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## Solar and interplanetary events that drove two CIR-related geomagnetic storms of 1 June 2013 and 7 October 2015, and their ionospheric responses at the American and African equatorial ionization Anomaly regions

Oluwole J. Oyedokun<sup>a,b,\*</sup>, P.O. Amaechi<sup>a,b,\*</sup>, A.O. Akala<sup>a,c</sup>, K.G. Simi<sup>d</sup>,  
Aghogho Ogwala<sup>e,f</sup>, E.O. Oyeyemi<sup>g</sup><sup>a</sup> Department of Physics, University of Lagos, Akoka, Yaba, Lagos, Nigeria<sup>b</sup> Department of Physical Sciences, Christland University, Abeokuta, Ogun State, Nigeria<sup>c</sup> Institute of Maritime Studies, University of Lagos, Akoka, Yaba, Lagos, Nigeria<sup>d</sup> Department of Physics, Mahatma Gandhi College, Kuvempuram, Thiruvananthapuram, University of Kerala, India<sup>e</sup> Department of Physics, Lagos State University, Ojo, Lagos, Nigeria<sup>f</sup> Department of Physics, Eko University of Medicine and Health Sciences, Ikorodu, Lagos, Nigeria<sup>g</sup> L.M. Ericson Nigeria, Victoria Island, Lagos, Nigeria

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### Abstract

This study investigates the sequence of solar and interplanetary events that drove the 1 June 2013 and October 2015 geomagnetic storms and how the American (68°–78°E) and African (32°–42°E) Equatorial Ionization Anomaly (EIA) regions responded to them. We constructed the EIA structures by using Total Electron Content (TEC) and ionospheric irregularities derived from Global Navigation Satellite System (GNSS) receivers along with the study locations. We also analyzed disturbed time ionospheric electric field and model data alongside the GNSS data. The 1 June 2013 geomagnetic storm was driven by a combination of a weak CME and HSSs from solar coronal holes, while the 7 October 2015 storm was solely driven by HSSs. Storm-time hemispherical asymmetry in ionospheric TEC and irregularities distributions was consistently observed. Storm with minimum SYM-H value at day-side locations caused enhancement in plasma ionization and equator-ward movement of EIA crests, while storm with minimum SYM-H value at night-side locations caused reduction in plasma ionization and equator-ward movement of EIA crests. The phase of responses of the ionosphere to geomagnetic storms depends on the local time of storm's onset and local time of the storm's main phase minimum which also determine the orientation of Prompt Penetration Electric Field (PPEF). At storm's onset time in the low latitude regions, the main storm-induced electric field is PPEF. Daytime eastward PPEF intensified plasma fountain to increase the EIA crests locations, while nighttime westward PPEF reversed plasma fountain to cause equator-ward collapse of the EIA crests. However, around the storm's recovery phase, under southward turning of IMF Bz, depending on their orientations, PPEF and Disturbed Dynamo Electric Field (DDEF) collectively influenced low latitude ionosphere. Eastward PPEF at the Pre-Reversal Enhancement (PRE) time enhanced irregularities generation, while westward DDEF at PRE time inhibited irregularities generation. The season of storm's occurrence is also a factor that dictates ionospheric response to a storm, for instance, the 7 October storm (SYM-H = 124 nT) influenced the ionosphere more than the 1 June storm (SYM-H = 137 nT). Both storms had long recovery phase. On pre-storm days, we observed stronger and well-developed EIA crests over the American sector than over the African sector.

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\* Corresponding authors at: Department of Physics, University of Lagos, Akoka, Yaba, Lagos, Nigeria (P.O. Amaechi).

E-mail addresses: [woloyedokun@live.com](mailto:woloyedokun@live.com) (O.J. Oyedokun), [paolobiako@yahoo.fr](mailto:paolobiako@yahoo.fr) (P.O. Amaechi), [e\\_oyeyemi@yahoo.co.uk](mailto:e_oyeyemi@yahoo.co.uk) (E.O. Oyeyemi).<https://doi.org/10.1016/j.asr.2021.12.027>

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O.J. Oyedokun et al.

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Keywords: Corotating Interacting Region; Geomagnetic storm; Ionospheric irregularities; Total electron content

### 1. Introduction

Geomagnetic storms are major disturbances in the Earth's geospace environment. The source of these disturbances is by the exchange of energy from the Sun through solar wind along the interplanetary space to the Earth. Coronal Mass Ejections (CMEs) emerging from the Sun's

westward, resulting in a downward orientation of  $E \times B$  drift and decay of the EIA crests.

Aside from the PPEF, other physical processes that have been reported to influence the responses of EIA to geomagnetic storms are: the thermal expansion of the atmosphere, causing mass transport of air parcels from the pole to the equator, thereby leading to changes in thermospheric com-



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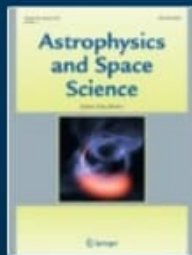
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# Characterization of ionospheric irregularities over the equatorial and low latitude Nigeria region

Research | [Published: 19 August 2022](#)

Volume 367, article number 79, (2022)


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# Abstract

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Ionospheric irregularity poses severe challenges to the highly dynamic satellite communication, navigation and tracking operations that rely on transionospheric satellite services like the operation of the Global Navigation Satellite System (GNSS). Although numerous studies on the effect of geomagnetic storms on the inhibition or suppression of irregularities across different longitudes have been documented, the prediction of equatorial ionospheric irregularities/scintillation over the Nigerian region still remains an unsolved scientific problem. Hence, this study characterizes storm-time ionospheric irregularities and comparison with the quiet-time baseline over the Nigerian equatorial region during the maximum phase (2012–2014) of the solar cycle 24. The ionospheric Total Electron Content (TEC) data from five geodetic GNSS stations across the equatorial region in Nigeria are considered to investigate the



annual rate of change of TEC (ROT) and the rate of change of TEC index (ROTI). We also



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## RESEARCH ARTICLE

10.1029/2021SW002734

## Key Points:

- August 26, 2018 geomagnetic storm was initiated by a solar filament eruption of August 20, 2018
- On the whole, this storm was driven by an aggregation of CME transients and CIR/HSSs
- The resultant atmospheric electric field and PPEF was too weak during the storm to support a super-fountain effect

## Supporting Information:

Supporting Information may be found in the online version of this article.

## Correspondence to:

A. O. Akala,  
akala@2004@yahoo.com

## Citation:

Akala, A. O., Oyedokun, O. J., Amaechi, E. O., Simi, K. G., Ogwala, A., & Arowolo, O. A. (2021). Solar origins of August 26, 2018 geomagnetic storm: Responses of the interplanetary medium and equatorial/low-latitude ionosphere to the storm. *Space Weather*, 19, e2021SW002734. <https://doi.org/10.1029/2021SW002734>Received 29 JAN 2021  
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## Solar Origins of August 26, 2018 Geomagnetic Storm: Responses of the Interplanetary Medium and Equatorial/Low-Latitude Ionosphere to the Storm

A. O. Akala<sup>1,2</sup>, O. J. Oyedokun<sup>1</sup>, P. O. Amaechi<sup>1,3</sup>, K. G. Simi<sup>4</sup>, A. Ogwala<sup>5</sup>, and O. A. Arowolo<sup>1,4</sup><sup>1</sup>Department of Physics, University of Lagos, Lagos, Nigeria, <sup>2</sup>Institute of Maritime Studies, University of Lagos, Lagos, Nigeria, <sup>3</sup>Department of Physical Sciences, Christland University, Abokuta, Nigeria, <sup>4</sup>Department of Physics, VTM NSS College Dhanuachapuram, University of Kerala, India, <sup>5</sup>Department of Physics, Lagos State University, Lagos, Nigeria, <sup>6</sup>Nigerian Civil Aviation Authority, Lagos, Nigeria

**Abstract** This study investigates the solar origins of August 26, 2018 geomagnetic storm and the responses of the interplanetary medium and equatorial/low-latitude ionosphere to it. We used a multinstrument approach, with observations right from the solar surface to the Earth. Our results showed that the G3 geomagnetic storm of August 26, 2018 was initiated by a solar filament eruption of August 20, 2018. The storm was driven by an aggregation of weak Coronal Mass Ejection (CME) transients and Corotating Interaction Regions/High Speed Streams (CIR/HSSs). The solar wind energy which got transferred into the magnetosphere drove electrical currents, that penetrated down into the ionosphere to produce weak Prompt Penetration Electric Field (PPEF) (0.3 mV/m). For this reason, during the storm, at daytime, plasma densities of the Equatorial Ionization Anomaly (EIA) crests were localized within the inner flank of  $\pm 15^\circ$  magnetic latitude strip. We attributed this to the extreme quietness of year 2018. There was a clear hemispherical asymmetry, with higher Total Electron Content (TEC) in the northern hemisphere. The major determining factors of the ionospheric responses during the various phases of this storm were the local time of the storm's onset, local time of storm's minimum SYM-H, and changes in thermospheric  $O/N_2$ .

**Plain Language Summary** This geomagnetic storm was initiated by a solar filament eruption of August 20, 2018, and driven by an aggregation of weak CME transients and CIR/HSSs. The weak PPEF during the storm, which is associated with the extreme quietness of year 2018 caused plasma densities to localize at locations that are not up to the EIA crests. A clear hemispherical asymmetry, with higher TEC in the northern hemisphere was observed. The determining factors for ionospheric responses to this storm are; local time of the storm's onset, local time of storm's minimum SYM-H, and changes in thermospheric  $O/N_2$ . Furthermore, one major factor that is hindering our progress in developing robust prediction capabilities for geomagnetic storm is the characteristic peculiarity of each storm. August 26, 2018 geomagnetic storm is peculiar due to the intertwined physical processes that led to its occurrence. To develop future forecasting capabilities for this type of a complex storm, a comprehensive understanding of the intertwined physical processes is required, which this study provided.

## 1. Introduction

Perturbations in the solar atmosphere are the major origins of geomagnetic storms. Reconfiguration of magnetic fields in the solar atmosphere causes uplift of materials from the solar chromosphere into the corona. These relatively cool, but dense materials are suspended against gravity at greater heights by magnetic tension in the dips of the field lines, appearing by absorption against the hotter and brighter background (Carlyle, 2016). These materials could be elongated in structures, to the order of thousands of kilometers in length to form filaments, which could, in turn erupt from the solar coronal surface as Coronal Mass Ejection (CME). CMEs, particularly the Earth-directed ones are the sources of space weather events (e.g., geomagnetic storms) on the Earth. High Speed Streams (HSSs) from the Sun's coronal holes are the sources of the Corotating Interaction Regions (CIRs) which also known to cause geomagnetic storms (Burlaga & Lepping, 1977; Gosling, 1993). The occurrences of geomagnetic storms do influence the electrodynamics of

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the Earth's ionosphere. This often leads to drastic changes in ionospheric density structures with resultant overbearing negative impacts on space-based and ground-based systems (Akala et al., 2020; NRC, 2008). Sharp and rapid variations in TEC are the essential conditions for occurrences of ionospheric plasma-density irregularities (Valladares et al., 1996), which cause scintillations of radio waves (Kintner et al., 2007). Severe scintillations have been reported to cause loss of signal and cycle slips to transionospheric radio systems (Akala et al., 2012, 2017). Fuller-Rowell et al. (1996) also used thermospheric circulation model to establish that changes in thermospheric circulation are related to the phases of ionospheric responses to geomagnetic storms.

The daytime eastward electric fields cause a vertical uplift of  $E \times B$  plasma at the magnetic equator, and its subsequent diffusion in a forward-fountain-like manner along the magnetic field lines due to pressure



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## Responses of the Indian Equatorial Ionization Anomaly to two CME-induced geomagnetic storms during the peak phase of solar cycle 24

K.G. Simi<sup>a,\*</sup>, A.O. Akala<sup>b,c</sup>, K. Siva Krishna<sup>d</sup>, Paul O. Amaechi<sup>e</sup>,  
Aghogho Ogwala<sup>f,g</sup>, D. Venkata Ratnam<sup>d</sup>, O.J. Oyedokun<sup>h</sup><sup>a</sup> Department of Physics, VTM NSS College, Dharmasapthapuram, University of Kerala, India<sup>b</sup> Department of Physics, University of Lagos, Yaba, Lagos, Nigeria<sup>c</sup> Institute of Maritime Studies, University of Lagos, Yaba, Lagos, Nigeria<sup>d</sup> Department of Electronics and Communication Engineering, Kona Lakshminarayana Education Foundation, Vaddeswaram, India<sup>e</sup> Department of Physical Sciences, Chitkara University, Abeokuta, Ogun State, Nigeria<sup>f</sup> Eko University of Medicine and Health Sciences, Ikorodu, Lagos, Nigeria<sup>g</sup> Department of Physics, Lagos State University, Ojo, Lagos, Nigeria

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Available online 15 June 2021

### Abstract

This work analyzes the geo-effectiveness of Coronal Mass Ejection- (CME-) induced storms by investigating the responses of ionospheric Vertical Total Electron Content (VTEC) and the Equatorial Ionization Anomaly (EIA) over the Indian sector to two storms. One of the storms occurred on February 19, 2014 (SYM-H:  $-120$  nT), while the other occurred on June 23, 2015 (SYM-H:  $-204$  nT). Both storms were driven by full halo CMEs. Global TEC maps were used to characterize VTEC variations during the storms. June 23, 2015 storm was characterized with stronger solar progenitors, right from its origin, although the VTEC response to the storm was not influenced by their strong progenitors. The CMEs that caused the selected storms are large (Halo CMEs). We inferred that irrespective of the strength of solar origin of a storm, the response of ionization distribution over equatorial and low-latitude regions to it depends on the season of storm occurrence, local time of the storm onset, and PPEF orientation. From the VTEC variations for the three Indian stations namely, Trivandrum (geographic latitude:  $8.52^{\circ}$ N, geographic longitude:  $76.94^{\circ}$ E, magnetic latitude:  $0.37^{\circ}$ N), Hyderabad ( $17.39^{\circ}$ N,  $78.49^{\circ}$ E,  $10.15^{\circ}$ N) and Delhi ( $28.70^{\circ}$ N,  $77.10^{\circ}$ E,  $22.70^{\circ}$ N), we observed that EIA disturbances were more prominent over Hyderabad than over Delhi. The February 19, 2014 storm was characterized by a localized EIA crest at latitude a little above Hyderabad, while in June 23, 2015 storm localized EIA crest was observed directly on Hyderabad. IRI-2016 model generally underestimated VTEC at the three Indian equatorial and low-latitude locations. Solar cycle 24 was characterized with low heliospheric pressure due to its weak polar field strength. The lower pressure allowed CMEs to expand greatly as they transit through space. As they expand, the strengths of the magnetic field inside them decrease, and such lower-strength magnetic fields cause geomagnetic storms that are less geoeffective, even when their solar/interplanetary progenitors are strong and healthy. This associated weak polar field strength of solar cycle 24 caused weak fountain effect with the attendant inability to exhibit storm-time super-fountain effect in the dayside of the equatorial/low-latitude regions.

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**Keywords:** Coronal mass ejection; Geomagnetic storm; Total electron content; Prompt penetration electric field; Disturbance dynamo electric field

\* Corresponding author.

E-mail addresses: [kg.simi@gmail.com](mailto:kg.simi@gmail.com) (K.G. Simi), [paolooakala@yahoo.fr](mailto:paolooakala@yahoo.fr) (P.O. Amaechi), [woloyedokun@live.com](mailto:woloyedokun@live.com) (O.J. Oyedokun).<https://doi.org/10.1016/j.asr.2021.06.013>

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K.G. Simi et al.

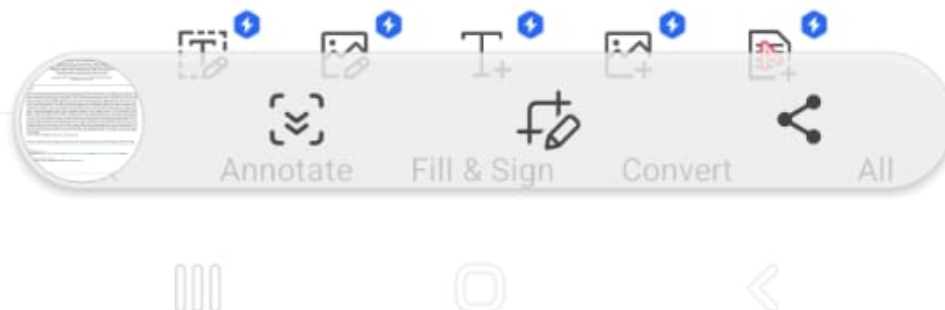
Advances in Space Research 68 (2021) 3417–3434

### 1. Introduction

Solar cycle 24 was extremely weak and this is attributable to the weak polar field strength of solar cycle 23 (Nandy et al., 2011). For this reason, the geomagnetic storms that occurred during solar cycle 24 were mild and infrequent, despite the fact that the solar cycle experienced high rate of occurrence of Coronal Mass Ejections (CMEs). It is known that CMEs are one of the consequences of the dynamic nature of the Sun. These eruptions have been studied by many researchers both by remote sensing, as

is highest during the main phase of the storm and it decreases during the recovery phase (Schunk and Nagy, 2000; Richmond and Lu, 2000).

Furthermore, Prompt penetration Electric Field (PPEF) (Vasyliunas, 1970) and Disturbance Dynamo Electric Field (DDEF) (Blanc and Richmond, 1980) are the major drivers of storm-time equatorial and low-latitude thermospheric-ionospheric coupling processes during space weather events. The magnetic signature of PPEF is the disturbance polar number 2 (DP2) (Nishida, 1968), while the magnetic signature of DDEF is referred to as the ionospheric distur-





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# Space Weather

## RESEARCH ARTICLE

10.1029/2021SW002806

### Special Section:

Space Weather Events of 4–10 September 2017

### Key Points:

- The X9.3/X8.2 flare induced peak vertical Total Electron Content increase of 7.9%/18.8% in Ascension Island/Kourou with the time of 270 min
- The total radio fade-out lasted from 30 to 90 min at the Hermanns and Sao Luis ionosondes during the flares
- The risk level to critical ground infrastructures based on the Ground Induced Current hazard was very low at the low-latitude

### Correspondence to:

P. O. Amaechi,  
p.o.amaechi@yaleu.fr

### Citation:

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### Author Contributions:

**Conceptualization:** Paul O. Amaechi  
**Data curation:** Paul O. Amaechi  
**Formal analysis:** Paul O. Amaechi, E. G. Sini  
**Investigation:** Paul O. Amaechi  
**Methodology:** Paul O. Amaechi  
**Resources:** Paul O. Amaechi, Andrew O. Akala, Johnson O. Oyedokun  
**Software:** Paul O. Amaechi  
**Supervision:** Andrew O. Akala, Elijah O. Oyejemi  
**Validation:** Paul O. Amaechi, Andrew O. Akala, O. Aghoghho, Elijah O. Oyejemi

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## Multi-Instrument Investigation of the Impact of the Space Weather Events of 6–10 September 2017

Paul O. Amaechi<sup>1</sup>, Andrew O. Akala<sup>2,3</sup>, Johnson O. Oyedokun<sup>2</sup>, K. G. Sini<sup>4</sup>, O. Aghoghho<sup>5</sup>, and Elijah O. Oyejemi<sup>2</sup>

<sup>1</sup>Department of Physical Sciences, Christland University, Abeokuta, Nigeria, <sup>2</sup>Department of Physics, University of Lagos, Akoka, Nigeria, <sup>3</sup>Institute of Maritime Studies, University of Lagos, Lagos, Nigeria, <sup>4</sup>Department of Physics, VTM NSS College Dhanuvachapuram, University of Kerala, Trivandrum, India, <sup>5</sup>Department of Physics, Lagos State University, Lagos, Nigeria

**Abstract** We analyzed the space weather events of 6–10 September 2017 using the multi-instrument approach. We focused on the four X-class flares which emanated from the Active Region AR 12673 and the Ground Induced Currents hazard associated with the geomagnetic storm of 7–8 September 2017. The flare effect on the equatorial electrojet (EEJ) recorded on board the SWARM satellite and on the horizontal component of the geomagnetic field (H) records of ground-based magnetometers was further examined. During the X2.2/X1.3 flares of 6/7 September, the maximum percentage Global Navigation Satellite System (GNSS) vertical Total Electron Content (VTEC) increase was 6.9%/5.0% in Dakar/Porto Velho. During the X9.3/X8.2 flare of 6/10 September it was 7.9%/18.8% in Ascension Island/Kourou. The strongest Solar Flare Effect occurred in Mbour and Kourou during the respective flare. However, the highest EEJ increase was observed during the X2.2 and X9.3 flares. Interestingly, the X9.3 flare resulted in a stronger ionospheric response than the X8.2 flare. Furthermore, global TEC map showed a higher response in the African and South American longitude during the respective event. The total radio fade-out lasted from 30 to 90 min at the Hermanns and Sao Luis ionosondes during the flares, while the risk level to critical ground infrastructures based on the geomagnetically induced currents hazard was very low risk. Our results highlight the potential GPS positioning errors induced by sudden increase in TEC and the loss of high-frequency communication and GNSS navigation signals associated with these solar events.

**Plain Language Summary** Space weather refers to changes on the Sun, solar wind and magnetosphere that can affect the performance of technological systems in space and on ground. Solar flares and coronal mass ejections are typical examples of space weather. Several Coronal Mass Ejections (CMEs) and solar flares occurred in the month of September 2017. We have focused on the X-class solar flares of 4–10 September and the Ground Induced Currents (GICs) related with the geomagnetic storm of 7/8 September. The X9.3/X8.2 flare had enhanced the ionospheric total electron content by about 7.9%/18.8% in Ascension Island/Kourou on 6/10 September. The highest sudden increase in the horizontal component of the geomagnetic field was observed in Mbour and Kourou during the respective flare. The largest changes in ionospheric current in the E region occurred during the X2.2 and X9.3 flares on 6 September. The flares also caused total radio fade-out for over 30–90 min at the Hermanns and Sao Luis ionosondes. The GICs however, represented a low risk to critical ground infrastructures such as power grids, as well as oil and gas pipelines.

## 1. Introduction

Space weather refers to the variations in the Sun, solar wind, magnetosphere, ionosphere, and thermosphere, which can affect the performance of a wide range of space-borne and ground-based technological systems and pose a danger to human health and safety (Koons et al., 1999). Space weather is mainly driven by extreme solar events such as Coronal Mass Ejections (CMEs), Solar Flares (SFs) and Solar Energetic Particles (SEPs). Solar flares are large but short duration explosions on the Sun's photosphere with sudden release of large amounts of electromagnetic energy at a broad range of wavelengths, particularly in the bands of X-rays and Extreme Ultraviolet (EUV) (Tsurutani et al., 2009). CMEs are massive solar eruption of magnetized plasma structures into the interplanetary space (Tousey, 1973), while SEPs are very high-energy particles accelerated close to the Sun by rapidly varying magnetic fields and shock waves in the solar wind. The high-energy protons and electrons as well as intense radiation released during SFs can influence the state of the ionosphere hence, the propagation

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## Space Weather

10.1029/2021SW002806

**Visualization:** Paul O. Amaechi  
**Writing – original draft:** Paul O. Amaechi, Johnson O. Oyedokun  
**Writing – review & editing:** Andrew O. Akala, Johnson O. Oyedokun, E. G. Sini, O. Aghoghho, Elijah O. Oyejemi

of radiowaves (Yasyukovich et al., 2018). Specifically, the emission of intense X-ray may cause high-frequency (HF) radio blackout, while EUV radiation could lead to prompt addition of ionization in the dayside ionosphere (Mitra, 1974) thus, posing a threat to the smooth operation of Global Navigation Satellite System (GNSS) applications (Berdermann et al., 2018).

CMEs are known to induce intense Geomagnetic Storms (GSs) (Shen et al., 2017). GSs stem from the southward component of the interplanetary magnetic field enclosed in the CME flux ropes and in the sheath between the flux rope and the CME-driven shock (Gopalwamy, 2009). Communication satellites in high orbits, power grids, as well as oil and gas pipelines on the ground can be adversely impacted during intense GSs (Baker, 2001; Pulkkinen et al., 2017). Particularly, the exposure and threat to power grids and pipelines depends on the magnitude of Geomagnetically Induced Currents (GICs). GICs which are the core effect of space weather on the ground



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## Report On Women's Day Celebration

Gayathri AR, Mathangi SR, and Soorya S Prakash, 2nd year students of Sociology Department have participated in the Women's day celebration conducted by the renowned NGO, "We Grow Forest Foundation" on 4th March 2023. It was a leadership summit where women from diverse sectors participated. The students are also currently working with the NGO in the capacity of Operation Associates. They have received certificates of recognition from the honourable minister Smt. Chinchu Rani in appreciation of their respective contributions.

## Poster

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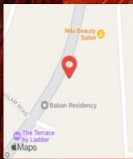




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## Pictures of receiving Awards



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**Pictures of Certificate**

MARCH 8  
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WOMEN'S DAY



## CERTIFICATE OF RECOGNITION

This certificate serves as a formal recognition of outstanding women who have demonstrated exceptional dedication, leadership, and perseverance in their respective fields. On this day, we honour and celebrate the achievements of women who have contributed to their communities and have inspired others to reach their full potential

CONGRATULATIONS  
**Ms SOORYA S PRAKASH**  
on this well-deserved recognition

*Meera Asmi*  
Dr Meera Asmi  
Chairwoman



*Aparna Anand*  
Dr Aparna Anand  
Managing Trustee

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INTERNATIONAL  
WOMEN'S DAY



## CERTIFICATE OF RECOGNITION

This certificate serves as a formal recognition of outstanding women who have demonstrated exceptional dedication, leadership, and perseverance in their respective fields. On this day, we honour and celebrate the achievements of women who have contributed to their communities and have inspired others to reach their full potential

CONGRATULATIONS  
**Ms GAYATHRI A R**  
on this well-deserved recognition

*Meera Asmi*  
Dr Meera Asmi  
Chairwoman



*Aparna Anand*  
Dr Aparna Anand  
Managing Trustee

MARCH 8  
INTERNATIONAL  
WOMEN'S DAY



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CONGRATULATIONS  
**Ms MATHANGI S R**  
on this well-deserved recognition

*Meera Asmi*

Dr Meera Asmi  
Chairwoman



[www.wegrowforest.org](http://www.wegrowforest.org)

*Dr Aparna Anand*

Dr Aparna Anand  
Managing Trustee

# Report of Celebrating National Unity Day



National Unity Day, also known as Rashtriya Ekta Diwas, is celebrated in India on October 31st 2021. This day holds immense significance as it commemorates the birth anniversary of Sardar Vallabhbhai Patel, one of the prominent leaders of India's freedom struggle and the first Deputy Prime Minister and Minister of Home Affairs of independent India. National Unity Day aims to promote and strengthen the unity, integrity, and diversity of the nation. This report highlights the importance of National Unity Day and explores the various activities and initiatives undertaken to celebrate this auspicious occasion. Honouring Sardar Vallabhbhai Patel: Sardar Patel, often referred to as the "Iron Man of India," played a crucial role in the unification of India after independence. National Unity Day serves as a tribute to his extraordinary leadership, vision, and relentless efforts in integrating the princely states into a unified nation. Promoting National Integration: National Unity Day emphasises the importance of unity and harmony among diverse communities, cultures, languages, and religions in India. It serves as

a reminder that despite our differences, we are all united as one nation. The students from our Department have participated in taking pledge of National Unity Day and they received an e - certificate from We Grow Forest Foundation. Students from the Sociology Department will always participate in Nation contributions.



The students participated in the pledge are :

NAME	SEMESTER	SIGNATURE
Mathangi SR	2nd Semester	
Gayathri AR	2nd Semester	

# Report of Celebrating International Women's Day



**CELEBRATING  
INTERNATIONAL  
WOMEN'S DAY 2023**

**LEADERSHIP SUMMIT**  
**STAND UP, STAND OUT**  
HOW DO YOU WANT TO BE  
REMEMBERED?

**DATE**  
MARCH 04<sup>th</sup>

**HOUR**  
10:30 - 03:30

**VENUE**  
THE TERRACE  
BUSINESS & LEISURE HOTEL  
THAMPANCOOR  
THIRUVANANTHAPURAM

**INAUGURATION**  
**J. CHINCHU RANI**  
HONOURABLE MINISTER  
ANIMAL HUSBANDRY OF KERALA

**DISTRIBUTION OF**  
**INSPIRING**  
**WOMEN AWARDS 2023**

**LAUNCH OF**  
**INFIBUSINESS CARD &**  
**NOTEMYDATE WEB APP**



TO BE A PARTNER OF INSPIRING WOMEN AWARDS  
9143 500 500 | 9778 411 911  
We Grow Forest  
drmeera@wegrowforest.org | www.wegrowforest.org

International Women's Day (IWD) and the Leadership Summit held on this occasion serve as a platform to celebrate the achievements of women, advocate for gender equality, and promote women's leadership in various fields. This report highlights the key events, initiatives, and outcomes of the recent International Women's Day and Leadership Summit, which took place on March 4, 2023 at Hotel The Terrace. The International Women's Day and Leadership Summit brought together influential leaders, experts, activists, and participants from diverse backgrounds to discuss pressing issues and drive positive change for women worldwide. The event aimed to inspire, empower, and support women in their personal and professional lives while fostering gender equality and inclusivity. The International Women's Day and Leadership Summit served as a significant platform to celebrate achievements, address challenges, and foster empowerment and gender equality. By bringing together

diverse perspectives and experiences, the event created a space for meaningful conversations, collaborations, and initiatives that will continue to drive positive change for women globally. Students of the 2nd year Sociology department have participated in the Women's Day celebration and it was a leadership summit where Women from diverse sectors participated. The students are also currently working with the NGO in the capacity of Operation Associates. They have received certificates of recognition from the honourable minister Smt. Chinchu Rani in appreciation of their respective contributions.







The students are :

NAMES	SEMESTER	SIGNATURE
Gayathri AR	3rd Semester	
Mathangi SR	3rd Semester	
Soorya S Prakash	3rd Semester	

# Report of Building Fruit Forest



The purpose of this report is to provide an overview of the "Building a Fruit Forest: 1001 Saplings Planting Drive" held on January 20, 2023 . The event aimed to promote environmental sustainability, enhance biodiversity, and create a fruit forest by planting 1001 saplings of various fruit-bearing trees. This report outlines the planning, execution, and outcomes of the event. We Grow Forest Green India Mission 2030 is a flagship mission by the We Grow Forest Foundation to plant 10 million trees by 2030. The mission aims to bring back biodiversity by recreating and restoring an ecosystem to support life on earth. We believe restoring ecosystems is the solution for mitigating climate change.

Objectives:

- Promote environmental sustainability and biodiversity.
- Create a fruit forest with a diverse range of fruit-bearing trees.

- Educate participants about the importance of trees and sustainable practices.

The "Building a Fruit Forest: 1001 Saplings Planting Drive" was a successful event that achieved its objectives of promoting environmental sustainability, biodiversity, and community engagement. Through the efforts of enthusiastic volunteers and participants, 1001 saplings were planted, creating a thriving fruit forest that will benefit both the environment and the community in the long run. Continued monitoring and maintenance will be crucial to ensure the saplings' survival and the forest's sustained growth. Students of the Sociology Department of MG College have actively participated in the planting drive. The students are :

NAME	SEMESTER	SIGNATURE
Priya MS	5th Semester	
Anjana Deepesh	5th Semester	
Hanna Shibu	5th Semester	
Sruthy AS	5th Semester	
Aravind SS	5th Semester	

## Report of attending national seminar on E - Waste Management



The poster features a background image of a man in a suit speaking to an audience. Overlaid on this are several text boxes with event details. At the top left, it says 'NATIONAL SEMINAR ON E-WASTE MANAGEMENT 2022'. Below that, a teal box contains the topic: 'A NEW CONCERN FOR ENVIRONMENTAL SUSTAINABILITY'. Further down, another teal box lists the date '14.12.2022', hour '10:30 - 03:30', and venue 'THE TERRACE BUSINESS & LEISURE HOTEL THAMPANOOR THIRUVANANTHAPURAM'. To the right, a larger teal box lists the inauguration by 'ADV. ANTONY RAJU, HONOURABLE MINISTER ROAD TRANSPORT OF KERALA', and the distribution of 'NATIONAL GREEN AWARDS' and 'ANNUAL PHOTOGRAPHY AWARDS'. At the bottom left is the 'WE GROW FOREST FOUNDATION' logo with the tagline 'INSPIRED BY NATURE'. At the bottom right, it says 'TO BE A PARTNER OF NATIONAL GREEN AWARDS' followed by contact information: '9143 500 500 | 9778 411 911', social media icons, and the email 'drmeera@wegrowforest.org | www.wegrowforest.org'.

**NATIONAL SEMINAR ON  
E-WASTE MANAGEMENT  
2022**

**TOPIC  
A NEW CONCERN FOR  
ENVIRONMENTAL  
SUSTAINABILITY**

**DATE  
14.12.2022**

**HOUR  
10:30 - 03:30**

**VENUE  
THE TERRACE  
BUSINESS & LEISURE HOTEL  
THAMPANOOR  
THIRUVANANTHAPURAM**

**INAUGURATION  
ADV. ANTONY RAJU  
HONOURABLE MINISTER  
ROAD TRANSPORT OF KERALA**

**DISTRIBUTION OF  
NATIONAL  
GREEN AWARDS**

**DISTRIBUTION OF  
ANNUAL PHOTOGRAPHY  
AWARDS**

**WE GROW FOREST  
FOUNDATION  
INSPIRED BY NATURE**

TO BE A PARTNER OF NATIONAL GREEN AWARDS  
9143 500 500 | 9778 411 911  
We Grow Forest  
drmeera@wegrowforest.org | www.wegrowforest.org

On 14/12/2022 We Grow Forest Foundation conducted a National Seminar on the topic "A New Concern for Environmental Sustainability" which mainly focused on the topic E - Waste Management. This event aims to assemble researchers, individuals and organisations to address climate change and sustainability. And it will provide a venue to learn, share and discuss ideas, studies, and successful sustainability models, motivating policymakers to participate in the eco - revolution actively. The seminar emphasised the significance of raising public awareness and educating individuals about the environmental and health hazards associated with improper e-waste disposal. Efforts should be made to promote responsible consumer behaviour and encourage the adoption of sustainable electronic products. The national seminar on E-Waste Management organised by the We Grow Forest Foundation provided a comprehensive platform for sharing knowledge, experiences, and best practices in addressing the pressing issue of electronic waste. The event successfully highlighted the urgency of adopting sustainable approaches to

e-waste management, emphasising the need for collaboration, awareness, and effective policy frameworks. I believe that the insights gained from this seminar will contribute significantly to my understanding of e-waste management and inspire me to take proactive steps towards creating a sustainable future. Students from the Sociology Department have actively participated in the seminar and conducted debate sessions, asking questions, etc... They have understood a lot of things about E - Waste Management. The students are:

NAME	SEMESTER	SIGNATURE
Priya MS	4th Semester	
Anjana Deepesh	4th Semester	
Gayathri AR	4th Semester	
Mathangi SR	4th Semester	
Amal AM	4th Semester	
Soorya S Prakash	4th Semester	

## **Report of Student Police Cadet Directorate Christmas Vacation Camp in association with We Grow Forest Foundation.**



As a part of Christmas Vacation Camp 2022 Students Police Cadet (SPC) associated with We Grow Forest Foundation has successfully organised an awareness session on the topic “Sustainable Development and Safe Life “ on 24/12/2022 at Government High School Chalai. The camp aimed to engage young students in meaningful activities during their Christmas break while promoting environmental awareness and community engagement. The primary objectives of the SPC Directorate Christmas Vacation Camp in association with the We Grow Forest Foundation were as follows:

- To provide a constructive and engaging platform for students during the Christmas vacation period.

- To enhance students' knowledge and understanding of environmental conservation.

- To foster leadership skills and teamwork among the participants.

- To instil values of discipline, responsibility, and community engagement.

The Student Police Cadet Directorate Christmas Vacation Camp in association with the We Grow Forest Foundation proved to be an impactful and successful initiative. It provided students with a unique learning experience, fostering environmental awareness, personal development, and community engagement. The collaboration between the organisations exemplified the importance of partnerships in achieving common goals. By continuing such initiatives, we can inspire the youth to become responsible citizens and stewards of the environment. Students from the Sociology Department participated in this camp and they also talked about environmental awareness and safe life. Students also like to take classes about nature. The students are :

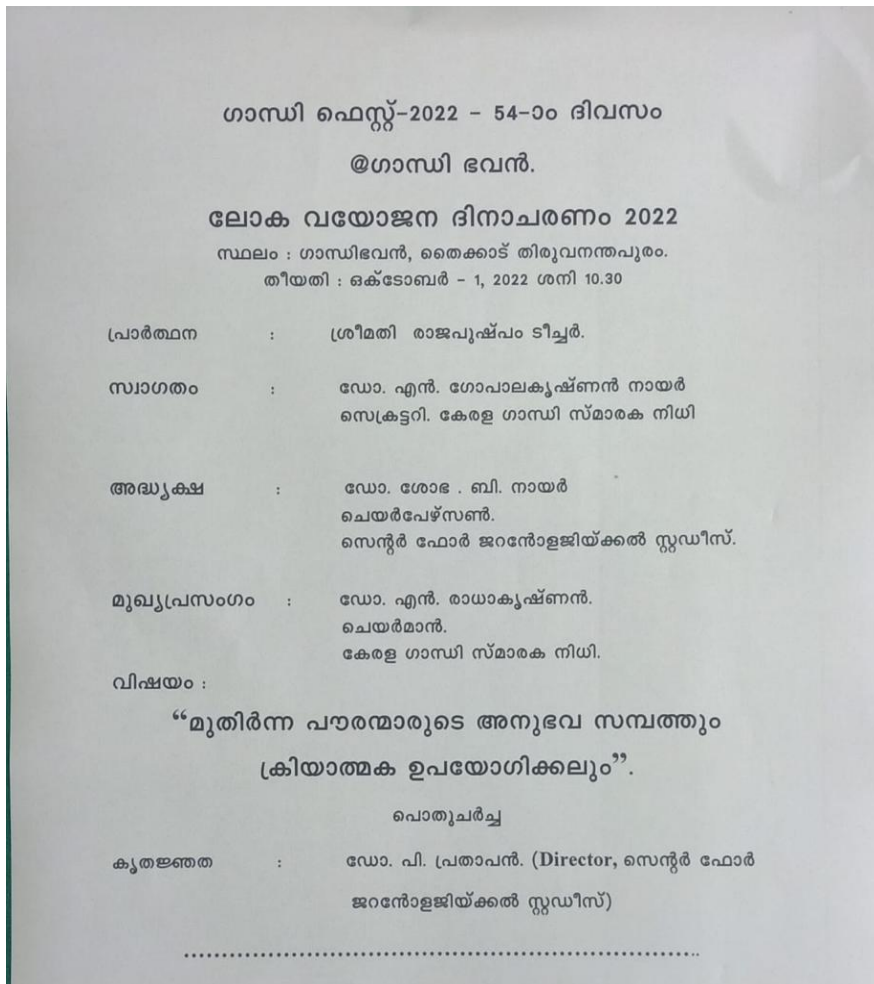
NAME	SEMESTER	SIGNATURE
Gayathri AR	2nd Semester	
Mathangi SR	2nd Semester	
Jyothika Suresh	1st Semester	

**DEPARTMENT OF SOCIOLOGY, MAHATMA GANDHI  
COLLEGE**

**OBSERVATION OF INTERNATIONAL DAY FOR OLDER PERSONS**

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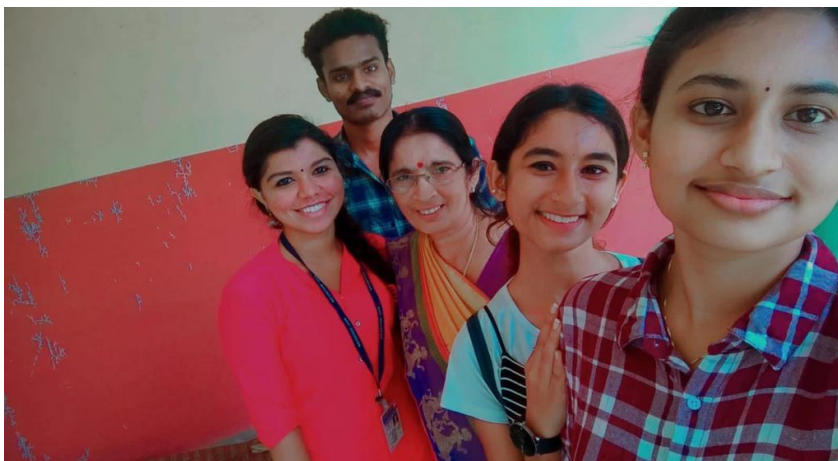
**The Celebration of International Day for Older Persons organized by Kerala Gandhi Bhavan was held on 1<sup>st</sup> October 2022 at 10.30am in Gandhi Bhavan, Thycaud, Thiruvananthapuram. Students of Sociology Department Mahatma Gandhi College, Kesavadasapuram attended the programme.**



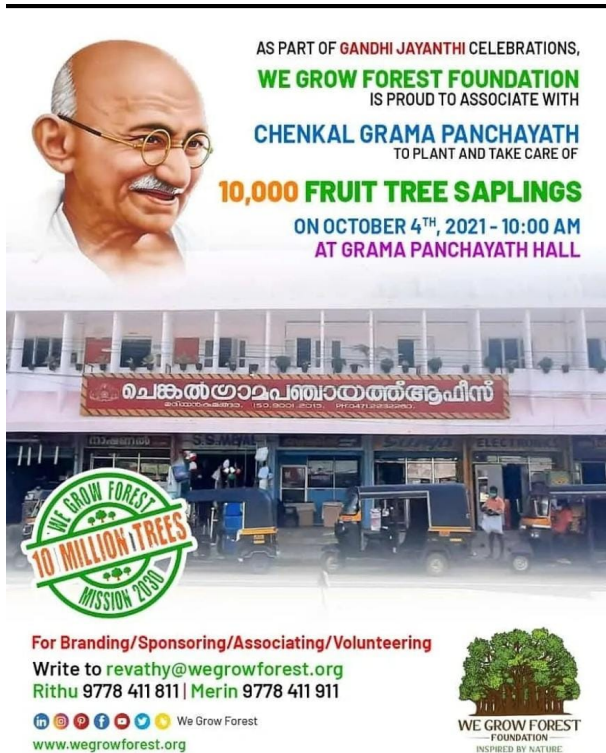


## **Overview of the Program**

The meeting commenced with a welcome speech by Dr.N.Gopala Krishnan Nair, Secretary,Kerala Gandhi Smaraka Nidhi. Dr.Shobha B.Nair, Chairperson, Center for Gerontological Studies introduced the hon'ble resource person with brevity and clarity.The inaugural address and talk was conducted later on "The Experiences of Aged People and it's Creative Utilization" by Dr.N.Radhakrishnan, Chairman,Kerala Gandhi Smaraka Nidhi. The talk attempted to give an insight into how the experiences of aged people can be utilized creatively.A very systematic presentation was carried out by Dr.N.Radhakrishnan on the experiences of Aged People.He point out how empathetically we should know about the experiences of aged people and utilize them effectively for the future uses.After the lecture resource person Dr.N.Radha Krishnan interacted with the participants.Numerous questions were raised and subjected to deeper discussions. Dr.P.Prathapan, Director, Center for Gerontological Studies proposed vote of thanks to the Chief Guest and participants for making the programme a grand success.



## Report of planting 10,000 fruit tree saplings



AS PART OF **GANDHI JAYANTHI** CELEBRATIONS,  
**WE GROW FOREST FOUNDATION**  
IS PROUD TO ASSOCIATE WITH  
**CHENKAL GRAMA PANCHAYATH**  
TO PLANT AND TAKE CARE OF  
**10,000 FRUIT TREE SAPPLINGS**  
ON OCTOBER 4<sup>TH</sup>, 2021 - 10:00 AM  
AT GRAMA PANCHAYATH HALL

ചെങ്കൽഗ്രാമപഞ്ചായത്ത് ഓഫീസ്

WE GROW FOREST  
10 MILLION TREES  
MISSION 2030

For Branding/Sponsoring/Associating/Volunteering  
Write to [revathy@wegrowforest.org](mailto:revathy@wegrowforest.org)  
Rithu 9778 411 811 | Merin 9778 411 911

[www.wegrowforest.org](https://www.wegrowforest.org)

WE GROW FOREST  
FOUNDATION  
INSPIRED BY NATURE

On the occasion of Gandhi Jayanthi, a significant day in India, a commendable initiative was undertaken in Chenkal Grama Panchayath to distribute 10,000 fruit tree saplings to promote environmental conservation and sustainable agriculture. This report aims to provide an overview of the distribution event and its potential impact on the local community. The primary objective of this initiative was to encourage the residents of Chenkal Grama Panchayath to actively participate in afforestation efforts, contribute to the mitigation of climate change, and promote sustainable agricultural practices by cultivating fruit-bearing trees. The distribution event took place on October 4th , 2021, at Grama Panchayath Hall in Chenkal Grama Panchayath. The event was organised by the local panchayath authorities in collaboration with We Grow Forest Foundation and their volunteers. The saplings were procured from local nurseries and carefully selected to ensure their

adaptability to the region's climate. The distribution of 10,000 fruit tree saplings in Chenkal Grama Panchayath on Gandhi Jayanthi has set a remarkable example of community-driven environmental conservation and sustainable agriculture. This initiative is expected to have a significant impact on the region's ecosystem, air quality, and socioeconomic well-being. By promoting the cultivation of fruit trees, the initiative aligns with Mahatma Gandhi's vision of sustainability, self-sufficiency, and harmony with nature. It is hoped that this endeavour will inspire other communities to undertake similar initiatives and contribute to a greener, healthier future. Gandhiji's concept of Sarvodaya is not just the rise of mankind alone but the rise of the whole of our environment. The development of forests in turn develops our whole economy. For this auspicious occasion the students of the Sociology Department have participated in the function. The students are:

NAMES	SEMESTER	SIGNATURE
Gayathri AR	2nd Semester	
Mathangi SR	2nd Semester	
Soorya S Prakash	2nd Semester	
Amal AM	2nd Semester	