

3-day Space Weather Conditions (SUPARCO)

Friday, April 15, 2022, 12:11PST

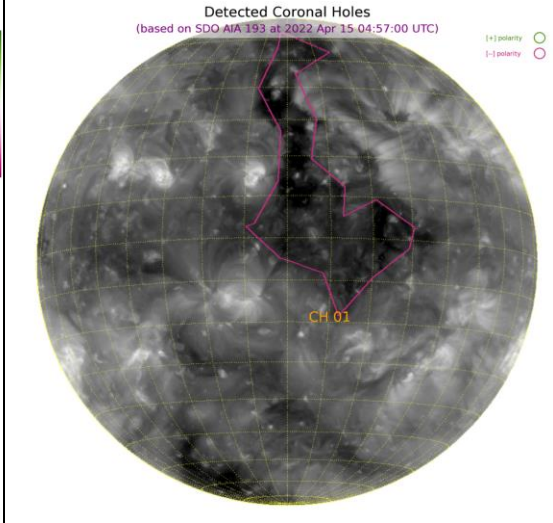
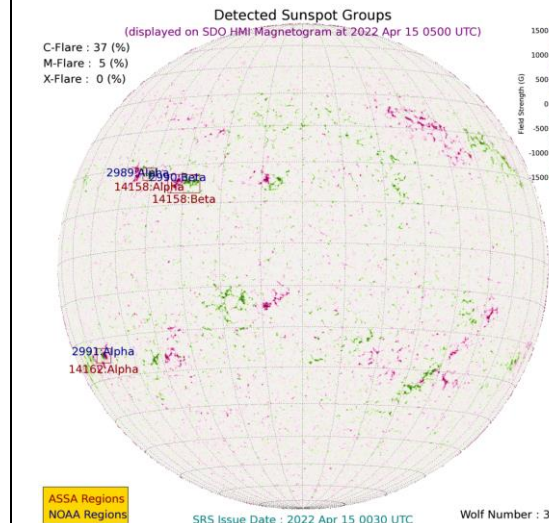


| LOCAL CURRENT IONOSPHERIC CONDITIONS (SON) | | | | | | | | |
|--|---|------|------|---|------|------|---|------|
| DATE | 15-Apr-22(noon) | | | 16-Apr-22 (noon) | | | 17-Apr-22 (noon) | |
| foF2 | 12.9 MHz | | | 12.7 MHz | | | 12.5 MHz | |
| h'F2 | 293 km | | | 290 km | | | 288 km | |
| TEC | 47 TECU | | | 46 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 (15 Apr-17 Apr) | 13.1 | 13.5 | 15.3 | 17.7 | 20.3 | 23.1 | 29.4 | 35.7 |
| | 12.9 | 13.3 | 15.1 | 17.5 | 20.1 | 22.9 | 29.2 | 35.5 |
| | 12.7 | 13.1 | 14.9 | 17.3 | 19.9 | 22.7 | 29.0 | 35.3 |
| FOT (MHz) for 3 days (15 Apr-17 Apr) | 11.1 | 11.5 | 13.0 | 15.0 | 17.3 | 19.6 | 25.0 | 30.3 |
| | 11.0 | 11.3 | 12.8 | 14.9 | 17.1 | 19.5 | 24.8 | 30.1 |
| | 10.8 | 11.1 | 12.6 | 14.7 | 16.9 | 19.3 | 24.7 | 30. |
| Local ionospheric conditions are enhanced as compared to the predicted monthly median MUF. | | | | | | | | |
| LOCAL GEOMAGNETIC CONDITIONS | | | | | | | | |
| K-index | 2 | | | Quiet geomagnetic activity expected | | | Quiet geomagnetic activity expected | |
| F (SON/ISB) | 45576/50086 nT | | | 45580±10 /50090±20 nT | | | 45580±10/50090±20 nT | |
| The local geomagnetic field is quite at the moment. | | | | | | | | |
| SOLAR CONDITIONS | | | | | | | | |
| SN | 37 | | | 36 (SSN-predicted) | | | 35 (SSN-predicted) | |
| F 10.7 | 103 sfu | | | 100 sfu | | | 97 sfu | |
| V _{sw} | 478.2 km/s (varied in the past 12 hrs between 427 & 568 km/s) | | | Low levels of solar wind speed expected. | | | Low levels of solar wind speed expected. | |
| Solar flares | C1.9 (max. flare in the past 24 hrs: C4 0306 UT Apr 15) | | | A low level of solar activity is expected. | | | A low level of solar activity is expected. | |
| IMF Bt Bz | 10.7 nT (varied in the past 12 hrs between 9.9 nT & 20.5 nT) 0.1 nT (varied in the past 12 hrs between -8.7 & 10.0 nT) | | | Expected to vary between positive and negative sectors. | | | Expected to vary between positive and negative sectors. | |
| Solar conditions are at low levels with background X-ray flux at C-class levels. | | | | | | | | |

Daily Sun: 15 April 2022

There is no active region present on the solar limb capable of producing strong solar flares.

01 Coronal Hole (CH) is detected on the solar disk.



2-Day Conditions

Solar activity is expected to be at low levels with background X-ray flux at C-class levels.

Low wind speed and quiet geomagnetic conditions are expected over the weekend.

Enhanced HF 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): 25.2° N, 66.75° E

Islamabad (ISB): 33.7° N, 73.13° 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, <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. |