

COMPARISON OF VARIOUS RUNS OF COMBINATION SOLUTION FOR CONSTRUCTING THE GAOUA COMBINED CATALOGUE OF RS POSITIONS

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ABSTRACT. Several versions of the GAOUA type combined catalogue of radio source positions were constructed using the so-called Kiev arc length method. As a result of comparative analysis of these versions the catalogue RSC (GAOUA) 05 C 03 has been selected as final one and it was compared with previous combined catalogue of this type.

1. RESULTS OF COMPARISON

Currently the new realization of the International Celestial Reference Frame is under preparation. For this reason the construction of combined catalogue of radio source (RS) positions based on initial catalogues provided by various Analysis Centres of the IVS may be of interest. Based on eight such catalogues we have conducted several runs of combination solution for constructing the GAOUA combined catalogues using the so-called Kiev arc length method.

Different numbers of "basic" initial catalogues (see Ya. Yatskiv, et al. 2002) were used in combination process.

Frame	N	N_b	$\sigma_\alpha \cdot \cos\delta$, mas	σ_δ , mas	Number of "basic" catalogues
RSC(GAOUA)05 C 01 (GAOUAc1)	953	212	0.03375	0.038	3
RSC(GAOUA)05 C 02 (GAOUAc2)	953	212	0.03495	0.039	4
RSC(GAOUA)05 C 03 (GAOUAc3)	953	212	0.03345	0.038	5
RSC(GAOUA)05 C 04 (GAOUAc4)	953	212	0.03315	0.038	5

Table 1: List of combined catalogues of RS positions. The first 3 catalogues have been constructed using the VLBI data since 1990, the last one is based on all available observations (since 1979). N is number of RS in frame, N_b is number of defining RS, $\sigma_\alpha \cos\delta$ and σ_δ are internal uncertainties for α and δ in mas

Table 1 shows that average values of positional uncertainties do not depend on number of "basic" catalogues used in combination solutions as well as on the data collected before 1990.

Therefore we have selected the catalogue RSC(GAO UA)05 C 03 as a final solution. This catalogue has been compared with the RSC (GAOUA)03 C 02 (see Figure 1).

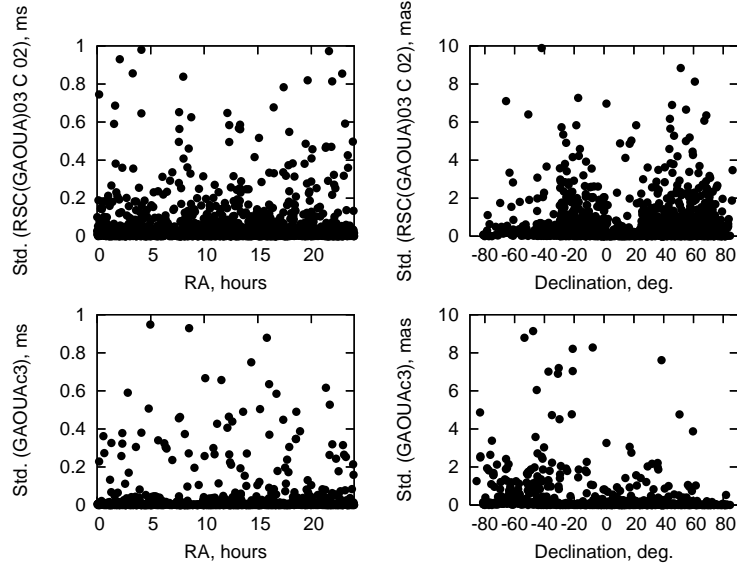


Figure 1: Positional uncertainties of RS for GAOUAc3 and RSC(GAOUA)03 C 02

2. CONCLUSIONS

The estimated uncertainties of the combined catalogues do not depend on number of "basic" catalogues used in combination solution.

The internal consistency of the combined catalogue RSC (GAOUA)05 C 03 proved to be better than for combined catalogue RSC (GAOUA)03 C 02.

REFERENCES

- IVS: International VLBI Service products available electronically at
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