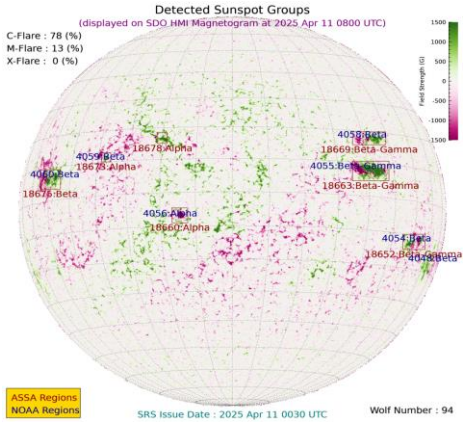
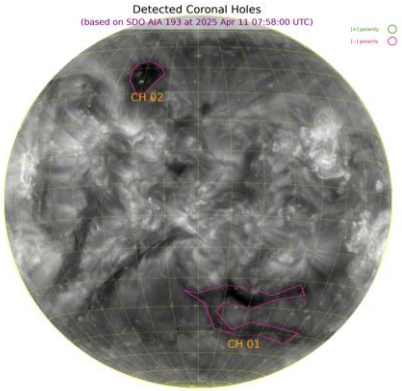
# 3-day Space Weather Conditions (SUPARCO)

**Friday, April 11, 2025, 14:45 PST**

SUPARCO

| Radio Blackouts | | | Solar Radiation Storms | | | Geomagnetic Storms | | |
|---|---|---|---|---|---|---|---|---|
| -24 Hr | Current | Predicted | -24 Hr | Current | Predicted | -24 Hr | Current | Predicted |
| R0 – R1 | R0 | R0 – R1 | S0 | S0 | S0 | G0 | G0 | G0 / G1 |

| LOCAL CURRENT IONOSPHERIC CONDITIONS (SON) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **DATE** | **11-Apr-25 (noon)** | | | **12-Apr-25 (noon)** | | | **13-Apr-25 (noon)** | |
| **foF2** | 13.7 MHz | | | 13.2 MHz | | | 13.1 MHz | |
| **h'F2** | 300 km | | | 295 km | | | 290 km | |
| **TEC** | 35 TECU | | | 37 TECU | | | 38 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 (11 Apr – 13 Apr)** | 12.8 | 13.9 | 15.6 | 17.6 | 19.8 | 21.1 | 24.5 | 30.3 |
| | 12.4 | 13.5 | 15.2 | 17.2 | 19.4 | 20.7 | 24.1 | 26.9 |
| | 12.2 | 13.1 | 14.9 | 16.9 | 19.1 | 20.4 | 23.7 | 26.6 |
| **FOT (MHz) for 3 days (11 Apr – 13 Apr)** | 10.6 | 11.6 | 13.9 | 15.5 | 17.9 | 18.8 | 21.4 | 24.5 |
| | 10.2 | 11.3 | 13.6 | 15.2 | 17.7 | 18.4 | 21.1 | 24.2 |
| | 10.0 | 11.1 | 13.3 | 15.0 | 17.5 | 18.2 | 20.8 | 23.8 |
| **Local ionospheric conditions are normal as compared to the predicted monthly median MUF.** | | | | | | | | |
| LOCAL GEOMAGNETIC CONDITIONS | | | | | | | | |
| **K-index** | 2 (Quiet) | | | Quiet to unsettled geomagnetic activity is expected. | | | Quiet geomagnetic activity is expected. | |
| **F (SON/ISB)** | 45670/50500 nT | | | 45672±10 /50505±20 nT | | | 45675±10/50510±20 nT | |
| **The local geomagnetic field is quiet at the moment** | | | | | | | | |
| SOLAR CONDITIONS | | | | | | | | |
| **SN** | 112 | | | 107 (SSN-predicted) | | | 98 (SSN-predicted) | |
| **F 10.7** | 153 sfu | | | 140 sfu | | | 111 sfu | |
| **$V_{sw}$** | 451.2 km/s (Varied in the past 12 hrs between 395 & 615 km/s) | | | Low to moderate levels of solar wind speed may prevail. | | | Low levels of solar wind speed may prevail. | |
| **Solar flares** | C1.5 (max. flare in the past (C4, 0714 UT) | | | Low to moderate levels of solar activity is expected. | | | Low to moderate levels of solar activity is expected. | |
| **IMF**<br>**Bt**<br><br>**Bz** | +7.4 nT (varied in the past 12 hrs between +5.69 nT & +7.61 nT)<br><br>-0.76 nT (varied in the past 12 hrs between -5.71 nT & +6.07 nT) | | | Expected to vary between positive and negative sectors. | | | Expected to vary between positive and negative sectors. | |
| **Solar conditions are at low to moderate levels with background X-ray flux at C-class levels.** | | | | | | | | |

| Daily Sun: 11 April 2025 | | |
|---|---|---|
| There is one active region AR4055 present on the Sun capable of producing strong C and M-class solar flares having chances of 78% and 13% respectively.<br><br>02 Coronal Holes (CHs) are detected on the solar disk. |  |  |
| **2-Day Conditions** | | |
| ▪ Solar activity is expected to be at low to moderate levels.<br>▪ In case of M/X-class solar flares, minor level radio blackouts are expected.<br>▪ Low to moderate levels of solar wind speed and quiet to unsettled levels of geomagnetic activity is expected.<br>▪ Normal ionospheric conditions are expected for the next 2 days. It is advised to use the frequency ranges mentioned in the ionospheric section. | | |

## ***Credits:***

*Solar conditions courtesy to SOHO, DSCOVR and GOES-16 missions.*
*NOAA SWPC is acknowledged for solar radio flux conditions.*
*Korean Space Weather Centre is acknowledged for solar disk and coronal hole images.*

**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, difference limit from night time value of quiet conditions: 25-30 nT, max: 260 nT |
| ISB | 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 day lit 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. |

# ***RSG SCALES***

| ***Radio Blackouts*** | | | | |
|---|---|---|---|---|
| **Minor** | **Moderate** | **Strong** | **Severe** | **Extreme** |
| **R1** | **R2** | **R3** | **R4** | **R5** |

| ***Solar Radiation Storms*** | | | | |
|---|---|---|---|---|
| **Minor** | **Moderate** | **Strong** | **Severe** | **Extreme** |
| **S1** | **S2** | **S3** | **S4** | **S5** |

| ***Geomegnatic Storms*** | | | | |
|---|---|---|---|---|
| **Minor** | **Moderate** | **Strong** | **Severe** | **Extreme** |
| **G1** | **G2** | **G3** | **G4** | **G5** |