2022 Workshop: Tonga Eruption

Long title
Dynamics of atmospheric regions as viewed through the recent Eruption at Tonga
Conveners
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Description

Large eruptions at Hunga Tonga-Hunga Ha'apai on both 14 and 15 January 2022 injected material far into the mesosphere, and evidence of the eruption was observed globally through the atmospheric waves that were triggered. Large events, such as this one, provide additional insight into how energy is moved throughout the coupled Earth system. Here we seek reports and discussions on how this large terrestrial event impacted the entire atmospheric column, from the troposphere through the thermosphere/ionosphere and what the event implies about the dynamics of these regions.

Agenda

13:30-13:45 Saurav Aryal (UC-LASP): "Tonga eruption's effects on the thermosphere: GOLD Observations"

13:45-14:00 Shun-Rong Zhang (MIT):

14:00-14:15 Brain Harding (UCB-SSL): "Impacts of the Tonga eruption on the ionospheric dynamo: ICON-MIGHTI an Swarm observations of extreme neutral winds and currents"

14:15-14:30 Corwin Wright (U Bath): "Atmospheric Waves at the Speed Limit"

14:30-14:45 Jia Yue (GSFC & UCA):

14:45-15:00 Min-Yang Chou (UCA):

15:00-15:30 General Discussion

Justification

The eruption at Tonga in January of this year coincided with the unprecedented amount of modern observations available of the middle and upper atmosphere. This eruption is an opportunity to study how strong impulsive events in the lower atmosphere may propagate through the atmospheric column and into geospace. A recent article submitted to Nature, shows that various types of waves were triggered and observed globally in various atmospheric and ionospheric parameters. Given the wealth of observations the CEDAR community works with, there are ample opportunities to study this event which may lead to insights into coupling of atmospheric regions, coupling of the ionosphere and thermosphere, wave dynamics, electrodynamics, vertical energy transfers, composition anomalies, and the implied dynamics of the middle and upper atmosphere.

Related to CEDAR Science Thrusts:
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