, lat, lon	K	variance of the LST observations used in the average for the grid cell
	satze	time, lat, lon	degree	Mean satellite zenith viewing angle for the grid cell
	sataz	time, lat, lon	degree	Mean satellite azimuth angle for the grid cell

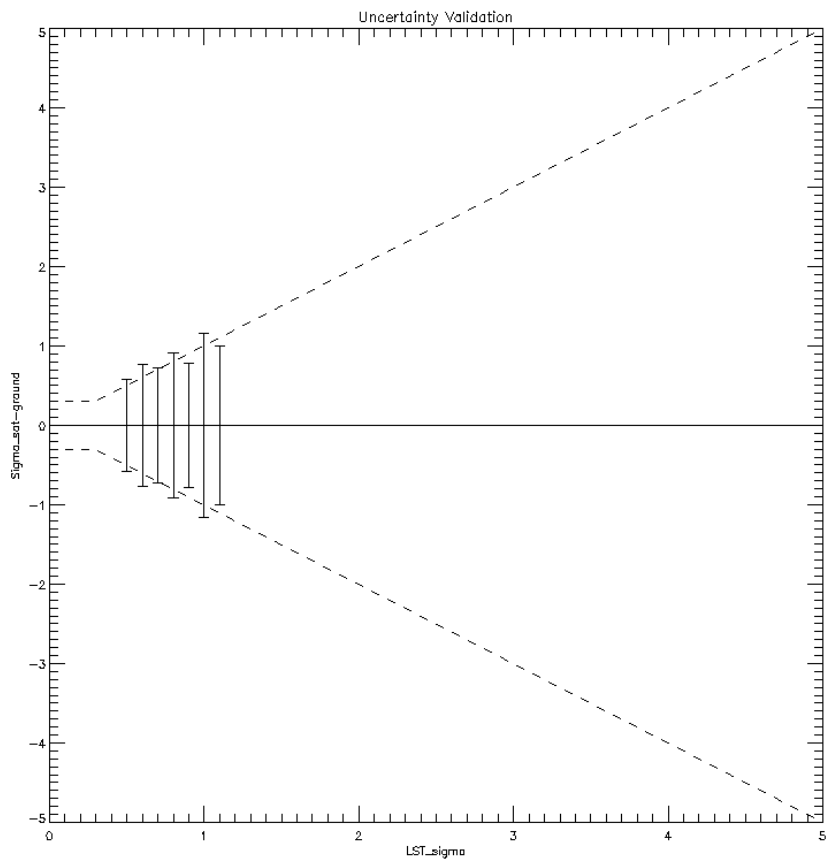
Dimensions	Name			
	time			
	channel			
	lat			
	lon			
	ch_length			
Variables	Name	Dimensions	Units	Comment
	channel	ch_length, channel	unitless	channel description
	emis	channel, time, lat, lon	unitless	channel emissivity
	lcc	time, lat, lon	unitless	land cover classification (biome)
	fv	time, lat, lon	unitless	fractional vegetation cover
	tcwv	time, lat, lon	kg m ⁻²	total column water vapour
	NDVI	time, lat, lon	unitless	normalised difference vegetation index
	solze	time, lat, lon	degree	solar zenith angle
	solaz	time, lat, lon	degree	solar azimuth angle
	lwm	lat, lon	unitless	land-water mask (proportion of land)
	LST_unc_noise	time, lat, lon	K	Random uncertainty
	LST_unc_sync	time, lat, lon	K	Synoptically correlated uncertainty
	LST_unc_smpl	time, lat, lon	K	Sampling uncertainty
	t2m	time, lat, lon	K	corresponding 2m air temperature from reanalysis
	sh2m	time, lat, lon	unitless	corresponding 2m specific humidity from reanalysis
	ws2m	time, lat, lon	m s ⁻¹	corresponding 2m wind speed from reanalysis
	albedo	time, lat, lon	unitless	albedo
	elevation	lat, lon	m	elevation of land surface

Product	Data Period	Archive	Format
(A)ATSR	1991-2012	GlobTemp	Harmonised
(A)ATSR Climate Data Record	1991-2012	GlobTemp	Harmonised
AMSR-E	2008-2010	GlobTemp	Harmonised
ArcLake	1991-2011	External	NetCDF-4
ASTER Global Emissivity	2000-2012	External	HDF-5
Metop-AVHRR (FRAC)	2007 onwards	GlobTemp	Harmonised
NOAA/Metop AVHRR (GAC)	1981 onwards	GlobTemp	Harmonised
GOES	2009 onwards	GlobTemp	Harmonised
Metop-IASI	2007 onwards	GlobTemp	Harmonised
Matchup DB	All data	GlobTemp	Harmonised
Merged LST	2010-2014 (GEO/LEO); 2003-2009 (LEO, continental GEO); NRT Demo	GlobTemp	Harmonised
NASA MEaSUREs LST&E	2000 onwards	External	
MODIS MOD11/MYD11	2000 onwards	External	HDF-EOS
MODIS MOD21/MYD21	2000 onwards	External	HDF-EOS
MTSAT	2010 onwards	GlobTemp	Harmonised
SEVIRI	2003 onwards	GlobTemp	Harmonised
SLSTR	2016 onwards	GlobTemp	Harmonised
SSM/I	2003	GlobTemp	Harmonised
VIIRS (standard EDR)	2012 onwards	External	HDF-5

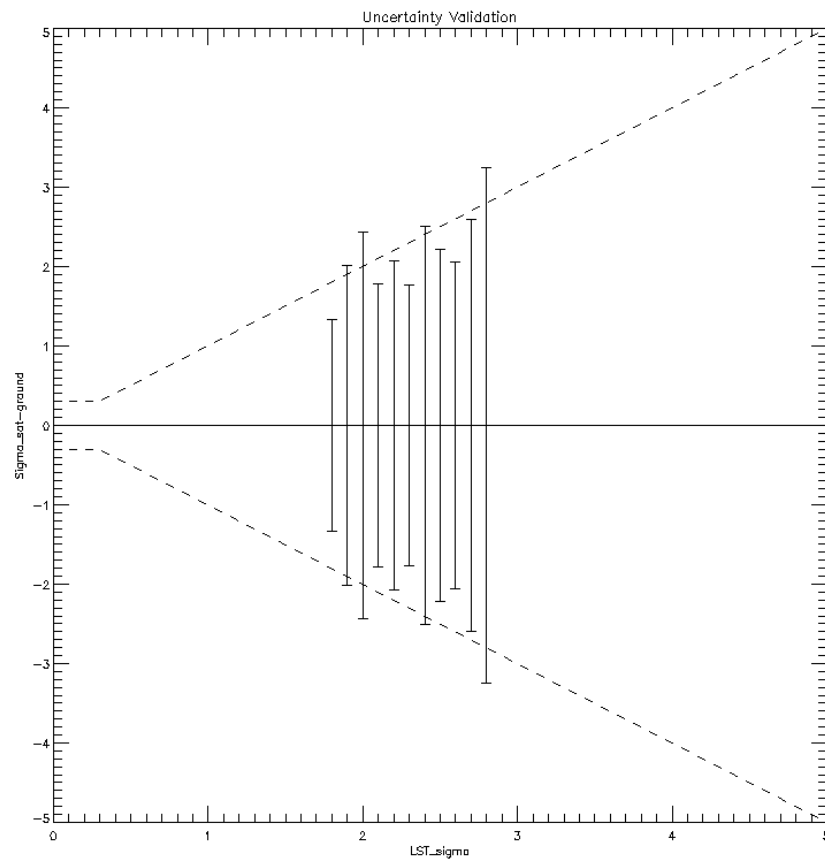
When a variable contains a flag both the flag values and meanings are included in the metadata.

int QC(nj,ni);

- **flag_meanings = "night, cloud, low_confidence, aerosol_information, aerosol_detected, spare, V3_cloud_mask_available, V1_cloud_mask, IMS_snow_mask_quality_assured, IMS_snow_mask, V3_cloud_mask_with_IMS_information, OSTIA_snow_mask_quality_assured, OSTIA_snow_mask, V3_cloud_mask_with_OSTIA_information, Istomina_Daytime_Night-time_snow_mask, OSISAF_snow_mask"**
- **QC:flag_masks = 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768**
- **comment = "quality control flags corresponding to the Advanced Along Track Scanning Radiometer land surface temperature product"**



AATSR LST uncertainty



Including cloud uncertainty

- **Test the goodness-of-fit between the uncertainty from in situ validation and the total satellite product uncertainty for each associated matchup consisting of four components:**
 - LST uncertainty for satellite pixel
 - Uncertainty associated with the ground-based instrumentation
 - Uncertainty associated with matching a satellite and ground observation in a spatial context
 - Uncertainty associated with matching a satellite and ground observation in time

- **Are the auxiliary data sufficient?**
- **Is the QC information sufficient?**
- **What is available and what is not?**
- **Is the lack of non-LST data limiting exploitation of the LST?**
- **Would links to external datasets improve this?**
- **Requirements for data access and visualisation**