This fourth data release contains data used in the publication of McComas et al., 2012, "The First Three Years of IBEX Observations and Our Evolving Heliosphere". IBEX results, together with in situ observations from the Voyager-1 and -2 spacecraft currently in the inner heliosheath, other supporting observations from several spacecraft, and a broad theory and modeling effort are producing a revolutionary new understanding of the outer heliosphere and its interactions with the local interstellar medium. In this release, we provide new ENA observations from IBEX, covering its first, second and third years of science operations.