Ionogram Scaling with Neural Networks and SAMI3 Model Comparison NOAH WALSH, St Mary's Coll of Maryland, KATE ZAWDIE, DOUGLAS DROB, LESLIE SMITH, U.S. Naval Research Laboratory — We improved the automation of the scaling process of converting raw ionogram soundings into usable data using machine learning techniques and neural networks, and analyzing scaled data and comparing it to our ionosphere model. We gathered data from multiple ionosonde sites across the United States, Peru and the Pacific using ionosondes. An ionosonde is a chirp-sounder that sends radio wave pulses into the ionosphere and records the reflected, refracted, and scattered radio waves. This 16 channel raw sounding data is cleaned and processed into an ionogram, and then scaled into a usable format, such as Standard Archiving Output (SAO) format. We used SAMI3, a global, three-dimensional, physics based model of the ionosphere which models the plasma and chemical evolution of multiple ion species, to understand the evolution of the peak electron density and peak height of the F2 layer. Our analysis will be used to improve the SAMI3 model. This research was performed at the U.S. Naval Research Laboratory.

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