3-day Space Weather Conditions (SUPARCO)

Friday, April 12, 2019, 15:09 PST
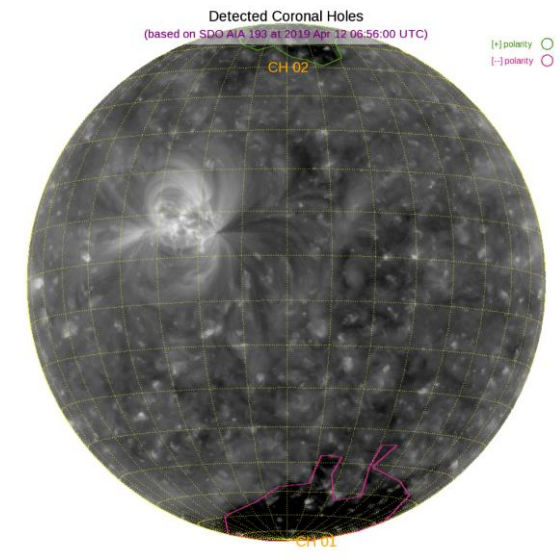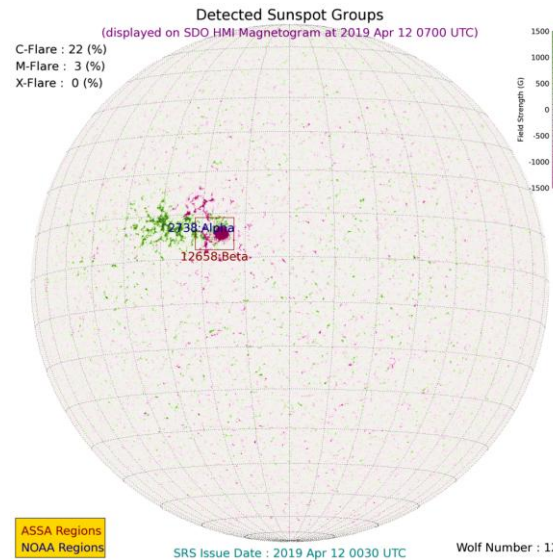
LOCAL CURRENT IONOSPHERIC CONDITIONS OVER PAKISTAN[a]			
DATE	**12-Apr-19 (noon)**	**13- Apr -19 (noon)**	**14- Apr -19 (noon)**
foF2	9.7 MHz	9 MHz	10 MHz
h'F2	278 km	275 km	260 km
TEC	20 TECU	25 TECU	22 TECU

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 (12, 13, & 14 Apr)	9.9	9.2	10.2	10.3	9.6	10.9	11.9	11.2	12.6	14.1	13.4	15.0	16.5	15.8	17.8	19.0	18.2	20.5	24.5	23.6	26.6	33.2	31.7	35.5
FOT (MHz) for 3 days (12, 13, & 14 Apr)	8.4	7.8	8.7	8.8	8.2	9.1	10.1	9.5	10.7	12.0	11.4	12.8	14.0	13.4	15.1	16.1	15.5	17.4	20.9	20.0	22.6	28.2	26.9	30.2

Local ionospheric conditions are nominal with good 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	1	2	2
F	45303 /49860 nT	45300±30 /49850±25 nT	45305±30 /49855±20 nT
D	0.55 /0.73 degrees	0.55 /0.73 degrees	0.60 /0.72 degrees

The local geomagnetic field is quiet at the moment.

SOLAR CONDITIONS			
SN	13	17 (SSN-predicted)	17 (SSN-predicted)
F 10.7	79 sfu	78 sfu	78 sfu
V_{sw}	426 km/sec (varied in the past 12 hrs between 421 & 436 km/s)	Moderate solar wind speed expected	Solar wind speed expected to return to ambient levels
Solar flares	A 0.0 (max. flare in the past 24 hrs: A 9.0 0452 UT Apr 12)	Very low levels of solar flare activity expected with slight chances of C/M-class flare(s)	Very low levels of solar flare activity expected with slight chances of C/M-class flare(s)
IMF Bt	2.7 nT (varied in the past 12 hrs between 2.7 & 4.6 nT)	Expected to get negatively oriented	Expected to vary between positive and negative sectors
Bz	+0.1 nT (varied in the past 12 hrs between -2.9 & +1.9 nT)		

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

Daily Sun: 12 April 2019

AR2738 is currently detected on the solar disk which possesses 22%, 3% and 0% chances to produce C, M and X-class solar flares respectively.

02 Coronal Holes (CH) are detected on the northern and southern limbs with positive and negative polarity respectively which might keep the solar wind elevated.

Detected Sunspot Groups
(displayed on SDO HMI Magnetogram at 2019 Apr 12 0700 UTC)

C-Flare : 22 (%)
M-Flare : 3 (%)
X-Flare : 0 (%)

12738 Alpha
12658 Beta

ASSA Regions
NOAA Regions

SRS Issue Date : 2019 Apr 12 0030 UTC   Wolf Number : 12

Detected Coronal Holes
(based on SDO AIA 193 at 2019 Apr 12 06:56:00 UTC)

[+] polarity
[−] polarity

CH 02

CH 01

2-Day Conditions

Solar activity is expected to remain at very low levels over the weekend. Solar wind speed is expected to remain elevated for the next day (13 Apr) and might return to ambient levels by Apr 14.

Quiet to slightly unsettled geomagnetic conditions are expected due to high speed solar wind streams for Apr 13 and might get quiet by Apr 14.

Nominal HF conditions are expected for the weekend. 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

[a]**Sonmiani (SON): 25.2º N, 66.75º E**   [b]**Islamabad (ISB): 33.7º N, 73.13º E**

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.
CIR	Co-rotating Interaction Region