

1. SSM/I

1.1 General Documents

DMSP SSM/I Calibration/Validation: Final Report Volume I

Technical document containing information about the calibration and algorithms used for SSM/I.

July 1989; Naval Research Laboratory; 192 pages.

File: SSMI_CalVal_Vol1_Jul89.pdf

Source: scanned from hardcopy, M. R. P. Sapiano, Dec 2009.

DMSP SSM/I Calibration/Validation : Final Report Volume II

Technical document containing information about the calibration and algorithms used for SSM/I. Second Volume.

May 1991; J.P. Hollinger; 322 pages.

File: DMSP_SSMI_CalibrationValidation_FinalRpt_VII_052091.pdf.

Source: Scanned from hardcopy, A. Lebsack, April 2010.

SSM/I Data Requirements Document

Technical document containing information required to read SSM/I files. Includes byte-by-byte guide to TDRs.

February 1991; Hughes for Air Force; 270 pages.

File: SSMI_Data_Req_Doc_Feb91.pdf

Source: scanned from hardcopy, M. R. P. Sapiano, Nov 2009.

DMSP Processing Guide

Technical document containing details required for processing DMSP data. Much of the processing described is done on the sensor and the document covers all DMSP instruments, including the SSM/I.

March 1992; Author unknown; Publisher Unknown; 77 pages.

File: DMSP_Processing_Guide_Mar92.pdf

Source: "DMSP Processing Guide.pdf", W. Berg, Nov 2009.

SSM/I User's Guide

Information on SDR and EDR files from NRL.

Date and author unknown ; 182 pages.

File: SSMI_User'sGuide.pdf.

Source: Scanned from hardcopy, A. Lebsack, April 2010.

Proceedings : Shared Processing Network DMSP SSM/I Algorithm Symposium 8-10 June 1993

Proceedings from the Shared Processing Network (SPN) DMSP SSM/I Algorithm Symposium in Monterey, 8 - 10 JUNE 1993.

June 1993; Dr. Marie C. Colton; 555 pages.

File: Proceedings_Shared_Netowrk_DMSP_SSMI_AlgorithmSymposium_8-10June1993.pdf.

Source: Scanned from hardcopy, A. Lebsack, April 2010.

SSM/I User's Interpretation Guide

General guide for users of imagery (aimed at forecasters). Includes notes on the DMSP program, the theory of MW remote sensing, the SSMI instrument, data processing and interpretation of SSMI data.

November 2000; Raytheon for DMSP/Air Force; 104 pages.

File: SSMI_Users_Interpretation_Guide_Nov00.pdf

Source: "SSMI Users Guide.pdf", W. Berg, Nov 2009.

Users Manual: SSMI Antenna Temperature Tapes. Revision 1

RSS Technical Report 120191. Revision 1 of RSS SSMI antenna temperature tapes users guide.

December 1991; Frank J Wentz; 85 pages.

File: RSS_Antenna_Temp_Manual_Rev1_Dec91.pdf

Source: "SSMI_Manual_RSS_Rev1.pdf", T. Greenwald, Dec 2009

Users Manual: SSMI Antenna Temperature Tapes. Revision 2

RSS Technical Report 120193. Revision 2 of RSS SSMI antenna temperature tapes users guide.

December 1993; Frank J Wentz; 39 pages.

File: RSS_Antenna_Temp_Manual_Rev2_Dec93.pdf

Source: "SSMI_Manual_RSS_Rev2.pdf", T. Greenwald, Dec 2009

Including Temperature Effects in the F15 RADCAL Correction

RSS Technical Report 051209.

May 2009; Kyle Hilburn; 11 pages.

File: RSS_incl_effects_F15RADICAL_correction.pdf

Source: Scanned from hardcopy, A. Lebsock, April 2010.

Deriving Earth Science Products from SSM/I

Progress Report for Contract NASW-4714 (August 1993-January 1995). RSS Technical Memo. 010395.

January 1995; Frank J. Wentz; 15 pages.

File: RSS_Deriving_Earth_Science_Products_SSMI_Jan95.pdf

Source: Scanned from hardcopy, A. Lebsock, April 2010.

SSM/I Processing Guide

This document describes procedures used for processing SSM/I data with the Sensor Data Processor (SDP) software, in addition it includes some suggested improvements to the existing procedures. Number : PG32268-501 Revision A, contract No. F04701-96-C-0026.

March 1998; Raytheon Company; 19 pages.

File: RaytheonCo_SSMI_Processing_Guide_Mar98.pdf

Source: Scanned from hardcopy, A. Lebsock, April 2010.

Final Report - Production of SSM/I Data Sets

RSS Technical Report. A summary of the work that was performed under Contract NAS8-38075 between NASA Marshall Space Flight Center and Remote Sensing Systems from September 1989 to September 1992.

September 1992; Frank J. Wentz; 70 pages.

File: RSS_TechRpt_090192.pdf.

Source: Scanned from hardcopy, A. Lebsack, April 2010.

User's Manual – SSM/I Antenna Temperature Tapes

RSS Technical Report 032588. This document describes the SSM/I antenna temperature data set produced by Remote Sensing Systems.

March 1988; Frank J. Wentz; 24 pages (plus 12 pages in Appendix).

File: RSS_TechRpt_032588.pdf.

Source: Scanned from hardcopy, A. Lebsack, April 2010.

SSM/I TDR Dataset Guide (.txt file from 1997)

General guide for SSM/I TDRs (includes information for F10, F11 and F13). Includes many useful numbers and file format for NESDIS TDRs after May 1997.

May 1997; Author/publisher unknown; 9 pages.

File: SSMI_TDR_Data_Sets_README_May97.pdf

Source: "README.tdr", W. Berg, Nov 2009.

SPP SSM/I TDR File Documentation

Alternate guide for reading TDRs from NOAA.

Feb 2004; N. Johanse?; 15 pages.

File: SPP_SSMI_TDR_Format.pdf

Source: "ssmi-tdr-documentation.pdf", www.ncdc.noaa.gov/oa/rsad/ssmi/ssmi-tdr-documentation.pdf, Nov 2009

CLASS SSMI Processing Change in 1997

Report describing issues arising from changes in QC for SSMI data. Poor QC before 1997 lead to artifacts in the data and examples are given in this document.

June 2006; Hilawe Semunegus; 6 pages.

File: CLASS_SSMI_processing_changes_1997_Jun06.pdf

Source: "SSMI_processing_changes.doc", D. Randel, Nov 2009

CSU/CIRA SSMI Rescue

Slides describing data rescue of SSMI data from 1987-1992 from 8mm tapes held at CSU.

February 2006; John Forsythe; 3 slides.

File: CSU_CIRA_SSMI_Rescue_Feb06.pdf

Source: "SSMI_Rescue.ppt", D. Randel, Nov 2009

SSM/I Antenna Temps (TA) Comparison Study

Comparison of SSM/I TA data from several sources.

May 1995; Adrian Ritchie; 68 pages.

File: SSMI_TA_ComparisonStudy_AdrianRitchie_Feb95.pdf.

Source: Scanned from hardcopy, A. Lebsack, April 2010.

1.2 F15 Documents

Including Temperature Effects in the F15 RADCAL Correction

RSS Technical report outlining a methodology for including temperature effects in the correction of RADCAL effects on data from SSM/I F15.

May 2009; Hilburn, RSS Technical report; 11 pages.

File: Hilburn_09__Including_Temp_Effects_in_the_F15_RADCAL_Corr__RSS_TechRep051209.pdf

Source: "RSS_TR051209_RADCAL.pdf", Wes Berg, Nov 2009.

1.3 Code

ssmitdrlatlon.c

C code to read NESDIS TDR files and create a subset within specified lat/lon bounds

ssmitdrta.c

C code to read SSMI antenna temperatures and output to files.

ssmitdrtb.f

Fortran code which converts Ta data from C program ssmitdrta.c to Tbs.

read_TDR.pro

IDL code to read TDR files and output channel temperatures

2. SSMIS

2. 1 General Documents

Algorithm and Data User Manual (ADUM) for the SSMIS

Technical description of SSMIS sensor characteristics and algorithms for data users.

July 2002; Northrup Gruman Electronic Systems Report 12621; 69 pages.

File: Algorithm_and_Data_User_Manual_For_SSMIS_Jul02.pdf

Source: “adum-ssmis-description.pdf”, Wes Berg, Nov 2009.

Additional Files: (All downloaded from NCDC, original filename in brackets)

ADUM_AppA_Beam_Location.pdf (adum-beamlocation.pdf)

ADUM_AppB_Lower_Air_Temp_And_Thickness.pdf (adum-lowerairtempandthickness.pdf)

ADUM_AppC_Doppler_Correction.pdf (adum-dopplercorrectionfortbcomputation.pdf)

ADUM_AppD_Lower_Air_Humidity.pdf (adum-lowerairhumidity.pdf)

ADUM_AppE_Upper_Air_Sounding.pdf (adum-upperairsounding.pdf)

Ground Processing Software Changes from Rev3a to Rev8c

List of changes to SSMIS ground processing system from Rev3 to Rev8.

Date and source unknown; 19 pages.

File: Ground_Processing_Software_Changes_Rev3a_to_Rev8c.pdf

Source: “GPS Software Changes Rev3a to Rev8c.pdf”, Wes Berg, Nov 2009.

SSMIS Ground Processing Software Rev6 Release notes

Memo listing changes to SSMIS ground processing system for Rev8. Information is duplicated from “Ground Processing Software Changes from Rev3a to Rev8c”, but an additional table is included listing all available documents from Northrup Gruman regarding SSMIS. Presumably distributed with SSMIS GPS Rev6 Software.

November 2005; George Vana; Northrup Gruman Memo; 7 pages.

File: Ground_Processing_Software_Rev_6_release_memo.pdf

Source: “Rev 6 release memo.pdf”, Wes Berg, Nov 2009.

Interface Design Document for the SSMIS Ground Processing Software

Very comprehensive technical description of SSMIS interface/file design. Gives information on all SSMIS file formats including ancillary files, ephemeris files, SDRs and TDRs. Note: does not include RSDR file spec.

November 2005; Northrup Gruman Electronic Systems AE-26775E; 222 pages.

File: Interface_Design_Document_for_SSMIS_Ground_Processing_Software_Nov05.pdf

Source: “AE-26775E.pdf”, Wes Berg, Nov 2009.

DMSP Satellite Raw Sensor Data Record (RSDR) File Format Specification

Description of SSMIS Raw Sensor Data Record file design.

January 2001; Air Force Weather Agency (HQ AFWA); 13 pages.

File: DMSP_Satellite_RSDR_File_Format_Specification_Jan01.pdf

Source: “SSMIS_RAW_SENS.PDF”, Hilawe Semenegus, May 2010.

NOAA/STAR SSMIS TDR Calibration and Validation User Manual

Description of Calibration and Validation methodologies for SSMIS F16 by NOAA/NESDIS/STAR.

March 2007; NOAA/NESDIS; 34 pages.

File: NOAA_STAR_SSMIS_TDR_CalVal_User_Manual.pdf

Source: "star-ssmis-tdr-calval-user-manual.pdf", Wes Berg, Nov 2009.

Tracking the Tempests: The Creation of the SSMIS

Description of development of SSMIS

Aerospace Report No. TOR-98(1550)-3, contract No. F04701-93-C-0094.

January 1999; A.A. Fote; 49 pages.

File: Tracking_the_Tempests_SSMIS_Creation_Jan99.pdf.

Source: Scanned from hardcopy, A. Lebsack, April 2010.

2.2 F16 Documents

DMSP SSMIS F16 Calibration/Validation Final Report

Volumes I to VI of the Cal/Val report for F16.

November 2005; SSMIS Cal/Val Team; 848 slides/pages.

File: SSMIS_F16_CalVal_Final_Report_Nov05.pdf

Source: "final-report-ssmis-F16-all-section.pdf", Wes Berg, Nov 2009.

2.3 Code

ssmis_edr2tdf.c

C code to read SSMIS EDR files (seems to be wrapped in HTML)

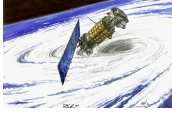
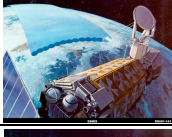
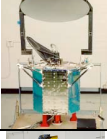
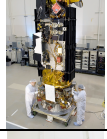
ssmis_sdr2tdf.c

C code to read SSMIS SDR files (seems to be wrapped in HTML) []

3. List of Archived Journal Articles and Conference Proceedings

- Colton, M. C., 1992: DMSP Special Sensor Microwave/Imager (SSM/I) Processing at the Fleet Numerical Oceanography Center : Operational Status, Applications and Plans. *Preprints, 6th AMS Conference on Satellite Meteorology and Oceanography*, Jan 5-10 1992, Atlanta, GA.
- Colton, M. C., 1994: Operational processing of DMSP Special sensor Microwave/Imager (SSM/I) data at Fleet Numerical Meteorology and Oceanography Center: algorithm transitions. *Geoscience and Remote Sensing Symposium, 1994. IGARSS '94. Surface and Atmospheric Remote Sensing: Technologies, Data Analysis and Interpretation, International*, **2**, 1225-1227.
- Colton, M. C., and G. A. Poe, 1999: Intersensor calibration of DMSP SSM/I's: F8 to F-14, 1987-1997. *IEEE Trans. Geosci. Rem. Sens.*, **37**, 418-439.
- Hollinger, J. P., J. L. Pierce, G. A. Poe, 1990: SSM/I instrument evaluation. *IEEE Trans. Geosci. Rem. Sens.*, **28**(5), 781-790.
- Kunkee, D. B., St. Germain, K. M., 2008: Foreword to the Special Issue on the DMSP SSMIS. *IEEE Geosci. Rem. Sens.*, **46**(4), 859-861.
- Kunkee, D. B., Poe, G. A., Boucher, D. J., Swadley, S. D., Hong, Y., Wessel, J. E., Uliana, E. A., 2008: Design and Evaluation of the First Special Sensor Microwave Imager/Sounder. *IEEE Geosci. Rem. Sens.*, **46**(4), 863-883.
- Kunkee, D. B., Y. Hong, Thompson, D. A., Werner, M. F., Poe, G. A., 2008: Analysis of the Special Sensor Microwave Imager/Sounder (SSMIS) Fields-of-View on DMSP F16. *IEEE Geosci. Rem. Sens.*, **46**(4), 934-945.
- Kunkee, D. B., Swadley, S. D., Poe, G. A., Ye Hong, Werner, M. F., 2008: Special Sensor Microwave Imager Sounder (SSMIS) Radiometric Calibration Anomalies—Part I: Identification and Characterization. *IEEE Geosci. Rem. Sens.*, **46**(4), 1017-1033.
- Poe, G. A. and R. W. Conway, 1990: A study of the geolocation errors for the Special Sensor Microwave/Imager (SSM/I). *IEEE Trans. Geosci. Rem. Sens.*, **28**(5), 791-799.
- Poe, G. A., Uliana, E. A., Gardiner, B. A., von Rentzell, T. E., Kunkee, D. B., 2008: Geolocation Error Analysis of the Special Sensor Microwave Imager/Sounder. *IEEE Geosci. Rem. Sens.*, **46**(4), 913-922.
- Yan B., F. Weng, 2008: Intercalibration Between Special Sensor Microwave Imager/Sounder and Special Sensor Microwave Imager. *IEEE Geosci. Rem. Sens.*, **46**(4), 984-995.

4. List of Thumbnailed Images

	Very large version of classic SSM/I image (Artist: Paul Fjeld) SSMI_Classic_giant.jpg Size: 2666x2133; Filetype: JPEG; Original Name: 2561.jpg Source: www.lockheedmartin.com/data/assets/2561.jpg
	Medium resolution version of classic SSM/I image SSMI_Classic.jpg Size: 500x316; Filetype: JPEG; Original Name: dmsp_blue.jpg Source: cindispace.utdallas.edu/DMSP/dmsp_blue.jpg
	Alternative rendering of SSM/I SSMI_alt.jpg Size: 423x365; Filetype: JPEG; Original Name: SSMI.jpg Source: http://www.lamma.rete.toscana.it/immagini/SSMI.jpg
	A (not great) drawing of SSMI SSMI_bad_drawing.jpg Size: 1200x874; Filetype: JPEG; Original Name: DMSP.jpg Source: www.philsmith.us/DMSP.jpg
	Medium sized version of SSMIS SSMIS_drawing_medium.jpg Size: 600x497; Filetype: JPEG; Original Name: ssmis drawing.jpg Source: Wes berg
	Small sized version of SSMIS SSMIS_drawing_small.jpg Size: 250x200; Filetype: JPEG; Original Name: ssmis-drawing2.jpg Source: Wes berg
	Photo of an SSMIS in the lab SSMIS_photo_lab.jpg Size: 177x240; Filetype: JPEG; Original Name: ssmis.jpg Source: Wes berg
	High resolution photo of F18 in the lab DMSP_F18_Lab1.jpg Size: 2848x4288; Filetype: JPEG; Original Name: DMSP-14A-hi.jpg Source: www.lockheedmartin.com/data/assets/ssc/dmsp/DMSP-14A-hi.jpg
	Second high resolution photo of F18 in the lab DMSP_F18_Lab2.jpg Size: 2848x4288; Filetype: JPEG; Original Name: DMSP-14B-hi.jpg Source: www.lockheedmartin.com/data/assets/ssc/dmsp/DMSP-14B-hi.jpg