

**Impacts of the January 2022 Tonga volcanic eruption on the ionospheric dynamo:
ICON-MIGHTI and Swarm observations of extreme neutral winds and currents**

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Caption for Movie S1

Introduction

This movie is an animated version of Figure 1. Any statements in the manuscript pertaining to Figure 1 also apply to Figure S1. It is included to provide a better sense of the spatiotemporal relationship between the observations.

Movie S1. (a) Two consecutive orbits of ICON-MIGHTI dayside passes and Swarm equator overflights. The red dot indicates the location of the MIGHTI wind observation at the given time, while the red lines show the locations before and after this time on the same orbit. The dashed appearance of the red line denotes individual MIGHTI wind profile locations. The green dot indicates the location of Swarm A, while the thick green line is the location of the equatorial electrojet estimate. The black line indicates the location of a notional radially propagating wavefront moving at 318 m/s that originated in Tonga at 04:28 UT. The yellow circles indicate the four ground-based magnetometer sites. (b) Daytime zonal wind profiles (positive eastward) measured by MIGHTI corresponding to the longitudes in the map above. Only daytime data are included. The altitude axis is in log scale to better display lower thermospheric winds. (c) Same as (b) for the meridional wind (positive northward).