

GRAS SAF Products Requirements Table

Product-identifier	Product name	Product acronym	Product type (product, software, dataset)	Characteristics and methods	Input satellite data	Dissemination type (NRT/off-line)	Dissemination means	Format	Timeliness	Spatial coverage	Generation frequency	Spatial resolution	Threshold accuracy	Target accuracy	Optimal accuracy	SeSp accuracy	Verification method	Applications and users	Expected start of operation resp. availability	Comments
GRM-01	NRT Refractivity Profile	NRP	Product	With error estimates Vertical Resolution: 150-250 m	GRAS	NRT	GTS EUMETCast	BUFR BUFR/netCDF	3 h	global	orbit dump	GRAS resolution	0-5 km: 1.8%-6% 5-30 km: 1.8% 30-50 km: 0.09 N-units	0-5 km: 0.6%-2% 5-30 km: 0.6% 30-50 km: 0.03 N-units	0-5 km: 0.3%-1% 5-30 km: 0.3% 30-50 km: 0.02 N-units	0-8 km: 1.5% (sd), 0.3% (bias) [tropics: 2% (bias)] 8-25 km: 0.7% (sd), 0.2% (bias) 25-35 km: 1.5% (sd), 1.5% (bias) 35-50 km: 4% (sd), 7% (bias) [all quantiles global unless noted]	NWP, other RO, Radiosondes	NWP	T1 + 6 mo (-Oct/Nov 2008)	T1: op data from EUMETSAT; 15 Mar 2008; pre-op PPF 2.8 data; 3 Jul 2008; GRAS SAF demonstrational REF data on GTS; Oct/Nov 2008; PPF 2.12 data;
GRM-02	NRT Temperature Profile	NTP	Product	Vertical Resolution: 250-500 m	GRAS	NRT	GTS EUMETCast	BUFR BUFR/netCDF	3 h	global	orbit dump	GRAS resolution	0-5 km: 6-9 K 5-30 km: 3 K 30-40 km: 3-15 K 40-50 km: 15-30 K	0-5 km: 2-3 K 5-30 km: 1 K 30-40 km: 1-5 K 40-50 km: 5-10 K	0-5 km: 1-1.5 K 5-30 km: 0.5 K 30-40 km: 0.5-2.5 K 40-50 km: 2.5-5 K		NWP, other RO, Radiosondes	NWP	T1 + 12 mo (-Apr 2009)	
GRM-03	NRT Specific Humidity Profile	NHP	Product	Vertical Resolution: 250-500 m	GRAS	NRT	GTS EUMETCast	BUFR BUFR/netCDF	3 h	global	orbit dump	GRAS resolution	0.6 g/kg 30% *	0.2 g/kg 10% *	0.1g/kg 5% *		NWP, other RO, Radiosondes	NWP	T1 + 12 mo	* whichever is greater
GRM-04	NRT Pressure Profile	NPP	Product	Vertical Resolution: 250-500 m	GRAS	NRT	GTS EUMETCast	BUFR BUFR/netCDF	3 h	global	orbit dump	GRAS resolution	6 hPa 0.6% *	2 hPa 0.2% *	1 hPa 0.1% *		NWP, other RO, Radiosondes	NWP	T1 + 12 mo	* whichever is greater
GRM-05	NRT Surface Pressure	NSP	Product		GRAS	NRT	GTS EUMETCast	BUFR BUFR/netCDF	3 h	global	orbit dump	GRAS resolution	6 hPa	2 hPa	1 hPa		NWP, other RO, Radiosondes	NWP	T1 + 12 mo	
GRM-06	NRT Validation Products	NVP	Information		GRAS CHAMP GRACE COSMIC TerraSAR-X	offline	Web	N/A	24 h	global	daily	GRAS resolution	N/A	N/A	N/A		N/A	NWP	T1 + 3 mo: Available on GARF since Apr 2008;	
GRM-07	Error Covariance Matrix for NRT Products	NEM	Dataset		GRAS	offline	Web	netCDF	N/A	global	N/A	N/A	N/A	N/A	N/A		NWP, other RO, Radiosondes	NWP	T1 + 12 mo	
GRM-08	OFL Bending Angle	OBA	Product	With error estimates Vertical Resolution: 150-250 m	GRAS	offline	Web	netCDF	30 d	global	daily	GRAS resolution	-	1 µrad 0.4% *	-		NWP, other RO, Radiosondes	Climate, Researchers	T2 + 6 mo (H2, 2009)	T2: offline data from EUMETSAT (expected mid 2009); * GRAS instrument BA specification;
GRM-09	OFL Refractivity Profile	ORP	Product	With error bars Vertical Resolution: 150-250 m	GRAS	offline	Web	netCDF	30 d	global	daily	GRAS resolution	0-5 km: 1.8%-6% 5-30 km: 1.8% 30-50 km: 0.09 N-units	0-5 km: 0.5%-2% 5-30 km: 0.5% 30-50 km: 0.02 N-units	0-5 km: 0.25%-1% 5-30 km: 0.25% 30-50 km: 0.01 N-units		NWP, other RO, Radiosondes	Climate, Researchers	T2 + 6 mo	* whichever is greater
GRM-10	OFL Temperature Profile	OTP	Product	Vertical Resolution: 250-500 m	GRAS	offline	Web	netCDF	30 d	global	daily	GRAS resolution	0-5 km: 6-9 K 5-30 km: 3 K 30-40 km: 3-15 K 40-50 km: 15-30 K	0-5 km: 1-2 K 5-30 km: 0.5 K 30-40 km: 0.5-3 K 40-50 km: 3-5 K	0-5 km: 0.5-1 K 5-30 km: 0.25 K 30-40 km: 0.25-1.5 K 40-50 km: 1.5-2.5 K		NWP, other RO, Radiosondes	Climate, Researchers	T2 + 6 mo	
GRM-11	OFL Specific Humidity Profile	OHP	Product	Vertical Resolution: 250-500 m	GRAS	offline	Web	netCDF	30 d	global	daily	GRAS resolution	0.6 g/kg 30% *	0.1 g/kg 5% *	0.05 g/kg 2.5% *		NWP, other RO, Radiosondes	Climate, Researchers	T2 + 6 mo	* whichever is greater
GRM-12	OFL Pressure Profile	OPP	Product	Vertical Resolution: 250-500 m	GRAS	offline	Web	netCDF	30 d	global	daily	GRAS resolution	6 hPa 0.6% *	1 hPa 0.1% *	0.5 hPa 0.05% *		NWP, other RO, Radiosondes	Climate, Researchers	T2 + 6 mo	* whichever is greater
GRM-13	OFL Surface Pressure	OSP	Product		GRAS	offline	Web	netCDF	30 d	global	daily	GRAS resolution	6 hPa	1 hPa	0.5 hPa		NWP, other RO, Radiosondes	Climate, Researchers	T2 + 6 mo	
GRM-14	OFL Validation Products	OVP	Information		GRAS	offline	Web	N/A	30 d	global	daily	GRAS resolution	N/A	N/A	N/A		N/A	Climate, Researchers	T2 + 6 mo	
GRM-15	Error Covariance Matrix for OFL Products	OEM	Dataset		GRAS	offline	Web	netCDF	N/A	global	N/A	N/A	N/A	N/A	N/A		NWP, other RO, Radiosondes	Climate, Researchers	T2 + 6 mo	
GRM-16	Radio Occultation Processing Package	ROPP	Software		GRAS CHAMP GRACE COSMIC TerraSAR-X	offline	Web	tarballs	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Test Folder	NWP, RO data suppliers, scientific users	ROPP-1 v1.0 released 12/04/2007; Operational version Q3 2009	
GRM-17	CLM Bending Angle	CBA	Product	Gridded monthly means	GRAS COSMIC	offline	Web	netCDF ASCII	30 d	global	monthly	5 deg lat §	-	1 µrad 0.4% § *	-		Re-analysis data RO centers Radiosondes	Climate, Researchers	T3 (H2, 2010)	T3 = T2 + 6 mo (OFL data) + 12 mo; § accuracy corresponding to gridding; * GRAS instrument BA specification; whichever is greater
GRM-18	CLM Refractivity	CRG	Product	Gridded monthly means	GRAS COSMIC	offline	Web	netCDF ASCII	30 d	global	monthly	5 deg lat §	0-15 km: 0.5%-2% 15-35 km: 1% §	0-15 km: 0.1%-1% 15-35 km: 0.2% §	0-15 km: 0.05%-0.5% 15-35 km: 0.1% §		Re-analysis data RO centers Radiosondes	Climate, Researchers	T3	§ accuracy corresponding to gridding
GRM-19	CLM Temperature	CTG	Product	Gridded monthly means	GRAS COSMIC	offline	Web	netCDF ASCII	30 d	global	monthly	5 deg lat §	0-15 km: 1 K 15-35 km: 2 K §	0-15 km: 0.2 K 15-35 km: 0.4 K §	0-15 km: 0.1 K 15-35 km: 0.2 K §		Re-analysis data RO centers Radiosondes	Climate, Researchers	T3	§ accuracy corresponding to gridding
GRM-20	CLM Specific Humidity	CHG	Product	Gridded monthly means	GRAS COSMIC	offline	Web	netCDF ASCII	30 d	global	monthly	5 deg lat §	0.25 g/kg 10% § *	0.05 g/kg 2% § *	0.03 g/kg 1% § *		Re-analysis data RO centers Radiosondes	Climate, Researchers	T3	§ accuracy corresponding to gridding; * whichever is greater
GRM-21	CLM Geopotential Height	CZG	Product	Gridded monthly means	GRAS COSMIC	offline	Web	netCDF ASCII	30 d	global	monthly	5 deg lat §	0-35 km: 50 gpm §	0-35 km: 12 gpm §	0-35 km: 5 gpm §		Re-analysis data RO centers Radiosondes	Climate, Researchers	T3	§ accuracy corresponding to gridding