

# 3-day Space Weather Conditions (SUPARCO)

Friday, January 13, 2023, 12:18 PST



LOCAL CURRENT IONOSPHERIC CONDITIONS (SON)								
DATE	13-Jan-23 (noon)			14-Jan-23 (noon)			15-Jan-23 (noon)	
foF2	11.1 MHz			10.9 MHz			10.4 MHz	
h'F2	318 km			310 km			290 km	
TEC	53 TECU			50 TECU			47 TECU	
Maximum Usable Frequency (MUF) and Optimum Traffic Frequency (FOT) for various distances								
Distance (km)	100	200	400	600	800	1000	1500	3000
MUF (MHz) for 3 days (13 Jan – 15 Jan)	11.2	11.5	12.7	14.4	16.3	18.4	23.0	28.9
	11.0	11.4	12.6	14.3	16.1	18.3	22.8	28.7
	10.5	10.9	12.2	14.0	16.0	18.1	22.7	28.5
FOT (MHz) for 3 days (13 Jan – 15 Jan)	9.5	9.8	10.8	12.2	13.9	15.6	19.6	24.5
	9.4	9.7	10.7	12.1	13.7	15.5	19.4	24.4
	8.9	9.3	10.4	11.9	13.6	15.4	19.3	24.2
Local ionospheric conditions are enhanced as compared to the predicted monthly median MUF.								
LOCAL GEOMAGNETIC CONDITIONS								
K-index	1			Quiet geomagnetic activity is expected.			Quiet geomagnetic activity is expected.	
F (SON/ISB)	45525/50035 nT			45538±10 /50040±20 nT			45538±10/50040±20 nT	
The local geomagnetic field is quiet at the moment.								
SOLAR CONDITIONS								
SN	151			148 (SSN-predicted)			139 (SSN-predicted)	
F 10.7	212 sfu			208 sfu			198 sfu	
V <sub>sw</sub>	456.4 km/s (Varied in the past 12 hrs between 376 & 496 km/s)			Low levels of solar wind speed may prevail.			Low to moderate levels of solar wind speed may prevail.	
Solar flares	C3.3 (max. flare in the past 24 hrs: M1, 0650 UT)			Moderate to high levels of solar activity expected.			Moderate to high levels of solar activity expected.	
IMF Bt Bz	+6.2 nT (varied in the past 12 hrs between +6.6 nT & +8.3 nT)  -3.4 nT (varied in the past 12 hrs between +3.3 nT & -7.7 nT)			Expected to vary between positive and negative sectors.			Expected to vary between positive and negative sectors.	
Solar conditions are at moderate to high levels with background X-ray flux at C-class levels.								



ANNEXURE

<b>DEFINITIONS OF TERMINOLOGIES USED IN THIS SUMMARY</b>	
foF2	Maximum frequency of F2-layer of the ionosphere
h'F2	Virtual height of the F2-layer
MUF	Maximum usable frequency for 3000 km
K-index	Local index defining geomagnetic conditions
Declination	Planetary A index defining geomagnetic conditions, predicted value during geomagnetic unsettled Conditions
F	Magnitude of the total geomagnetic field vector (unit in nano Teslas)
SON, difference	Sonmiani Geomagnetic Observatory mean value, <u>difference limit</u> from night time value of quiet conditions: 25-30 nT, max: 260 nT
ISB	Islamabad Geomagnetic Observatory mean value
SN	Relative sunspot numbers
Vsw	Solar Wind Speed (km/s)
F10.7	Solar radio flux at 2.8 GHz (10.7 cm wavelength)
sfu	Solar flux unit (defines the solar radio 10.7 cm flux)
Solar Flare	Could be B, C, M and X depending upon the intensity of x-rays being emitted (each type has further 10 classes based on amount of energy released by the flare)
IMF	Interplanetary magnetic field (the source of which is the Sun)
Bt	Total IMF (unit in Nano Teslas)
Bz	Vertical component of IMF (could be north/upward/positive or south/downward/negative) (unit in nano Teslas)
AR	Active Regions on the sun currently in view
CME	Coronal Mass Ejection
CH	Coronal Hole
KASI	Korean Astronomy & Space Science Institute
SWFs	Short-wave fadeouts, caused by M/X class flares on the daylit side of the hemisphere absorbing lower Frequencies and hampering HF communication.
SSN-predicted	Smooth Sunspot Number-it is an estimated value using a mathematical relation to forecast it.