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Product: Daily Forecast of Geomagnetic Activity
Issued: 2023 December 16 08:13UTC
Prepared by the Athens Space Weather Forecasting Center
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**I. Solar activity**
*--Current Status*
Solar Flux (10.7cm) measured on 15.12.2023 at 23:00 UTC was 130 sfu.
The background X-Ray flux is at the class C1.9 level.
AR3514 erupted on December 15 at 07:34 UT peak time producing a M6.9 class solar flare and a radioblackout of category R2.
No obviously Earth directed CMEs were observed in available LASCO imagery on December 10-12.
A coronal hole (CH1193) at northern hemisphere was Earth facing on December 14-16.
---CME arrival forecast
A full halo CME was observed on December 14 at 17:38 UT. The source is a X2.8 class solar flare from AR13514 (N05W54) peaking on December 14 at 17:02 UT. This CME is expected to reach Earth between on December 16 at 17:09 UT and on December 17 at 07:35 UT according to EAM predictions.
Another partial halo CME was observed on December 13 at 00:00 UT. This CME was expected to reach Earth on December 15 between at 18:31 UT and at 20:24 UT according to EAM predictions.

**II. Solar Energetic Particle Events**
GOES Proton Flux for particles with energies above 10 MeV exceed the SWPC 10 MeV warning threshold on December 15 at 23:00 UT for a few hours. A short solar radiation storm of level S1 was also observed.

**III. Interplanetary and Geomagnetic conditions**
The solar wind speed measured by ACE satellite reached the max value 522 Km/s on December 16 at 04:45 UT during the last 24 hours.
The solar wind speed from STEREO A was detected 800 Km/s during the last 24 hours.
The vertical component of IMF Bz reached the max value -12 nT on December 15 at 11:30 UT during the last 24 hours.
The geomagnetic field was at quiet to active levels during the last 24 hours.
The Kp index now is at active levels with Kp=4.
The Dst index reached the value -35 nT on December 15 at 24:00 UT during the last 24 hours.

**IV. 3-day Geomagnetic Activity Forecast**
The geomagnetic field is expected to be at quiet to moderate storm (G2) levels on December 16 and 17 due to effects from CMEs observed on December 13 and 14 and at quiet to active levels on December 18.

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| **Date** | **Ap index forecast** | **Geomagnetic Activity level** |
| 16.12.2023 | 25 | Quiet to Moderate storm (G2) |
| 17.12.2023 | 30 | Quiet to Moderate storm (G2) |
| 18.12.2023 | 15 | Quiet to Active |

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