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Imaging ~3500 Sources in the International Celestial Reference Frame

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The International Celestial Reference Frame is comprised of positions of compact quasars calculated from Very Long Baseline Interferometry (VLBI) observations at 2.3 GHz and 8.6 GHz. It has now been through three full realizations (Hereafter ICRF1, ICRF2, and ICRF3) [1,2,3]. The third realization (ICRF3) was recently adopted by the International Astronomical Union at the most recent general assembly as the standard reference frame.

The accuracy of ICRF3 has been improved by a monitoring campaign of over 3500 sources included in the reference frame. In some cases, this monitoring campaign doubled the number of observations on individual sources and increased the cadence at which many sources were observed. Positions can be improved by imaging these observations and making corrections for source structure [4].

Here we present results from our imaging campaign targeting 3500 quasars that comprise the third realization of the International Celestial Reference Frame (ICRF3) taken with the VLBA simultaneously at 2 and 8 GHz. We also present the distribution of flux, a statistical analysis of source structure for the observing campaign, and estimated spectral indexes. We will make these images publicly available to the astronomical community as part of the USNO Fundamental Reference Image Data Archive (FRIDA). Eventually this survey can be used to study temporal changes in individual objects as well, for example jet motions or changes in core structure.

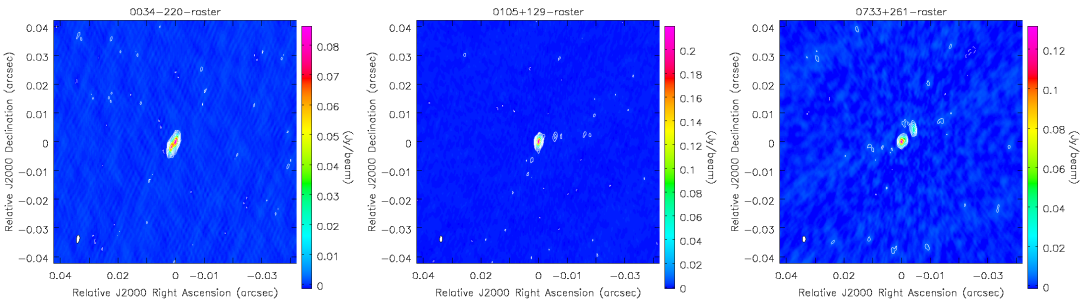

Figure 1. Examples of images created from our monitoring campaign.

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