

## First Results from the NASA Ionospheric Connection Explorer Mission

\*Thomas J Immel<sup>1</sup>, Scott L. England<sup>4</sup>, Roderick A. Heelis<sup>3</sup>, Christoph R. Englert<sup>2</sup>, Stephen B. Mende<sup>1</sup>, Jerry E. Edelstein<sup>1</sup>

1. University of California Berkeley, 2. U.S. Naval Research Laboratory, 3. University of Texas at Dallas, 4. Virginia Institute of Technology

The NASA Ionospheric Connection Explorer (ICON) mission carries a complement of 3 remote sensing instruments and an in-situ plasma instrument to explore the interaction of Earth's atmosphere with its plasma environment, with coverage from the boundary of space at 95 km to the altitude of maximum ionospheric plasma density. Launched in October of 2019 into a 27<sup>o</sup> 600-km circular orbit, it is now possible to report the first results from the mission. All of the instruments are working as planned, providing all of the expected calibrated data to support 6 retrieved products: cardinal neutral winds, neutral temperatures, daytime neutral composition, daytime and nighttime ionospheric density profiles, and in-situ plasma drifts and density. Intercomparison of these measurements show the varying physical connections between the atmosphere and the ionosphere, and allow researchers to understand the causes of the large day-to-day variability in the conditions in near-Earth space.

Keywords: ionosphere, thermosphere, electrodynamics, atmospheric waves, atmospheric tides, space weather