

SSMIS Basefile

File Format Specification

Release V1

April 4, 2012

1 Introduction

SSMIS Basefiles are files in netCDF version 4.0 format. The filename has the form:

SSMIS_TDRBASE_VVRRR_FNN_DYYYYMMDD_SHHMM_EHHMM_RGGGGG.nc

where:

VVV	-	Algorithm version (e.g. V01)
RRR	-	Revision (e.g. R00)
FNN	-	Satellite Designation (e.g. F16)
DYYYYMMDD	-	Date as year month day
SHHMM	-	Start time as hour minute
EHHMM	-	End time as hour minute
RGGGGG	-	Granule number

An example filename is:

SSMIS_TDRBASE_V01R00_F16_D20051101_S0017_E0159_R10515.nc

2 Summary of Data Fields

Dimension definitions:

Name	Size	Description
nscan	varies	Number of scans
npixel_imager	180	Number of pixels per scan for imager channels
npixel_enviro	90	Number of pixels per scan for environmental channels
npixel_las	60	Number of pixels per scan for lower air sounder channels
npixel_uas	30	Number of pixels per scan for upper air sounder channels
nephem	3	Number of ephemeris measurements per scan
ndate	6	Number of date/time fields (up to seconds)
ntime	7	Number of date/time fields (up to milliseconds)
nsatpos	2	Number of position/velocity measurements of the satellite per scan
nchannel	24	Number of channels
nwarmload	3	Number of warmload measurements per scan
nmuxhouse	4	Number of MUX housekeeping values
nbasepoint	28	

Variable definitions:

Name	Type	Dimensions
spacecraft_id	int	1
nscan	int	1
begin_time	int	ndate
end_time	int	ndate
ascend_time	int	ndate
tle_time	double	1

scan_time	float	(nscan, ntime)
xtime	double	nscan
orbit_number	double	nscan
quality_flag	int	(nscan, nchannel)
spacecraft_posx_gci	double	(nscan, nsatpos)
spacecraft_posy_gci	double	(nscan, nsatpos)
spacecraft_posz_gci	double	(nscan, nsatpos)
spacecraft_velx_gci	double	(nscan, nsatpos)
spacecraft_vely_gci	double	(nscan, nsatpos)
spacecraft_velz_gci	double	(nscan, nsatpos)
spacecraft_julday	int	(nscan, nephem)
spacecraft_time	float	(nscan, nephem)
spacecraft_lat	float	(nscan, nephem)
spacecraft_lon	float	(nscan, nephem)
spacecraft_alt	float	(nscan, nephem)
surface_tag_img	byte	(nscan, npixel_imager)
rainflag_img	byte	(nscan, npixel_imager)
lat_img1	float	(nscan, npixel_imager)
lon_img1	float	(nscan, npixel_imager)
ta150h_img1	float	(nscan, npixel_imager)
ta183_1h_img1	float	(nscan, npixel_imager)
ta183_3h_img1	float	(nscan, npixel_imager)
ta183_7h_img1	float	(nscan, npixel_imager)
lat_img2	float	(nscan, npixel_imager)
lon_img2	float	(nscan, npixel_imager)
ta91v_img2	float	(nscan, npixel_imager)
ta91h_img2	float	(nscan, npixel_imager)
surface_tag_env	byte	(nscan, npixel_enviro)
lat_env1	float	(nscan, npixel_enviro)
lon_env1	float	(nscan, npixel_enviro)
ta19v_env1	float	(nscan, npixel_enviro)
ta19h_env1	float	(nscan, npixel_enviro)
ta22v_env1	float	(nscan, npixel_enviro)
lat_env2	float	(nscan, npixel_enviro)
lon_env2	float	(nscan, npixel_enviro)
ta37v_env2	float	(nscan, npixel_enviro)
ta37h_env2	float	(nscan, npixel_enviro)
surface_tag_las	byte	(nscan, npixel_las)
lat_las	float	(nscan, npixel_las)
lon_las	float	(nscan, npixel_las)
ta50h_ch1_las	float	(nscan, npixel_las)
ta52h_ch2_las	float	(nscan, npixel_las)
ta53h_ch3_las	float	(nscan, npixel_las)
ta54h_ch4_las	float	(nscan, npixel_las)
ta55h_ch5_las	float	(nscan, npixel_las)
ta57rc_ch6_las	float	(nscan, npixel_las)
ta59rc_ch7_las	float	(nscan, npixel_las)
ta60rc_ch24_las	float	(nscan, npixel_las)

lat_uas	float	(nscan, npixel_uas)
lon_uas	float	(nscan, npixel_uas)
ta63rc_ch19_uas	float	(nscan, npixel_uas)
ta60rc_ch20_uas	float	(nscan, npixel_uas)
ta60rc_ch21_uas	float	(nscan, npixel_uas)
ta60rc_ch22_uas	float	(nscan, npixel_uas)
ta60rc_ch23_uas	float	(nscan, npixel_uas)
aux_warmcal	short	(nscan, nchannel)
aux_coldcal	short	(nscan, nchannel)
aux_warmloadtemp	float	(nscan, nwarmload)
aux_MUXsubID	short	nscan
aux_MUXhouse	float	(nscan, nmuxhouse)
aux_lat_kband	float	(nscan, nbasepoint)
aux_lon_kband	float	(nscan, nbasepoint)
aux_eia_kband	float	(nscan, nbasepoint)
aux_azimuth_kband	float	(nscan, nbasepoint)
aux_lat_uvband	float	(nscan, nbasepoint)
aux_lon_uvband	float	(nscan, nbasepoint)
aux_eia_uvband	float	(nscan, nbasepoint)
aux_azimuth_uvband	float	(nscan, nbasepoint)
aux_lat_wband	float	(nscan, nbasepoint)
aux_lon_wband	float	(nscan, nbasepoint)
aux_eia_wband	float	(nscan, nbasepoint)
aux_azimuth_wband	float	(nscan, nbasepoint)
aux_lat_gband	float	(nscan, nbasepoint)
aux_lon_gband	float	(nscan, nbasepoint)
aux_eia_gband	float	(nscan, nbasepoint)
aux_azimuth_gband	float	(nscan, nbasepoint)
aux_lat_lvband	float	(nscan, nbasepoint)
aux_lon_lvband	float	(nscan, nbasepoint)
aux_eia_lvband	float	(nscan, nbasepoint)
aux_azimuth_lvband	float	(nscan, nbasepoint)
aux_lat_kaband	float	(nscan, nbasepoint)
aux_lon_kaband	float	(nscan, nbasepoint)
aux_eia_kaband	float	(nscan, nbasepoint)
aux_azimuth_kaband	float	(nscan, nbasepoint)

3 Description of Data Fields

- spacecraft_id** : Spacecraft ID number from TDR file
- nscan** : Number of scans
- begin_time** : Time stored as [0]=yyyy, [1]=mm, [2]=dd, [3]=hr, [4]=min, [5]=sec
- end_time** : Time stored as [0]=yyyy, [1]=mm, [2]=dd, [3]=hr, [4]=min, [5]=sec

ascend_time : Time stored as [0]=yyyy, [1]=mm, [2]=dd, [3]=hr, [4]=min, [5]=sec

tle_time : Time (UTC) of Two Line Element (TLE) used to compute spacecraft ephemeris in seconds since 1987

scan_time : Time stored as [0]=yyyy, [1]=mm, [2]=dd, [3]=hr, [4]=min, [5]=sec, [6]=msec

xtime : Scan start time (UTC) in seconds since 1987

orbit_number : Fractional orbit number

quality_flag : Quality flag for each channel/scan
0=good; 1=bad geolocation; 2=bad antenna temperatures

spacecraft_posx_gci : Orbital Position Vector X in Geocentric Inertial Coordinates, in km

spacecraft_posy_gci : Orbital Position Vector Y in Geocentric Inertial Coordinates, in km

spacecraft_posz_gci : Orbital Position Vector Z in Geocentric Inertial Coordinates, in km

spacecraft_velx_gci : Orbital Velocity Vector X in Geocentric Inertial Coordinates, in km/sec

spacecraft_vely_gci : Orbital Velocity Vector Y in Geocentric Inertial Coordinates, in km/sec

spacecraft_velz_gci : Orbital Velocity Vector Z in Geocentric Inertial Coordinates, in km/sec

spacecraft_julday : Original spacecraft Julian day (3 sets)

spacecraft_time : Original spacecraft time from start of day (3 sets)

spacecraft_lat : Original spacecraft latitude (3 sets), in degrees

spacecraft_lon : Original spacecraft longitude (3 sets), in degrees

spacecraft_alt : Original spacecraft altitude (3 sets), in km

surface_tag_img : Surface tag for imager channels

rainflag_img : Rain flag (-1=indeterminate, 0=no rain, 1=rain)

lat_img1 : Original pixel latitude for channels 8-11 (150, 183 GHz), in degrees

lon_img1 : Original pixel longitude for channels 8-11 (150, 183 GHz), in degrees

ta150h_img1 : 150.0 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta183_1h_img1 : 183.31 +/- 1 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta183_3h_img1 : 183.31 +/- 3 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta183_7h_img1 : 183.31 +/- 6.6 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

lat_img2 : Original pixel latitude for channels 17-18 (91 GHz), in degrees

lon_img2 : Original pixel longitude for channels 17-18 (91 GHz), in degrees

ta91v_img2 : 91.655 GHz V-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta91h_img2 : 91.655 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

surface_tag_env : Surface tag for environmental scene channels

lat_env1 : Original pixel latitude for channels 12-14 (19, 22 GHz), in degrees

lon_env1 : Original pixel longitude for channels 12-14 (19, 22 GHz), in degrees

ta19v_env1 : 19.35 GHz V-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta19h_env1 : 19.35 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta22v_env1 : 22.235 GHz V-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

lat_env2 : Original pixel latitude for channels 15-16 (37 GHz), in degrees

lon_env2 : Original pixel longitude for channels 15-16 (37 GHz), in degrees

ta37v_env2 : 37.0 GHz V-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta37h_env2 : 37.0 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

surface_tag_las : Surface tag for lower air sounding channels

lat_las : Original pixel latitude for channels 1-7, 24 (50-59, 60.8 GHz), in degrees

lon_las : Original pixel longitude for channels 1-7, 24 (50-59, 60.8 GHz), in degrees

ta50h_ch1_las : 50.3 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta52h_ch2_las : 52.8 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta53h_ch3_las : 53.596 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta54h_ch4_las : 54.40 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta55h_ch5_las : 55.50 GHz H-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta57rc_ch6_las : 57.29 GHz RC-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta59rc_ch7_las : 59.4 GHz RC-Pol Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta60rc_ch24_las : 60.792688 GHz RC-Pol (IF1=357.892, IF2=16.0 MHz) Antenna Temperature, in kelvin
Missing data value is: -9999.9f

lat_uas : Original pixel latitude for channels 19-23 (63.2, 60.8 GHz), in degrees

lon_uas : Original pixel longitude for channels 19-23 (63.2, 60.8 GHz), in degrees

ta63rc_ch19_uas : 63.283248 GHz RC-Pol (IF1=285.271, IF2=0.0 MHz) Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta60rc_ch20_uas : 60.792688 GHz RC-Pol (IF1=357.892, IF2=0.0 MHz) Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta60rc_ch21_uas : 60.792688 GHz RC-Pol (IF1=357.892, IF2=2.0 MHz) Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta60rc_ch22_uas : 60.792688 GHz RC-Pol (IF1=357.892, IF2=5.5 MHz) Antenna Temperature, in kelvin
Missing data value is: -9999.9f

ta60rc_ch23_uas : 60.792688 GHz RC-Pol (IF1=357.892, IF2=16.0 MHz) Antenna Temperature,

in kelvin
Missing data value is: -9999.9f

- aux_warmcal** : Warm load calibration by channel (1-24), in counts
- aux_coldcal** : Cold load calibration by channel (1-24), in counts
- aux_warmloadtemp** : Warm load temperatures (1-3), in kelvin
- aux_MUXsubID** : Subframe ID number
- aux_MUXhouse** : MUX housekeeping values (1-4), in kelvin
- aux_lat_kband** : K-Band Base Point Latitude (1-28), in degrees
- aux_lon_kband** : K-Band Base Point Longitude (1-28), in degrees
- aux_eia_kband** : K-Band Base Point EIA (1-28), in degrees
- aux_azimuth_kband** : K-Band Base Point Azimuth (1-28), in degrees
- aux_lat_uvband** : UV-Band Base Point Latitude (1-28), in degrees
- aux_lon_uvband** : UV-Band Base Point Longitude (1-28), in degrees
- aux_eia_uvband** : UV-Band Base Point EIA (1-28), in degrees
- aux_azimuth_uvband** : UV-Band Base Point Azimuth (1-28), in degrees
- aux_lat_wband** : W-Band Base Point Latitude (1-28), in degrees
- aux_lon_wband** : W-Band Base Point Longitude (1-28), in degrees
- aux_eia_wband** : W-Band Base Point EIA (1-28), in degrees
- aux_azimuth_wband** : W-Band Base Point Azimuth (1-28), in degrees
- aux_lat_gband** : G-Band Base Point Latitude (1-28), in degrees
- aux_lon_gband** : G-Band Base Point Longitude (1-28), in degrees
- aux_eia_gband** : G-Band Base Point EIA (1-28), in degrees
- aux_azimuth_gband** : G-Band Base Point Azimuth (1-28), in degrees
- aux_lat_lvband** : LV-Band Base Point Latitude (1-28), in degrees
- aux_lon_lvband** : LV-Band Base Point Longitude (1-28), in degrees

aux_eia_lvband : LV-Band Base Point EIA (1-28), in degrees
aux_azimuth_lvband : LV-Band Base Point Azimuth (1-28), in degrees
aux_lat_kaband : KA-Band Base Point Latitude (1-28), in degrees
aux_lon_kaband : KA-Band Base Point Longitude (1-28), in degrees
aux_eia_kaband : KA-Band Base Point EIA (1-28), in degrees
aux_azimuth_kaband : KA-Band Base Point Azimuth (1-28), in degrees