NASA Ionospheric Connection Explorer, Validation of Scientific Performance

*Thomas J Immel[1], Scott England[1], Ellen Taylor[1], Stephen Mende[1], Jerry Edelstein[1], Eric Korpela[1], Harald Frey[1], Roderick Heelis[2], Russell Stoneback[2], Christoph Englert[3], Kenneth Marr[3], Jonathan Makela[4], Brian Harding[4], Farzad Kamalabadi[4], Dimitrious Iliou[4]

1.University of California, Berkeley, 2.University of Texas at Dallas, 3.Naval Research Laboratory, 4.University of Illinois

Earth's space environment is highly variable, changing in ways that we are currently unable to predict. Specifically, the ionosphere exhibits remarkable day-to-day changes that cannot be attributed to any known source, though forcing from the lower atmosphere is now considered of key importance. NASA's Ionospheric Connection Explorer, a mission designed to discover the causes of this variability, is in development for a June 2017 launch. Concurrent with the build of the instruments and spacecraft, a science validation effort has tracked the expected performance of the observatory. The predicted performance of the science retrieval algorithms developed for ICON will be reported. The current performance models show that ICON will have outstanding scientific capability and be able to address and resolve the open questions in space plasma physics that pertain to space weather. Here we will present the performance predictions and observational plans for the ICON mission, and discuss opportunities for collaborative measurements aligned with international research efforts.

Keywords: Thermosphere, Ionosphere, atmospheric physics