

5-day Space Weather Conditions (SUPARCO)

Friday, September 06, 2019, 14:43 PST



LOCAL CURRENT IONOSPHERIC CONDITIONS OVER PAKISTAN^a

DATE	06-Sep-19	07-Sep-19	08-Sep-19	09-Sep-19	10-Sep-19
foF2	6.2 MHz	8.0 MHz	8.5 MHz	9.0 MHz	7.5 MHz
h'F2	353 km	360 km	345 km	360 km	345 km
TEC	12 TECU	10 TECU	11 TECU	15 TECU	14 TECU

*Table provided for Maximum Usable Frequency (MUF) and Optimum Traffic Frequency (FOT) for various distances after 4-Day conditions' section.

Local ionospheric conditions are nominal with slightly depressed MUF conditions. It is advised to use the frequency range mentioned above w.r.t the distances (km).

LOCAL GEOMAGNETIC CONDITIONS OVER PAKISTAN^{ab}

K-index	4	4	2	2	2
F	45320/49810 nT	45320±40/49840±30 nT	453210±50 /49850±20 nT	45320±40/49855±30 nT	45320±40/49855±30 nT
D	0.51 /0.66 degrees	0.51 /0.68 degrees	0.52/0.65 degrees	0.52/0.68 degrees	0.53/0.70 degrees

The local geomagnetic field is quiet at the moment.

SOLAR CONDITIONS

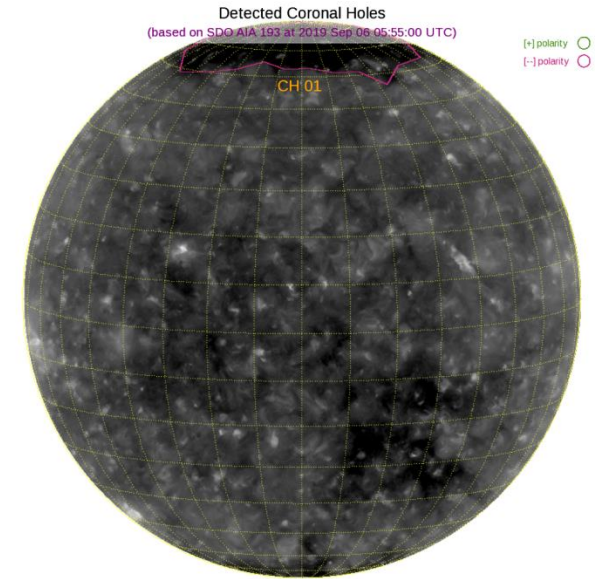
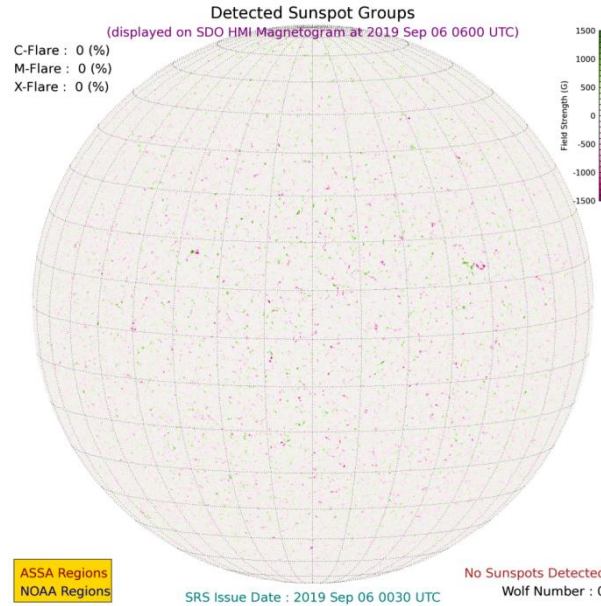
SN	0	2 (SSN-predicted)	2 (SSN-predicted)	2 (SSN-predicted)	2 (SSN-predicted)
F 10.7	70 sfu	68	68 sfu	69	69 sfu
V _{sw}	524 km/sec (varied in the past 12 hrs between 427 & 580 km/s)	Moderate solar wind speed expected	Moderate solar wind speed expected	Low solar wind speed expected	Low solar wind speed expected
Solar flares	A 6.5 (max. flare in the past 24 hrs: A 7.0 0519 UT Sep 06)	low levels of solar flare activity expected	low levels of solar flare activity expected	low levels of solar flare activity expected	low levels of solar flare activity expected
IMF B _t B _z	4.1 nT (varied in the past 12 hrs between 1.8 & 6.0 nT) -1.6 nT (varied in the past 12 hrs between -5.0 & +3.7 nT)	Expected to vary between positive and negative sectors	Expected to vary between positive and negative sectors	Expected to vary between positive and negative sectors	Expected to vary between positive and negative sectors

Solar conditions are at very low levels with background X-ray flux at A-class levels. Local HF working frequencies are fair as compared to monthly average predicted values.

Daily Sun: 6 September 2019

None of the regions are active currently on the solar disk.

01 Coronal Hole (CH) is visible on the northern solar limb.



4-Day Conditions

Solar activity is expected to remain at very low levels for the next four days.

The solar wind speed is expected to remain elevated due to CH effects.

Geomagnetic activity is expected to stay mostly at quiet levels but might get slightly unsettled today and tomorrow (7 Sep).

It is advised to use the frequency ranges mentioned in the table below*.

***Maximum Usable Frequency (MUF) and Optimum Traffic Frequency (FOT) for various distances**

Distance (Km) →Dates ↓	100		200		400		600		800		1000		1500		3000	
	MUF	FOT	MUF	FOT	MUF	FOT	MUF	FOT	MUF	FOT	MUF	FOT	MUF	FOT	MUF	FOT
06-Sep	6.3	5.3	6.4	5.5	7.1	6.0	8.1	6.9	9.2	7.8	10.4	8.8	13.2	11.2	18.5	15.7
07-Sep	8.1	6.9	8.3	7.1	9.7	7.8	10.3	8.8	11.7	10.0	13.2	11.2	16.8	14.3	23.6	20.1
08-Sep	8.6	7.3	8.8	7.5	9.9	8.3	11.2	9.5	12.7	10.8	14.4	12.3	18.4	15.7	25.7	21.8
09-Sep	9.1	7.7	9.3	7.9	10.3	8.7	11.6	9.9	13.2	11.2	14.9	12.6	18.9	16.1	26.5	22.6
10-Sep	7.6	6.4	7.8	6.6	8.6	7.4	9.9	8.4	11.2	9.6	12.7	10.8	16.3	13.8	22.7	19.3

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, <u>difference limit</u> 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)
B _t	Total IMF (unit in nano Teslas)
B _z	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.
CIR	Co-rotating Interaction Region

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>

^aSonmiani (SON): 25.2° N, 66.75° E

^bIslamabad (ISB): 33.7° N, 73.13° E