GOES R REQ ID #	Observational Requirement	User(s) & Priority (LO-#) (Note 1)	LEVEL	Orthogonality / Angular Res / Spatial or Geo Coverage	Spatial / Horizontal / Angular Res.	Spatial Spacing / Sampling	Mapping Accuracy	Mapping Uncrtnty	Msnmt. Range	Msmnt. Accrcy	Refresh Rate	Data Latency	Long-term stability
3.5.11 ENERGETIC PARTICLES													
3.5.11.1	**Total Electron Content (TEC)**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	G	10 km	n/a	5 km	n/a	1-200 TEC units	Greater of 1 TEC unit or 30%	0-50° N/S: 30 min > 50° N/S: 15 min	15 min	tbs
3.5.12 MAGNETOSPHERE/ATMOSPHERE													
3.5.12.1	**Auroral Boundary**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	>30° N/S Latitude	10 km	n/a	25 km	n/a	tbs	± 10%	15 min	15 min	tbs
3.5.12.2	**Auroral Emissions and Airglow**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	Auroral Emissions: > 30° N/S Airglow: Global	5 km	n/a	1 km	n/a	tbs	± 10%	Auroral Emissions: 15 min Airglow: 4 hr	5 min	tbs
3.5.12.3	**Auroral Energy Deposition**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	>30° N/S Latitude	10 km	n/a	10 km	n/a	Energy Range: 30 eV-50 KeV Energy Flux: $5x10^{-5}$-1 W m^{-2}	Greater of $5x10^{-5}$ W/m^2 or 5 %	15 min	15 min	tbs
3.5.12.4	**Auroral Imagery**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	>30° N/S Latitude	10 km	n/a	10 km	n/a	Wavelength: $2x10^{-3}$-10^2 µm Energy Flux: 0.25-50 ergs $cm^{-2}sec^{-1}$	± 5%	15 min	15 min	tbs
3.5.12.5	**Electron Density Profiles**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	G	10 km	n/a	5 km	n/a	ne: 100-107 cm-3	± 5%	15 min	15 min	tbs
3.5.12.6	**Ionospheric Scintillation**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	G	25 km	n/a	5 km	n/a	Amp. Fluc. Index (S4): 0.1 to 0.5 Phase Fluc. Index: 0.1 to 20 radians (VHF to S-Band Frequencies)	S4: 0.1 Phase Index: 0.1 radians	15 min	< 5 min	tbs
3.5.12.7	**Neutral Density Profile**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	G	250 km	n/a	125 km	n/a	$2x10^{-19}$ to $5x10^{-9}$ g cm^{-3}	< 500 km: 5% 500-700 km: 10% > 700 km: 15%	60 min	15 min	tbs
3.5.12.8	**Optical Backgrounds**	**GOES R P3I**	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	G	10 km	n/a	50 km	n/a	Wavelength: 1-29 microns, 0.4-0.7 microns, 0.04-0.2 microns Brightness: tbs	tbs	1 sec	15 min	tbs

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(3.5.12.9)	Upper Atmospheric Neutral Winds	GOES R P3I	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	G	250 km	n/a	125 km	n/a	0 to ± 1500 m/s	Greater of 5 m/s or 5%	0-50° N/S: 30 min > 50° N/S: 15 min	15 min	tbs
3.5.13 SOLAR													
3.5.13.1	Solar Flux: Spectral Irradiance	GOES R P3I	T	Whole Sun (40 arcmin)	n/a	N/A	+/-1 arcmin	+/-0.5 arcmin	0 - 10 W/m^2nm	1%	6 hour	1 day	<600nm: 0.02% per yr >600 nm: 0.01% per yr
			O	Whole Sun (40 arcmin)	n/a	N/A	+/-1 arcmin	+/-0.5 arcmin	0 - 10 W/m^2nm	0.1%	60 min	60 min	<600nm: 0.01% per yr >600 nm: 0.01% per yr
3.5.13.2	Solar Flux: Total Irradiance	GOES R P3I	T	Whole Sun (40 arcmin)	25 km	N/A	+/-1 arcmin	+/-0.5 arcmin	1310-1420 W/m^2	1.5 W/m^2 (0.1%)	60 min	1 day	0.002% per year
			O	Whole Sun (40 arcmin)	2 km	N/A	+/-1 arcmin	+/-0.5 arcmin	1310-1420 W/m^2	0.15 W/m^2 (0.01%)	15 min	15 min	0.0005% per year
3.5.13.3	Solar Radiation Imagery: Corona Images	GOES R P3I	T	3.7 - 17 solar radii (1.0 - 4.5 deg. halfwidth) (Position Angle: > 355 deg.)	50 arcsec (TBS)	25 arcsec	6.25 arcsec during image sequence	25 arcsec	[1 x 10^{-11}, 1 x 10^{-8}] B/B_{sun} (TBS), where B_{sun} is the mean solar brightness.	25%	15 minutes	15 minutes	N/A
			O	2 - 17 solar radii (0.5 - 4.5 deg. halfwidth) (Position Angle: 360 deg.)	50 arcsec (TBS)	25 arcsec	6.25 arcsec during image sequence	12.5 arcsec (TBS)	[1 x 10^{-11}, 5 x 10^{-9}] B/B_{sun} (TBS), where B_{sun} is the mean solar brightness.	10%	15 minutes	1 minute	N/A
3.5.13.4	Solar Radiation Imagery: EUV Images	GOES R P3I	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	Whole sun	5 arc sec	n/a	2 Arc sec	n/a	Wavelength: 10-1600 Angstroms	± 5%	1 min	1 min	tbs
3.5.13.5	Solar Radiation Imagery: Far IR & Optical Images	GOES R P3I	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	Whole sun	1 Arc sec	n/a	tbs	n/a	Far IR to Optical, H-Alpha, and White Light	± 5%	1 min	1 min	tbs
3.5.13.6	Solar Radiation Imagery: Magneto-heliograph	GOES R P3I	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	Whole sun	1000 km	n/a	1000 km	n/a	$2x10^{-3}$ - 0.3 Tesla	± $2x10^{-3}$ Tesla	60 min	15 min	tbs

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3.5.13.7	Solar Radiation Imagery/Flux: Solar Radio (Total Flux & Burst Location)	GOES R P3I	T	tbs	tbs		tbs	tbs	tbs	tbs	tbs	tbs	tbs
			O	Whole sun	1° Helio-centric	n/a	1° Helio-centric	n/a	Freq. Range: 25 kHz - 300 GHz Ant. Temp: 108-1012 K	± 5%	1 min	1 min	tbs

Note 1: For Priority Categories use:
"1" = Mission Critical / Cannot meet operational mission objectives without this data
"2" = Mission Optimal / Data not critical but would provide significant improvement to operational capability
"3" = Mission Enhancing / Needed to enhance state of knowledge / assess potential for operational capability
"UA" = Unassigned

Note 2: For Geographic Coverage use:
"C" = CONUS Coverage / Contiguous US / 3000 km N/S x approx 5000 km E/W Target Area (4000km northern boundary, 6000 km southern boundary) centered at 38.2 N Lat / 96 W Lon
"FD" = Full Disk Coverage / A region defined as the combined earth area viewed from the nominal GOES R system longitudinal positions
"G" = Global Coverage / Self-explanatory
"H" = Hemispheric Coverage / West Boundary of 150 deg E and an East Boundary of 0 deg Meridian
"M" = Mesoscale "Non-Routine" Coverage / 1000 km N/S x 1000 km E/W Relocatable Target Area within Hemispheric Coverage Area requested on an as needed basis

Note 3:
Underline = Threshold not expceted to be fully addressed
***** **=** Requirement also carried in P3I section for further study