

# 3-day Space Weather Conditions (SUPARCO)

Friday, September 28, 2018, 15:00 PST



LOCAL CURRENT IONOSPHERIC CONDITIONS OVER PAKISTAN			
DATE	28-Sep-18 (noon)	29-Sep-18 (noon)	30-Sep-18 (noon)
foF2	ISL/SON: 9/8.9 MHz	10/9 MHz	12/11 MHz
h'F2	ISL/SON: 320/338 km	310/330 km	295/310 km
MUF	ISL/SON: 28/27 MHz	30/28 MHz	34/32 MHz
TEC	ISL/SON: 30/35 TECU	35/40 TECU	25/30 TECU

Local ionospheric conditions are nominal with normal MUF conditions. It is advised to use a higher frequency band in case of HF communication difficulty.

LOCAL GEOMAGNETIC CONDITIONS OVER PAKISTAN			
K-index	1	1	1
F	ISL/SON: 49825/45313 nT	49810±30 /45300±30 nT	49800±30/45300±20 nT
D	ISL/SON: 0.72/0.52 degrees	0.72/0.52 degrees	0.7/0.5 degrees

The local geomagnetic field is quiet at the moment.

SOLAR CONDITIONS			
SN	0	2 (SSN-predicted)	2 (SSN-predicted)
F 10.7	67 sfu	68 sfu	68 sfu
V <sub>sw</sub>	402 km/sec (varied in the past 12 hrs between 389.2 & 424.3 km/s)	Low to moderate solar wind speed expected	Low solar wind expected
Solar flares	A 0.0 (max. flare in the past 24 hrs: A 1.0 0922 UT Sep 28)	Very Low levels of solar flare activity expected	Very Low levels of solar flare activity expected
IMF Bt	2.6 nT (varied in the past 12 hrs between 2.18 & 5.05 nT)	Expected to vary between positive and negative sectors.	Expected to vary between positive and negative sectors
Bz	+1.2 nT (varied in the past 12 hrs between -1.99 & +2.63 nT)		

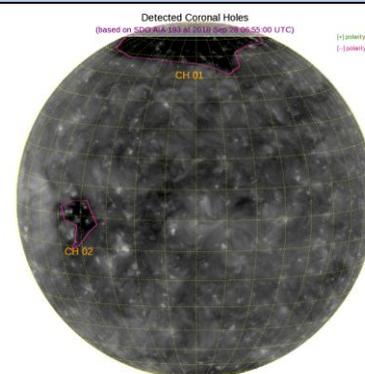
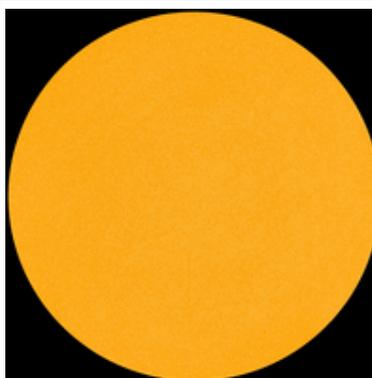
Solar conditions are at very low levels with background X-ray flux at A-class levels. Local HF working frequencies are normal as compared to monthly average predicted values.

## Daily Sun: 28 September 2018

Very low solar activity as there is no sunspots on the solar disk.

*(Credit: discerned from solar image processed and analysed by SUPARCO)*

At the moment, 02 CHs are detected on the solar disk.



## 2-Day Conditions

Solar activity is expected to remain at very low levels over the weekend. Geomagnetic conditions are expected to remain at quiet levels and occasionally may reach unsettled levels. Normal HF conditions are expected over the weekend.

## 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
ISP	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.

*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): 25.2° N, 66.75° E**

**Islamabad (ISB): 33.7° N, 73.13° E**