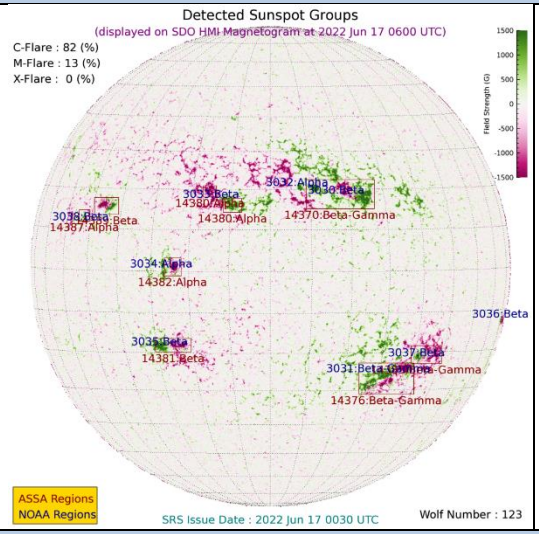
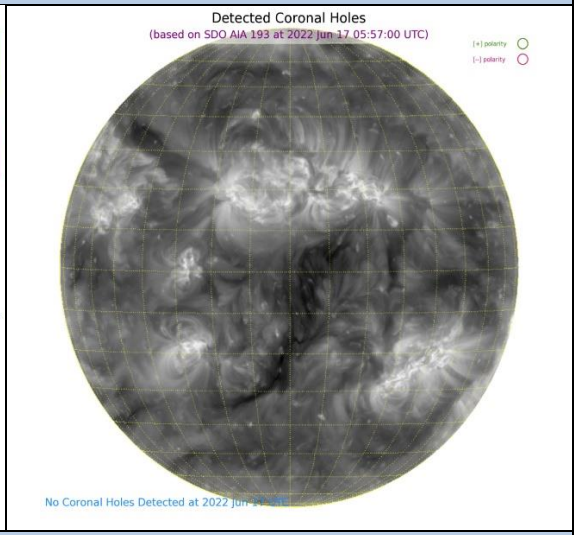
3-day Space Weather Conditions (SUPARCO)

Friday, June 17, 2022, 12:52PST

SUPARCO

DATE	LOCAL CURRENT IONOSPHERIC CONDITIONS (SON)							
	17-Jun-22(noon)		**18-Jun-22 (noon)**			**19-Jun-22 (noon)**		
foF2	9.1 MHz		9.0 MHz			8.7 MHz		
h'F2	363 km		352 km			341 km		
TEC	39 TECU		38 TECU			36 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 (17 June-19 June)	9.2	9.3	10.3	11.4	13.1	14.5	18.3	22.4
	9.1	9.2	10.2	11.3	13.0	14.4	18.2	22.3
	8.8	9.0	10.0	11.1	12.9	14.1	18.0	22.1
FOT (MHz) for 3 days (17 June-19 June)	7.8	7.9	8.8	9.7	11.2	12.3	15.6	19.0
	7.7	7.8	8.7	9.6	11.1	12.2	15.5	18.9
	7.5	7.7	8.5	9.4	10.9	12.0	15.3	18.8
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)	45103/50113 nT		45114±10 /50118±20 nT			45114±10/50118±20 nT		
The local geomagnetic field is quiet at the moment.								
SOLAR CONDITIONS								
SN	159		150 (SSN-predicted)			145 (SSN-predicted)		
F 10.7	140 sfu		135 sfu			120 sfu		
V_{sw}	605.0 km/s (varied in the past 12 hrs between 511 & 633 km/s)		Elevated levels of solar wind speed may prevail.			Elevated levels of solar wind speed may prevail.		
Solar flares	C1.9 (max. flare in the past 24 hrs: C4, 0053 UT)		Moderate levels of solar activity expected.			Moderate levels of solar activity expected.		
IMF **Bt** **Bz**	5.5 nT (varied in the past 12 hrs between 5.8 nT & 7.2 nT) -1.7 nT (varied in the past 12 hrs between -1.9 nT & 2.0 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: 17 June 2022		
There is one active region AR3031 present on the solar limb capable of producing strong C and M-Class solar flares having chances of 82% and 13% respectively. No 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. Minor to moderate radio blackouts may be observed in case of solar flares. Elevated solar wind speed and quiet geomagnetic conditions are expected over the weekend. Normal MUF conditions are expected for the next 2 days. 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.