2024 Workshop: Quiet Ionsopshere

Long title
Is there a quiet state of the ionosphere and thermosphere system?
Conveners
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Description

While geomagnetic storm time variations have consumed all the attention of the past studies of the ionosphere-thermosphere (IT) and the storms are clearly defined (e.g. a rapid decrease followed by a slow recovery in Dst index), the quiet state IT system has largely been neglected and is more challenging to study. “Quiet state” IT system is widely used as the reference state when investigating the IT under various conditions. However, the quiet geomagnetic activity is not clearly defined and thus could have resulted in biased understanding of the IT system. Can we say that in the absence of geomagnetic disturbances, the IT system is quiet? Can we really use the widely used geomagnetic indices, such as a low Kp, as a criterion of no geomagnetic activities? We have noticed that there are cases that low Kp and AE indices are no guarantee of absence of geomagnetic activities that are revealed by other observations. Perhaps, a long duration of the IMF Bz northward condition or low solar wind and magnetosphere coupling rate can give us a peace of mind, but then the question becomes how long the duration should be then we can assure the IT system is quiet. We invite you to join the discussion of the IT system under low Kp and AE index yet not absent of the geomagnetic activities and the true definition of quiet state of the IT system. Having a better definition and understanding of the quiet state will be of great help to investigate the long-term trend and ionospheric impact from atmospheric input. New observations and model simulations are welcomed.

Agenda

Zoom link

Join Zoom Meeting
https://ucar-edu.zoom.us/j/94859519411?pwd=bNyj5Q4h7SovU3tcKMpoeyEJyKGlmV.1

Meeting ID: 948 5951 9411
Passcode: CEDAR2024

10 presentations

Each speaker has 10 min (8 min presentation + 2 min QA)

1. Introduction
2. Endawoke Yizengaw, Quiet and recent storm time ionospheric disturbances observed by multi-instruments.
3. L. Claire Gasque, Solar terminator waves in the quiet time thermosphere
4. Manbharat Dhadly, Recent Analysis of MIGHTI, TIDI and SABER observations
5. Katelynn Greer, Quiet-time molecular oxygen as observed by GOLD and other occultation instruments
6. **Joe Huba,** SAMI3 quiet time results
7. **Geonhwa Jee,** Jang Bogo station observation of thermosphere and ionosphere conditions
8. **Dong Lin,** Energy deposition associated with Alfvenic Poynting flux under northward IMF
9. Qian Wu, Not so quiet thermosphere condition during low Kp conditions
10. Yongliang Zhang, Unusual substorm event look like quiet condition view from UV observations
11. **Discussion and collaboration**

Justification

A better understanding of quite ionosphere and thermosphere has great implication for long-term trend and atmospheric inputs studies. Without a more clearly defined quiet state, we can have large uncertainties in these studies. We will explore what other data can help better define quiet state and see what simulations will reveal.

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quiet condition, ionosphere, thermosphere
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