Summary of Changes

The changes fall into the following categories:

1. Correction of a sign in routine P06E.
2. Correction in the ANSI C macro function dnint in the include file sofam.h, to improve rounding.
3. Improvements in precision and rounding (see 2 and 3 below).
4. Miscellaneous typographical corrections and improvements to various other documents.

FORTRAN 77 Library

1. iau_P06E Correction. The series are taken from Table 1 of Hilton, J. et al., 2006, Celest. Mech. Dyn. Astron. 94, 351., and it has been discovered that the one for general precession, p_A, had the wrong sign for the t^5 coefficient. The error in the paper has been corrected in the SOFA code. The correct value is -0.0000000383 arcsec. (Even after five centuries the error would be lower than 250 microarcsec.)

2. iau_PB06 Improvements in the method of decomposing the rotation matrix by ensuring that angles near zero are preferred.

3. iau_JD2CAL iau_JDCALF Improvements by ensuring precision is not lost when splitting date and time.

4. iau_DAT Release year updated.

5. t_sofa_f.for Updated due to the correction in iau_P06E.

6. iau_FK524 iau_FW2M iau_GMST82 iau_TRXP iau_XYS00A Minor corrections/improvements to the documentation.

ANSI C Library

1. iauP06e Correction. The series are taken from Table 1 of Hilton, J. et al., 2006, Celest. Mech. Dyn. Astron. 94, 351., and it has been discovered that the one for general precession, p_A, had the wrong sign for the t^5 coefficient. The error in the paper has been corrected in the SOFA code. The correct value is -0.0000000383 arcsec. (Even after five centuries the error would be lower than 250 microarcsec.)

2. sofam.h Correction to dnint(A).

The existing dnint macro could incorrectly round numbers just over -0.5 and just under +0.5 due to the loss of precision when calculating ceil(A-0.5) or floor(A+0.5). A preliminary test for |A|<0.5 has been added to ensure that such numbers always round to zero. As none of the SOFA C functions depend critically on perfect rounding, the change is unlikely to affect user applications noticeably, though critical round-trip tests may see an improvement.
3. iauPb06       Improvements in the method of decomposing the rotation matrix by ensuring that angles near zero are preferred.
4. iauJd2cal    Improvements by ensuring precision is not lost when splitting date and time.
5. iauDat        Release year updated.
6. t_sofa_c.c    Updated due to the correction in iauP06e.
7. iauA2af       Minor corrections/improvements to the documentation.
                iauA2tf
                iauD2tf
                iauFk524
                iauFw2m
                iauGmst82
                iauTrxp
                iauXys00a

SOFA thanks all those who have reported the various issues that go to ensuring the libraries and documentation are kept up-to-date and relevant.
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End of updates
+ 2020 June 22
+
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