2018 Workshop: Whole atmosphere coupling

Long title
Whole atmosphere coupling: research challenges and needs
Conveners
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Description

Different types of waves (gravity waves, tides, and planetary waves) are major dynamical features that couple tropospheric, stratospheric, and mesospheric processes to the upper thermosphere and ionosphere. While the importance of wave forcing from below is without dispute, major challenges remain in understanding the evolution of the wave spectrum in the TI system, including wave-wave and wave-mean flow interactions that excite additional motions and drive the structure, mixing, composition and energy balance in the TI. This workshop aims to discuss our understanding of the roles of different mechanisms, articulate scientific challenges faced by the research community, and identify further steps needed to move forward, including required theoretical, modeling, and observational efforts.

Agenda

All presentations are 10 min talks + 3 min of discussion; short contributions are 3 slides (5 mins)

Presentations:
Quan Gan, *Clemson University*, "Empirical model of the quasi 6-day wave based on TIMED observations "
Erich Becker, *IAP*, "Possible sources of gravity waves in the polar winter mesopause region"
Tzu-Wei Fang, *NOAA*, “Updates of the Whole Atmosphere Models”
Manbharat Dhadly, *NRL*, “Tidal variability in the MLT region”

McArthur Jones, *NRL*, "Evaluating different techniques for constraining lower atmospheric variability in an upper atmosphere general circulation model: The 2010 sudden stratospheric warming period"
Chigomezyo Ngwira, *Catholic Univ. of America*, “A Comprehensive Study of Mid-Latitude Long-Lasting SED”

Short contributions:
Larisa Goncharenko, *MIT Haystack Observatory*, “Longitudinal features in TEC during recent (2016-2018) sudden stratospheric warmings” (3 slides)
Juan Rodriguez-Zuluaga, *GFZ-Potsdam*, “Use of GCMs in prediction of equatorial plasma bubbles” (3 slides)
Dimitry Pokhotelov, *IAP*, “Tidal climatology” (3 slides)
Thomas Immel, *UC Berkeley*, “Wave-wave coupling” (3 slides)

Justification

Understanding the coupling of different atmospheric regions is the primary goal of the CEDAR community. This workshop will build on the following CEDAR strategic thrusts: Strategic Thrust #1:Encourage and Undertake a Systems Perspective to Geospace; Strategic Thrust #2: Explore Exchange Processes at Boundaries and Transitions Strategic; Thrust #3: Explore Processes Related to Geospace Evolution Strategic; Thrust #5: Fuse the Knowledge Base across Disciplines

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