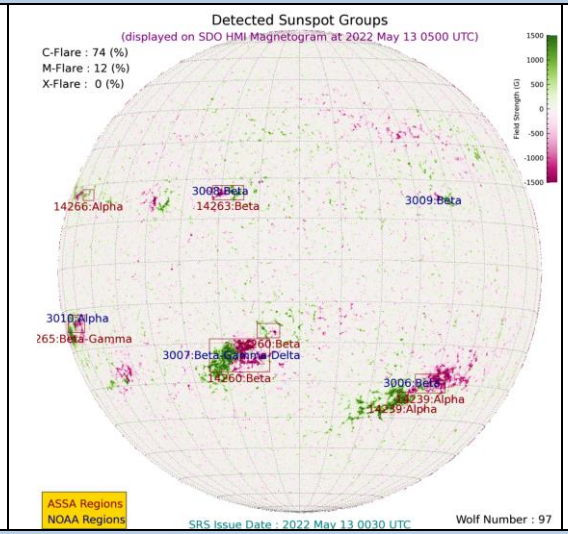
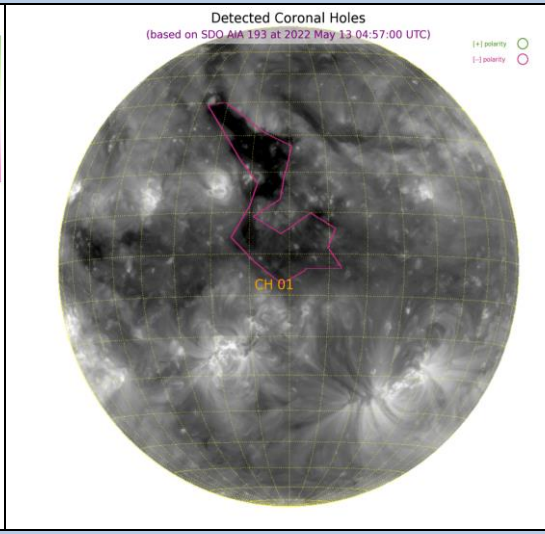
3-day Space Weather Conditions (SUPARCO)

Friday, May 13, 2022, 12:09PST

SUPARCO

DATE	LOCAL CURRENT IONOSPHERIC CONDITIONS (SON)							
	13-May-22(noon)		14-May-22 (noon)		15-May-22 (noon)			
foF2	10.6 MHz		10.3 MHz		10.0 MHz			
h'F2	325 km		320 km		310 km			
TEC	50 TECU		47 TECU		45 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 May-15 May)	10.7	11.1	12.4	14.1	16.1	18.2	23.2	28.4
	10.4	10.7	12.0	13.7	15.7	17.8	22.8	28.0
	10.1	10.4	11.7	13.4	15.4	17.5	22.5	27.7
FOT (MHz) for 3 days (13 May-15 May)	9.1	9.0	9.9	11.1	12.6	14.0	17.7	24.2
	8.8	8.7	9.6	10.8	12.3	13.7	17.4	23.9
	8.6	8.5	9.4	10.6	12.1	13.5	17.2	23.7
Local ionospheric conditions are normal as compared to the predicted monthly median MUF.								
LOCAL GEOMAGNETIC CONDITIONS								
K-index	1		Quiet geomagnetic activity expected		Quiet geomagnetic activity expected			
F (SON/ISB)	45579/50089 nT		45586±10 /50092±20 nT		45586±10/50092±20 nT			
The local geomagnetic field is quite at the moment.								
SOLAR CONDITIONS								
SN	112		115 (SSN-predicted)		117 (SSN-predicted)			
F 10.7	133 sfu		138 sfu		143 sfu			
V_{sw}	331.9 km/s (varied in the past 12 hrs between 298 & 382 km/s)		Low to moderate levels of solar wind speed is expected.		Low to moderate levels of solar wind speed is expected.			
Solar flares	C1.2 (max. flare in the past 24 hrs: M1 at 2019 UT)		Moderate to high levels of solar activity expected.		Moderate levels of solar activity expected.			
IMF **Bt** **Bz**	4.5 nT (varied in the past 12 hrs between 4.7 nT & 7.0 nT) 0.3 nT (varied in the past 12 hrs between -1.3 nT & 4.8 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.								

Daily Sun: 13 May 2022		
There is one active region AR3007 present on the solar limb capable of producing strong C and M-Class solar flares having chances of 74% and 12% respectively. 01 Coronal Hole (CH) is detected on the solar disk.		
2-Day Conditions		
Solar activity is expected to be at moderate to high levels with background X-ray flux at C-class levels. There are slight chances of X class flares also. Low to moderate solar wind speed is expected due to coronal hole and CME impact. Quiet to unsettled geomagnetic conditions are expected over the weekend. Minor to moderate radio blackouts may be observed in case of solar flares. Normal HF conditions are expected for the next 2 days. In case of high solar activity, MUF enhancement may be expected. It is advised to use the frequency ranges mentioned in the ionospheric section.		

For information on radio blackout levels, please follow the link:
http://www.swpc.noaa.gov/noaa-scales-explanation

Acknowledgements:

Images source: Solar Dynamics Observatory-SDO both images showing the Solar disk and Coronal Holes have been processed at SUPARCO using Automatic Solar Synoptic Analyzer (ASSA), developed jointly by the Korean Space Weather Centre of the Radio Research Agency (RRA) & Space Environment Laboratory (SELab).

Data sources: The planetary indices and solar data are taken from the URLs below:
http://www.spaceweather.go.kr
http://www.sws.bom.gov.au
http://www.solarmonitor.org

Sonmiani (SON): 25.2º N, 66.75º E
Islamabad (ISB): 33.7º N, 73.13º E

ANNEXURE

DEFINITIONS OF TERMINOLOGIES USED IN THIS SUMMARY	
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, difference limit from night time value of quiet conditions: 25-30 nT, max: 260 nT
ISP	Islamabad Geomagnetic Observatory mean value
SN	Relative sunspot numbers
V_{SW}	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.