Note that all variable names in CDF files have pre-pended 'th[probe]_' for probe data, (example 'tha_peef_density'). Ground based data is prepended with 'thg_'. See the THEMIS Data Analysis Software User's Guide for details: http://themis.ssl.berkeley.edu/downloads/ THEMIS_Users_Guide_THEMIS_Science_Data_Analysis_Software_TDAS_v7.0.pdf

Instrument	Level	Data Name	Description
ASI	L1	asf_????	All-sky imager full resolution images of 256x256 pixels (???? = 4-letter code of ground station)
		ast_????	All-sky imager thumbnail images of 32x32 pixels (???? = 4-letter code of ground station)
ASK	L1	ask_????	All-sky imager keogram images of 256 pixels (???? = 4-letter code of ground station)
ESA	L2 or L0*	For ESA: ? = f or r or b	f=full, r=reduced, b=burst
		pei?_data_quality	ion data quality flag (0: good data; nonzero: data may not be suitable)
		pei?_density	ion density
		pei?_t3	diagonalized ion temperature
		pei?_en_eflux	ion energy flux spectrogram
		pei?_velocity_???	ion velocity (???=DSL or GSE or GSM)
		pei?_ptens	ion pressure tensor (DSL)
		peif_mftens	ion momentum flux tensor (DSL)
		pei?_magt3	ion temperatures in B frame
		pei?_avgtemp	trace of diagonalized temperature tensor divided by 3
		pei?_vthermal	ion thermal velocity
		pei?_symm	direction of pressure tensor symmetry (DSL)
		pei?_symm_ang	angle between symmetry direction and B
		pei?_mode	ion instrument mode
		pei?_sc_pot	spacecraft potential
		pei?_flux	ion particle flux vector
		pei?_magf	magnetic field vector in DSL
		pee?_data_quality	electron data quality flag (0: good data; nonzero: data may not be suitable)
		pee?_density	electron density
		pee?_t3	diagonalized electron temperature
		pee?_en_eflux	electron energy flux spectrogram
		pee?_velocity_???	electron velocity (???=DSL or GSE or GSM)
		pee?_ptens	electron pressure tensor (DSL)
		pee?_mftens	electron momentum flux tensor (DSL)
		pee?_magt3	electron temperatures in B frame
		pee?_avgtemp	trace of diagonalized temperature tensor divided by 3
		pee?_vthermal	electron thermal velocity
		pee?_symm	direction of pressure tensor symmetry (DSL)
		pee?_symm_ang	angle between symmetry direction and B

	pee?_sc_pot	spacecraft potential
	pee?_flux	electron particle flux vector
	pee?_magf	magnetic field vector in DSL
	pee?_mode	electron instrument mode
	iesa_solarwind_flag	ion solar wind mode flag (0: not in solar wind mode; 1: in solar wind mode)
	eesa_solarwind_flag	electron solar wind mode flag (0: not in solar wind mode; 1: in solar wind mode)
L0 only	pei?_en_counts	ion count vs. energy
L0 only	pee?_en_counts	electron count vs. energy

SST	L1*	For SST: ? = f or r or b	f=full, r=reduced, b=burst
		psi?_#	# = same quantities as for ESA
		pse?_#	# = same quantities as for ESA
	L2	SST: full only	
		psif_en_eflux	ion energy spectrogram
		psef_en_eflux	electron energy spectrogram
MOM (on-board moments)	L1 and L2	peim_density	ESA ion density
		peim_flux	ESA ion flux
		peim_mftens	ESA ion momentum flux tensor
		peim_eflux	ESA ion energy flux
	(L1 only)	peim_velocity	ESA ion velocity
		peim_ptot	ESA ion pressure
		peim_ptens	ESA ion pressure tensor
	L2 only	peim_velocity_???	ESA ion velocity in ???=dsl, gse, gsm coordinates
		peim_velocity_mag	ESA ion field-aligned velocity
		peim_ptens_mag	ESA ion field-aligned pressure tensor
		peim_t3_mag	ESA ion field-aligned temperature
		peim_mag	B field (DSL) interpolated to peim time array
		peim_data_quality	ion moment data quality (0: good data; nonzero: data may not be suitable)
		pxxm_pot	Spacecraft potential
	L1 and L2	peem_#	# = ESA electron quantities (same as above for ESA ions)+A1
		iesa_solarwind_flag	ESA ion solar wind flag mode (0: not in solar wind mode; 1: in solar wind mode)
		eesa_solarwind_flag	ESA electron solar wind flag mode (0: not in solar wind mode; 1: in solar wind mode)
	L1 only	psim_#	# = SST ion quantities (same as for ESA ions)
		psem_#	# = SST electron quantities (same as for ESA electrons)
		ptim_#	# = ESA+SST ion quantities (same as for ESA ions)
		ptem_#	# = ESA+SST electron quantities (same as for ESA ions)
		pxxm_qf	calibration parameter for SC potential
		pxxm_shft	calibration parameter for SC potential
EFI	L1 and L2	eff	E field, fast survey/full orbit, 3D
	L1 only?	efp	E field, particle burst, 3D
	L1 only?	efw	E field, wave burst, 3D
		eff_dot0	E field, fast survey/full orbit, 3D, using E dot B=0 (DSL coordinates)
	L1 only?	efp_dot0	E field, particle burst, 3D, using E dot B=0
	L1 only?	efw_dot0	E field, particle burst, 3D, using E dot B=0
	L1 only?	eff_0	E field, fast survey/full orbit, 3D, using Ez=0
	L1 only?	efp_0	E field, particle burst, 3D, using Ez=0
	L1 only?	efw_0	E field, particle burst, 3D, using Ez=0
	L1 only?	efs	On-board spin-fit electric field
	L1 only?	efs_0	On-board spin-fit electric field using Ez=0

		efs_dot0	On-board spin-fit electric field using E dot B=0 *(DSL coordinates)*
	L1 only?	vaf	Voltage, processor A, fast survey/full orbit
	L1 only?	vap	Voltage, processor A, particle burst
	L1 only?	vaw	Voltage, processor A, wave burst
	L1 only?	vbf	Voltage, processor B, fast survey/full orbit
	L1 only?	vbp	Voltage, processor B, particle burst
	L1 only?	vbw	Voltage, processor B, wave burst
	L1 only?	ef?_hed	16-byte packet header for analogous data type; ?=f or p or w
	L1 only?	ef?_raw	raw data for analogous data type; ?=f or p or w
	L1 only?	va?_hed	16-byte packet header for analogous data type; ?=f or p or w
	L1 only?	va?_raw	raw data for analogous data type; ?=f or p or w
		efs_q_mag	Data quality parameter (=NaN)
		efs_q_pha	Data quality parameter (=NaN)
		eff_q_mag	Data quality parameter (equal to the spin-fit E34 electric field magnitude divided by the spin-fit E12 electric field magnitude. Good values are near 1.0)
		eff_q_pha	Data quality parameter (equal to the cosine of the angle between the spin-fit E34 electric field and the spin-fit E12 electric field. Good values are near 1.0)
		eff_e12_efs	Ground spin-fit (using E12), spin plane electric field vector in DSL coordinates
		eff_e34_efs	Ground spin-fit (using E34), spin plane electric field vector in DSL coordinates
FBK	L1 only	fb1	Filter Bank 1 (E and/or B)
		fb2	Filter Bank 2 (E and/or B)
		fbh	Filter Bank high frequency (100-300kHz)
	L1 and L2	fb_hff	High-frequency filter peak and average values
		fb_eac12	Spectrogram E field AC component, sensors 1&2 (spin plane)
		fb_eac34	Spectrogram E field AC component, sensors 3&4 (spin plane)
		fb_eac56	Spectrogram E field AC component, sensors 5&6 (axial)
		fb_edc12	Spectrogram E field DC component, sensors 1&2 (spin plane)
		fb_edc34	Spectrogram E field DC component, sensors 3&4 (spin plane)
		fb_edc56	Spectrogram E field DC component, sensors 5&6 (axial)
		fb_scm?	Spectrogram SCM? (search coil) ; ?=1,2,3 (three axes)
		fb_v?	Spectrogram floating potential of sensor ?=1,2,3,4,5,6

FFT	L1 and L2	ffp_16	FFT power spectrum in particle burst x 16 frequencies
(on-board)		ffp_16_dbpara	FFT power spectrum for dB (parallel)
		ffp_16_dbperp	FFT power spectrum for dB (perpendicular)
		ffp_16_eac12	FFT power spectrum for AC component E12
		ffp_16_eac34	FFT power spectrum for AC component E34
		ffp_16_eac56	FFT power spectrum for AC component E56
		ffp_16_edc12	FFT power spectrum for DC component E12
		ffp_16_edc34	FFT power spectrum for DC component E34
		ffp_16_edc56	FFT power spectrum for DC component E56
		ffp_16_epara	FFT power spectrum for E (parallel)
		ffp_16_eperp	FFT power spectrum for E (perpendicular)
		ffp_16_scm?	FFT power spectrum for SCM? ; ?=1,2,3 (axes)
		ffp_16_v?	FFT power spectrum for V? ; ?=1,2,3,4,5,6 (sensors)
		ffp_32_#	# = same quantities in particle burst x 32 frequencies
		ffp_64_#	# = same quantities in particle burst x 64 frequencies
		ffw_16_#	# = same quantities in wave burst x 16 frequencies
		ffw_32_#	# = same quantities in wave burst x 32 frequencies
		ffw_64_#	# = same quantities in wave burst x 64 frequencies
FGM	L1 and L2	fgl	B field, low telemetry (low data rate)
		fgh	B field, high telemetry (high data rate)
		fge	engineering data (decimated from FGH)
	L2 only	fgs_dsl	B field, spin-resolution magnetic field B in DSL
		fgs_btotal	spin-resolution magnetic field magnitude
		fgl_btotal	low time resolution magnetic field magnitude
		fgh_btotal	high time resolution magnetic field magnitude
		fge_btotal	engineering mode magnetic field magnitude
FIT	L2 only	efs	On-board spin-fit electric field (EFI) data
(on-board)		efs_0	On-board spin-fit electric field (EFI) using Ez=0
		efs_dot0	On-board spin-fit electric field (EFI) using E dot B=0
		efs_sigma	Variance of onboard spin-plane electric field spin fit
		fgs	On-board spin-fit FGM data
		fgs_sigma	Variance of onboard spin-plane magnetic field spin fit
		fit_bfit	FGM spinfit calibrated data: A,B,C,sig,avg
		fit_efit	EFI spinfit calibrated data: A,B,C,sig,avg
	L1?	fit	SpinFIT file E&B raw data

GMAG	L2	mag_????	Ground magnetometer data in HDZ* coordinates (???? = 4-letter code of ground station)
		mag_???	(??? = 3-letter code of ground station)
SCM	L1	For SCM: ? = f or p or w	f=fast survey, p=particle burst, w=wave burst
		scf	waveform fast survey (DSL)
		scp	waveform particle burst (DSL)
		scw	waveform wave burst (DSL)
		sc?_misalign	misalignment of Z axis from spin axis
		sc?_dc	X-Y (spin plane) values of the DC field in DSL
		sc?_iano	time discontinuities of data
		sc?_cal	calibrated data (unit depends on selected step)
	L2	scf_???	waveform fast survey (DSL, GSE, GSM)
		scp_???	waveform particle burst (DSL, GSE, GSM)
		scw_???	waveform wave burst (DSL, GSE, GSM)
		scf_btotal	fast survey magnetic field magnitude
		scp_btotal	particle burst magnetic field magntude
		scw_btotal	wave burst magnetic field magnitude

STATE	L1	state_pos	GEI position, xyz
		state_vel	GEI velocity, xyz
		state_man	Maneuver flag
		state_roi	Regions of interest
		state_spinras	spin axis right ascension, deg
		state_spindec	spin axis declination, deg
		state_spinalpha	Geom to spin axis, Euler alpha, deg
		state_spinbeta	Geom to spin axis, Euler beta, deg
		state_spinper	spin period, sec
		state_spinphase	spin phase, deg
		state_{pos,vel}_gsm	GSM position and velocity
		state_{pos,vel}_gse	GSE position and velocity
		state_spindec_correction	V03 correction to spin axis declination
		state_spinras_correction	V03 correction to spin axis right ascension

Comments

*For ESA L0 and SST L1, a separate call to THM_PART_MOMENTS is required for moments.

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Needs FGS data to load
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*Coordinate system for

gmags may vary depending on site and installation error/drift. It is best to verify with comparison to expected field.