

## Extending the ICRF to Higher Radio Frequencies: Global Astrometric Results at 24 GHz

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### Abstract

A celestial reference frame at K-band (24 GHz) has been constructed using eight 24-hour VLBA sessions which covered the full 24 hours of right ascension and declinations down to -40 deg. The resulting catalog contains 259 sources with median formal position uncertainties of 100 micro-arcsec in RA cos(dec) and 200 microarcsec in declination. In order to constrain the long arcs of the K-band catalog to those obtained with the S/X-band ICRF, four K-band high quality source positions well-separated in the sky were set to the S/X-band positions. After this registration, comparison of the K-band frame to an S/X-band ICRF-like frame shows agreement of 200 micro-arcsec in RA cos(dec) and 300 micro-arcsec in declination. The motivations for extending the ICRF to frequencies above 8 GHz are to use more compact sources less susceptible to structure changes in order to construct a more stable frame, to provide calibrators for phase referencing, and to support spacecraft navigation at higher frequencies.

[Note from the Editors: The overheads of the oral presentation of this contribution can be downloaded from the IVS 2006 General Meeting web site. Please get the PowerPoint file of the presentation at the URL [ftp://ivscc.gsfc.nasa.gov/pub/general-meeting/2006/presentations/gm2006\\_6-03\\_jacobs.ppt](ftp://ivscc.gsfc.nasa.gov/pub/general-meeting/2006/presentations/gm2006_6-03_jacobs.ppt).]