

S3 Product Notice – SLSTR

Mission	S3A and S3B		
Sensor	SLSTR		
Product	Level 2 Land Surface Temperature		
Product Notice ID	S3.PN-SLSTR-L2L.04		
Issue/Rev Date	14/06/2021		
Version	1.0		
Preparation	This Product Notice was prepared by the S3 Mission Performance Centre and by ESA experts		
Approval	ESA Mission Management		

Summary

This is a Product Notice for the release of Sentinel-3 Sea and Land Surface Temperature Radiometer (SLSTR) Level-2 Land Surface Temperature product for both S3A and S3B. The Notice describes the SLSTR current processing baseline relevant to Land Surface Temperature, product quality and limitations, and product availability.



Processing Baselines					
	S3A	S3B			
Processing Baseline	Processing Baseline: 2.77	Processing Baseline: 1.55			
IPFs version	 SL_1 IPF version: 06.18 SL_2_LST IPF version: 06.17 PUG version: 3.40 				

Current Operational Processing Baseline				
IPF	IPF Version	In operation since (creation date)		
S3A SL1	06.18	18/05/2021 08:10 UTC		
S3A SL2	06.17	14/06/2021 08:21 UTC		
S3B SL1	06.18	18/05/2021 08:10 UTC		
S3B SL2	06.17	14/06/2021 08:21 UTC		
PUG	03.38	14/06/2021 08:21 UTC		



 Status of the Processing Baseline

 S3A

 Level-2 LST Products

 • The performance against in situ measurements remains within mission requirements of 1 K.

 S3B

Level-2 LST Products

• The performance against in situ measurements is within mission requirements of 1 K.

Product Updates

Common to S3A and S3B

LST Uncertainty

- For each pixel, different components of uncertainty are provided, representing the uncertainty from effects whose errors have distinct correlation properties:
 - random (no correlation of error component between cells);
 - o locally systematic (correlation of error component between "nearby" pixels);
 - [large-scale] systematic (correlation of error component between "distant" pixels).
- Locally correlated errors are modelled via spatio-temporal correlation length scales that determine how an observation influences the analysis in the vicinity of its time-space location. Systematic errors are accounted for by allowing a bias to be determined within the analysis procedure between different sources of data, whose magnitude is conditioned by the uncertainty attributed to systematic effects. Since all effects can be treated independently, the total uncertainty per pixel is acquired by adding all the components in quadrature.
- The LST uncertainty model fields in the SL_2_LST data product are as follows:
 - "LST_uncertainty" the total uncertainty
 - "LST_uncertainty_random" the random component as a result of the instrument noise
 - "LST_uncertainty_locT" the locally correlated component as a result of the instrument calibration



- "LST_uncertainty_locATM" the locally correlated component as a result of atmospheric errors
- "LST_uncertainty_locSF" the locally correlated component as a result of surface emissivity errors
- "LST_uncertainty_locGEO" the locally correlated component as a result of geolocation errors
- "LST_uncertainty_sys" the large-scale systematic uncertainty

Note that uncertainties are available for image and orphan pixels. However, as LST_uncertainty_locGEO is depending on neighbouring pixels, this data is set to 0 for orphan pixels.

Snow Masking

- For any given orbit every pixel is assessed for non-permanent snow and ice cover, since prior knowledge of the surface type is required in order to allow application of the most appropriate LST retrieval coefficients.
- Snow masking information in the Northern Hemisphere (NH) is provided by the Interactive Multisensor Snow and Ice Mapping System (IMS) Daily Northern Hemisphere snow and ice analysis. IMS data are not available for the southern hemisphere, so transient snow and ice is identified using an approach based on the methods of Istomina et al., 2010.
- The snow mask is provided as a flag in the "confidence_in" word.

Specific to S3A

• Nothing specific to S3A

Specific to S3B

• Nothing specific to S3B



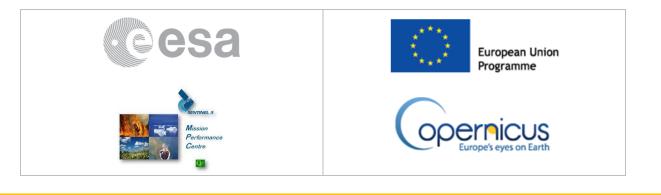
Known product quality limitations		
Common to S3A and S3B		
 Orphan dataset: Further to the updated SLSTR L1 regridding approach, some orphan pixel can be associated with a scan index lower than the first contributing scan index associated to each line, provided in the time file and corresponding to the image pixel. To avoid internal operational issues at the first row of SLSTR L2 images - when the SLSTR L1 radiometric image is re-projected on the instrument grid - it has been chosen to discard from processing these orphan pixels; They are thus associated with aFillValue in the LST dataset. 		
Probabilistic cloud screening		
• This cloud module is performed only over image pixels and not over orphan pixels.		
Specific to S3A		
Nothing specific to S3A		
Specific to S3B		
Nothing specific to S3B		

Products Availability

□ Copernicus Open Access Hub (<u>https://scihub.copernicus.eu/</u>), NRT and NTC

□ ESA Internal Hub for Experts (<u>https://inthub.copernicus.eu/s3exp/</u>), NRT and NTC

 $oxed{tabular}$ Other: TDS provided to users



Any other useful information

None

User Support

- Questions about SLSTR products can be ask to the Sentinel-3 User Support desk at:
 - o <u>eosupport@copernicus.esa.int</u>

References

- SLSTR L1 Product Notice, ref. S3.PN.SLSTR-L1.08, version 1.0, dated on 18/05/2021
- Product Data Format Specification SLSTR Level 2 Land Products, Ref: S3IPF.PDS.005.2, Issue: 2.9, Date: 26/08/2020

https://sentinel.esa.int/web/sentinel/user-guides/sentinel-3-slstr/document-library

• SLSTR Land User Handbook:

https://sentinel.esa.int/documents/247904/4598082/Sentinel-3-SLSTR-Land-Handbook.pdf/







	Static ADIS	
	S3A	
•	S3SL_2_LSTBAX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
•	S3SL_2_LSTVAX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
•	S3SL_2_LSTWAX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
•	S3A_SL_2_F1N_AX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
•	S3A_SL_2_S7N_AX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
•	S3A_SL_1_N_S8AX_20160216T000000_20991231T235959_20170324T120000	MPC_O_AL_006.SEN3
•	S3A_SL_1_N_S9AX_20160216T000000_20991231T235959_20170324T120000	MPC_O_AL_006.SEN3
•	S3A_SL_2_S8N_AX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
•	S3A_SL_2_S9N_AX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
•	S3A_SL_2_LSTCAX_20160216T000000_20991231T235959_20190215T120000	MPC_O_AL_003.SEN3
•	S3A_SL_2_LSTEAX_20160216T000000_20991231T235959_20210413T120000	MPC_O_AL_003.SEN3
•	S3A_SL_2_PCP_AX_20160216T000000_20991231T235959_20210413T120000	MPC_O_AL_006.SEN3
•	S3SL_2_IMSCAX_20160216T000000_20991231T235959_20210413T120000	MPC_O_AL_001.SEN3

Static ADFs

S3B

 S3_SL_2_LSTBAX_20000101T000000_20991231T235959_20151214T120000 	MPC_O_AL_001.SEN3
• S3_SL_2_LSTVAX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
• S3_SL_2_LSTWAX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
• S3B_SL_2_F1N_AX_20180425T000000_20991231T235959_20180409T120000	MPC_O_AL_001.SEN3
• S3B_SL_2_S7N_AX_20180425T000000_20991231T235959_20180409T120000	MPC_O_AL_001.SEN3
Error! Reference source not found.Error! Reference source not found.	
• S3_SL_2_SST_AX_20000101T000000_20991231T235959_20151214T120000	MPC_O_AL_001.SEN3
• S3B_SL_2_S8N_AX_20180425T000000_20991231T235959_20180409T120000	MPC_O_AL_001.SEN3
• S3B_SL_2_S9N_AX_20180425T000000_20991231T235959_20180409T120000	MPC_O_AL_001.SEN3
• S3B_SL_2_LSTCAX_20180425T000000_20991231T235959_20190215T120000	MPC_O_AL_002.SEN3
• S3B_SL_2_LSTEAX_20180425T000000_20991231T235959_20210413T120000	MPC_O_AL_002.SEN3
• S3B_SL_2_PCP_AX_20180425T000000_20991231T235959_20210413T120000	MPC_O_AL_002.SEN3
• S3_SL_2_IMSCAX_20160216T000000_20991231T235959_20210413T120000	MPC_O_AL_001.SEN3

In red: modified ADFs



End of the Product Notice