BULLETIN B 200
(IAU 2000)
5 october 2004

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Following IAU Conventions 2000, IERS provides new products dX, dY, celestial pole offsets with respect to the new IAU2000A Precession-Nutation theory.

The present Bulletin B version includes the celestial pole offsets dX, dY:

dX = X_obs - X_IAU2000A and dY = Y_obs - Y_IAU2000A

where

X_obs, Y_obs are the observed coordinates of the Celestial Intermediate Pole (CIP) in the Geocentric Celestial Reference System, and

X_IAU2000A, Y_IAU2000A are the celestial pole coordinates provided by using the IAU2000A Precession-Nutation theory.

The current Bulletin B including (dpsi,deps)_1980 will be maintained until December 2004.

For more details refer to IERS Messages 38, on IAU 2000 Resolution Compliancy Information.
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Contents are described in the Explanatory Supplement available at http://hpiers.obspm.fr/eop-pc/

1 - EARTH ORIENTATION PARAMETERS (IERS evaluation).
The values in this section are samplings of section 2 given at five-day intervals.

| Date 2004 (0h UTC) | | MJD | x " | y " | UT1R-UTC s | UT1R-TAI s | dX 0.001" | dY 0.001" |
|---|---|---|---|---|---|---|---|---|
| Final Bulletin B values. | | | | | | | | |
| AUG | 2 | 53219 | .07551 | .51560 | -.454321 | -32.454321 | .20 | -.55 |
| AUG | 7 | 53224 | .08887 | .51478 | -.453036 | -32.453036 | .20 | .05 |
| AUG | 12 | 53229 | .10293 | .51267 | -.452551 | -32.452551 | .14 | -.37 |
| AUG | 17 | 53234 | .11732 | .51301 | -.452120 | -32.452120 | .26 | -.24 |
| AUG | 22 | 53239 | .12842 | .50932 | -.452316 | -32.452316 | .12 | -.37 |
| AUG | 27 | 53244 | .13837 | .50245 | -.452722 | -32.452722 | .26 | .02 |
| SEP | 1 | 53249 | .15226 | .49571 | -.452625 | -32.452625 | .19 | .11 |
| Preliminary extension, to be updated weekly in Bulletin A and monthly in Bulletin B. | | | | | | | | |
| SEP | 6 | 53254 | .16398 | .48477 | -.452565 | -32.452565 | .10 | -.28 |
| SEP | 11 | 53259 | .17385 | .47520 | -.451574 | -32.451574 | .30 | .11 |
| SEP | 16 | 53264 | .18215 | .46379 | -.451981 | -32.451981 | .10 | -.16 |
| SEP | 21 | 53269 | .18984 | .45209 | -.452661 | -32.452661 | .14 | -.33 |
| SEP | 26 | 53274 | .19588 | .44263 | -.453329 | -32.453329 | .00 | .00 |
| OCT | 1 | 53279 | .19853 | .43159 | -.454441 | -32.454441 | .00 | .00 |
| OCT | 6 | 53284 | .20329 | .41957 | -.455852 | -32.455852 | .00 | .00 |
| OCT | 11 | 53289 | .20731 | .40706 | -.457615 | -32.457615 | .00 | .00 |
| OCT | 16 | 53294 | .21061 | .39425 | -.459652 | -32.459652 | .00 | .00 |
| OCT | 21 | 53299 | .21298 | .38125 | -.461895 | -32.461895 | .00 | .00 |
| OCT | 26 | 53304 | .21439 | .36812 | -.464275 | -32.464275 | .00 | .00 |
| OCT | 31 | 53309 | .21479 | .35494 | -.466686 | -32.466686 | .00 | .00 |
| NOV | 5 | 53314 | .21421 | .34178 | -.469112 | -32.469112 | .00 | .00 |
| NOV | 10 | 53319 | .21264 | .32875 | -.471477 | -32.471477 | .00 | .00 |
| NOV | 15 | 53324 | .21010 | .31588 | -.473782 | -32.473782 | .00 | .00 |
| NOV | 20 | 53329 | .20662 | .30326 | -.475971 | -32.475971 | .00 | .00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NOV | 25 | 53334 | .20221 | .29098 | -.478016 | -32.478016 | .00 | .00 |
| NOV | 30 | 53339 | .19692 | .27909 | -.479908 | -32.479908 | .00 | .00 |

Note. In UT1R, the effects of zonal tides with periods shorter than 35 days are removed ; UT1-UT1R (smaller than 0.0025s in absolute value) should be added after quadratic interpolation of UT1R. Section 2 of this Bulletin gives the daily interpolation of x, y, UT1, duration of day, dX, and dY.

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2 - SMOOTHED VALUES OF x, y, UT1, D, dX, dY (IERS EVALUATION)
at one-day intervals. For smoothing characteristics, see Table2 in the explanatory supplement. The reference system is described in the 2003 IERS Annual Report.

| 2004 (0 h UTC) | | MJD | x " | y " | UT1-UTC s | UT1-UT1R ms | D ms | dX 0.001" | dY 0.001" |
|---|---|---|---|---|---|---|---|---|---|
| AUG | 2 | 53219 | .07551 | .51560 | -.453778 | .543 | .003 | .20 | -.55 |
| AUG | 3 | 53220 | .07836 | .51526 | -.453907 | .166 | .210 | .10 | -.26 |
| AUG | 4 | 53221 | .08114 | .51525 | -.454156 | -.349 | .285 | .02 | -.09 |
| AUG | 5 | 53222 | .08391 | .51494 | -.454435 | -.880 | .225 | .04 | -.10 |
| AUG | 6 | 53223 | .08661 | .51491 | -.454574 | -1.317 | .101 | .13 | -.12 |
| AUG | 7 | 53224 | .08887 | .51478 | -.454619 | -1.582 | -.006 | .20 | .05 |
| AUG | 8 | 53225 | .09182 | .51402 | -.454555 | -1.640 | -.154 | .23 | .28 |
| AUG | 9 | 53226 | .09482 | .51372 | -.454315 | -1.486 | -.364 | .23 | .33 |
| AUG | 10 | 53227 | .09743 | .51317 | -.453840 | -1.146 | -.558 | .23 | .13 |
| AUG | 11 | 53228 | .09973 | .51294 | -.453218 | -.666 | -.603 | .20 | -.18 |
| AUG | 12 | 53229 | .10293 | .51267 | -.452657 | -.107 | -.646 | .14 | -.37 |
| AUG | 13 | 53230 | .10568 | .51327 | -.451951 | .459 | -.636 | .10 | -.40 |
| AUG | 14 | 53231 | .10903 | .51347 | -.451410 | .955 | -.508 | .15 | -.30 |
| AUG | 15 | 53232 | .11143 | .51373 | -.450956 | 1.314 | -.366 | .25 | -.24 |
| AUG | 16 | 53233 | .11479 | .51341 | -.450692 | 1.483 | -.138 | .30 | -.24 |
| AUG | 17 | 53234 | .11732 | .51301 | -.450682 | 1.438 | .117 | .26 | -.24 |
| AUG | 18 | 53235 | .11978 | .51227 | -.450917 | 1.189 | .333 | .03 | -.27 |
| AUG | 19 | 53236 | .12206 | .51169 | -.451325 | .785 | .489 | .00 | -.23 |
| AUG | 20 | 53237 | .12440 | .51111 | -.451864 | .308 | .554 | .15 | -.21 |
| AUG | 21 | 53238 | .12648 | .51029 | -.452398 | -.142 | .474 | .16 | -.28 |
| AUG | 22 | 53239 | .12842 | .50932 | -.452781 | -.466 | .292 | .12 | -.37 |
| AUG | 23 | 53240 | .13019 | .50792 | -.452965 | -.589 | .099 | .14 | -.38 |
| AUG | 24 | 53241 | .13245 | .50628 | -.452979 | -.486 | -.078 | .19 | -.25 |
| AUG | 25 | 53242 | .13423 | .50494 | -.452831 | -.187 | -.250 | .25 | -.06 |
| AUG | 26 | 53243 | .13648 | .50378 | -.452519 | .215 | -.373 | .26 | .07 |
| AUG | 27 | 53244 | .13837 | .50245 | -.452130 | .591 | -.366 | .26 | .02 |
| AUG | 28 | 53245 | .14137 | .50131 | -.451826 | .810 | -.124 | .31 | -.18 |
| AUG | 29 | 53246 | .14363 | .50000 | -.451900 | .785 | .085 | .40 | -.34 |
| AUG | 30 | 53247 | .14699 | .49858 | -.451987 | .501 | .352 | .42 | -.29 |
| AUG | 31 | 53248 | .14962 | .49735 | -.452572 | .020 | .613 | .33 | -.08 |
| SEP | 1 | 53249 | .15226 | .49571 | -.453170 | -.544 | .602 | .19 | .11 |
| SEP | 2 | 53250 | .15502 | .49379 | -.453737 | -1.065 | .466 | .12 | .14 |
| SEP | 3 | 53251 | .15702 | .49215 | -.454073 | -1.437 | .289 | .13 | .07 |
| SEP | 4 | 53252 | .15946 | .48957 | -.454303 | -1.599 | .069 | .17 | -.04 |
| SEP | 5 | 53253 | .16158 | .48751 | -.454211 | -1.533 | -.245 | .16 | -.16 |
| SEP | 6 | 53254 | .16398 | .48477 | -.453823 | -1.257 | -.516 | .10 | -.28 |
| SEP | 7 | 53255 | .16525 | .48260 | -.453197 | -.817 | -.711 | .02 | -.37 |
| SEP | 8 | 53256 | .16762 | .48078 | -.452425 | -.274 | -.792 | -.04 | -.26 |
| SEP | 9 | 53257 | .16945 | .47883 | -.451638 | .298 | -.782 | .02 | -.14 |
| SEP | 10 | 53258 | .17188 | .47703 | -.450887 | .823 | -.657 | .17 | -.03 |
| SEP | 11 | 53259 | .17385 | .47520 | -.450347 | 1.227 | -.398 | .30 | .11 |
| SEP | 12 | 53260 | .17635 | .47309 | -.450108 | 1.452 | -.132 | .36 | .13 |
| SEP | 13 | 53261 | .17794 | .47070 | -.450091 | 1.460 | .160 | .36 | -.01 |
| SEP | 14 | 53262 | .17981 | .46842 | -.450424 | 1.246 | .453 | .28 | -.15 |
| SEP | 15 | 53263 | .18112 | .46608 | -.450978 | .845 | .627 | .19 | -.22 |
| SEP | 16 | 53264 | .18215 | .46379 | -.451645 | .336 | .680 | .10 | -.16 |
| SEP | 17 | 53265 | .18381 | .46138 | -.452299 | -.170 | .642 | .01 | -.05 |
| SEP | 18 | 53266 | .18492 | .45910 | -.452892 | -.561 | .447 | -.06 | -.01 |
| SEP | 19 | 53267 | .18660 | .45682 | -.453170 | -.745 | .163 | -.06 | -.08 |
| SEP | 20 | 53268 | .18796 | .45447 | -.453215 | -.685 | -.061 | .02 | -.22 |
| SEP | 21 | 53269 | .18984 | .45209 | -.453068 | -.408 | -.238 | .14 | -.33 |
| SEP | 22 | 53270 | .19167 | .44980 | -.452776 | .004 | -.319 | .23 | -.37 |
| SEP | 23 | 53271 | .19356 | .44805 | -.452475 | .427 | -.259 | .29 | -.38 |
| SEP | 24 | 53272 | .19496 | .44643 | -.452299 | .735 | -.072 | .36 | -.41 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SEP | 25 | 53273 | .19567 | .44483 | -.452355 | .829 | .180 | .00 | .00 |
| SEP | 26 | 53274 | .19588 | .44263 | -.452661 | .668 | .430 | .00 | .00 |
| SEP | 27 | 53275 | .19634 | .44083 | -.453195 | .281 | .654 | .00 | .00 |
| SEP | 28 | 53276 | .19716 | .43847 | -.453932 | -.243 | .804 | .00 | .00 |
| SEP | 29 | 53277 | .19795 | .43652 | -.454762 | -.786 | .782 | .00 | .00 |
| SEP | 30 | 53278 | .19805 | .43389 | -.455460 | -1.229 | .594 | .00 | .00 |



3 - NORMAL VALUES OF THE EARTH ORIENTATION PARAMETERS AT FIVE-DAY INTERVALS (IERS evaluation).

| | | Raw normal values | | | | | Uncertainties | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 (0 h UTC) | MJD | x " | y " | UT1-UTC s | dX 0.001" | dY | x 0.001" | y | UT1 0.0001s | dX 0.001" | dY |
| AUG 2 | 53219 | .07556 | .51564 | -.453773 | .236 | -.528 | .02 | .02 | .02 | .03 | .03 |
| AUG 7 | 53224 | .08886 | .51478 | -.454616 | .183 | .039 | .02 | .02 | .03 | .08 | .08 |
| AUG 12 | 53229 | .10293 | .51267 | -.452656 | .148 | -.321 | .02 | .02 | .01 | .03 | .03 |
| AUG 17 | 53234 | .11733 | .51301 | -.450680 | .266 | -.176 | .02 | .02 | .02 | .04 | .03 |
| AUG 22 | 53239 | .12841 | .50932 | -.452782 | .103 | -.321 | .02 | .02 | .02 | .03 | .03 |
| AUG 27 | 53244 | .13839 | .50243 | -.452127 | .225 | -.096 | .02 | .02 | .02 | .05 | .05 |
| SEP 1 | 53249 | .15226 | .49569 | -.453171 | .114 | .042 | .02 | .02 | .01 | .04 | .04 |
| SEP 6 | 53254 | .16399 | .48478 | -.453823 | .147 | -.204 | .02 | .02 | .01 | .06 | .06 |
| SEP 11 | 53259 | .17384 | .47521 | -.450346 | .349 | .046 | .02 | .02 | .02 | .05 | .06 |
| SEP 16 | 53264 | .18214 | .46380 | -.451644 | .092 | -.152 | .02 | .02 | .02 | .02 | .03 |
| SEP 21 | 53269 | .18984 | .45209 | -.453068 | - | - | .02 | .02 | .06 | - | - |
| SEP 26 | 53274 | .19588 | .44262 | -.452658 | - | - | .02 | .02 | .03 | - | - |

4 - DURATION OF THE DAY AND ANGULAR VELOCITY OF THE EARTH (IERS evaluation).
The data of this section are smoothed, with the same characteristics as UT1R in section 1. They are corrected for the effects of zonal tides with periods up to 35 days. Section 2 gives the daily interpolation of D.

| Date (0h UTC) 2004 | MJD | DR s | OmegaR (microrad/s) | |
|---|---|---|---|---|
| AUG 2 | 53219 | -.00028 | 72.921 | 15170 |
| AUG 7 | 53224 | -.00018 | | 15162 |
| AUG 12 | 53229 | -.00008 | | 15153 |
| AUG 17 | 53234 | -.00004 | | 15150 |
| AUG 22 | 53239 | .00006 | | 15141 |
| AUG 27 | 53244 | -.00005 | | 15151 |
| SEP 1 | 53249 | .00005 | | 15143 |

5 - INFORMATION ON TIME SCALES
No leap second was introduced in UTC on 30 June 2004.
No leap second will be introduced in UTC on 31 December 2004.
All information concerning time scales : announcements of the leap seconds (Bulletin C) and of the value of DUT1 (Bulletin D) can be found in our web/ftp site :

World Wide Web : http://hpiers.obspm.fr
Anonymous ftp : hpiers.obspm.fr or 145.238.100.28



6 - SUMMARY OF CONTRIBUTED EARTH ORIENTATION PARAMETERS SERIES
This section gives the average precision of the individual series contributing to the combination and their average agreement with it. The periods covered start at the beginning of the first month in Section 1 and end with

the last available value in the individual series considered.

Units : 0.001" for x,y , 0.0001s for UT1, 0.001" for dX, dY.

| EOP series<br>Periods covered | Mean formal uncertainty<br>Weighted RMS agreement with Bulletin B | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | x | y | UT | D | dX | dY | Data | Number |
| VLBI | | | | | | | | |
| EOP(AUS) 1 R 01 | .09 | .09 | .04 | - | - | - | | 12 |
| 53220.20 to 53258.27 | .12 | .26 | .02 | - | - | - | | |
| EOP(BKG) 3 R 04 | .12 | .11 | .04 | - | - | - | | 14 |
| 53220.20 to 53265.27 | .27 | .25 | .06 | - | - | - | | |
| EOP(BKG) 3 R 02 | - | - | .11 | - | - | - | | 47 |
| 53219.79 to 53276.79 | - | - | .19 | - | - | - | | |
| EOP(GSFC) 4 R 02 | .16 | .18 | .08 | - | - | - | | 16 |
| 53220.20 to 53272.27 | .24 | .10 | .06 | - | - | - | | |
| EOP(GSFC) 4 R 01 | - | - | .13 | - | - | - | | 36 |
| 53219.79 to 53275.79 | - | - | .19 | - | - | - | | |
| EOP(IAA) 3 R 04 | .11 | .10 | .04 | - | .16 | .07 | 13 | |
| 53220.20 to 53265.27 | .18 | .14 | .08 | - | .16 | .07 | | |
| EOP(IAA) 3 R 03 | - | - | .12 | - | - | - | | 57 |
| 53219.79 to 53274.33 | - | - | .18 | - | - | - | | |
| EOP(SPBU) 3 R 03 | .37 | .39 | .22 | - | - | - | | 13 |
| 53220.20 to 53265.27 | .21 | .13 | .09 | - | - | - | | |
| EOP(SPBU) 2 R 01 | - | - | .14 | - | - | - | | 35 |
| 53219.79 to 53271.79 | - | - | .16 | - | - | - | | |
| EOP(MAO) 3 R 01 | .11 | .11 | .04 | - | .18 | .07 | 14 | |
| 53220.25 to 53265.28 | .19 | .19 | .10 | - | .43 | .20 | | |
| EOP(USNO) 4 R 01 | .10 | .09 | .03 | - | - | - | | 13 |
| 53220.20 to 53265.27 | .14 | .11 | .06 | - | - | - | | |
| EOP(IVS) 0 R 01 | .09 | .09 | .04 | - | - | - | | 14 |
| 53220.00 to 53265.00 | .20 | .14 | .09 | - | - | - | | |
| GPS | | | | | | | | |
| EOP(CODE) 98 P 01 | .01 | .01 | - | .27 | - | - | | 59 |
| 53219.50 to 53277.50 | .05 | .04 | - | .25 | - | - | | |
| EOP(EMR) 96 P 03 | .03 | .03 | - | .04 | - | - | | 59 |
| 53219.50 to 53277.50 | .06 | .11 | - | .60 | - | - | | |
| EOP(ESOC) 96 P 01 | .02 | .02 | - | .06 | - | - | | 59 |
| 53219.50 to 53277.50 | .07 | .08 | - | .85 | - | - | | |
| EOP(GFZ) 96 P 02 | .01 | .01 | - | .01 | - | - | | 59 |
| 53219.50 to 53277.50 | .05 | .05 | - | .25 | - | - | | |
| EOP(IAA) 1 P 01 | .03 | .03 | - | .06 | - | - | | 59 |
| 53219.50 to 53277.50 | .15 | .18 | - | .63 | - | - | | |
| EOP(JPL) 96 P 03 | .02 | .02 | - | .12 | - | - | | 59 |
| 53219.50 to 53277.50 | .07 | .06 | - | .25 | - | - | | |
| EOP(NOAA) 96 P 01 | .01 | .01 | - | .02 | - | - | | 54 |
| 53219.50 to 53272.50 | .17 | .20 | - | .32 | - | - | | |
| EOP(SIO) 96 P 01 | .05 | .05 | - | .12 | - | - | | 59 |
| 53219.50 to 53277.50 | .06 | .07 | - | .63 | - | - | | |
| EOP(IGS F)95 P 02 | .02 | .02 | .09 | .05 | - | - | | 48 |
| 53219.50 to 53266.50 | .06 | .07 | .24 | .22 | - | - | | |
| EOP(IGS R)96 P 02 | .03 | .03 | .19 | .06 | - | - | | 59 |
| 53219.50 to 53277.50 | .12 | .07 | .45 | .23 | - | - | | |
| EOP(IERS) 97 P 01 | .03 | .04 | .23 | .15 | - | - | | 59 |
| 53219.50 to 53277.50 | .04 | .03 | .31 | .21 | - | - | | |
| SLR | | | | | | | | |
| EOP(ASI) 3 L 02 | .07 | .07 | - | .16 | - | - | | 51 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 53219.50 to 53269.50 | .29 | .31 | - | .80 | - | - | |
| EOP(CSR) 95 L 01 | .34 | .41 | .27 | - | - | - | 20 |
| 53219.61 to 53276.62 | .33 | .32 | .83 | - | - | - | |
| EOP(IAA) 2 L 01 | .04 | .04 | .03 | .03 | - | - | 60 |
| 53219.00 to 53278.00 | .30 | .21 | .29 | .17 | - | - | |
| EOP(MCC) 97 L 01 | .05 | .05 | - | .10 | - | - | 53 |
| 53219.00 to 53271.00 | .23 | .13 | - | .55 | - | - | |
| Bulletin A | | | | | | | |
| EOP(NEOS) 97 C 01 | .07 | .06 | .09 | - | - | - | 60 |
| 53219.00 to 53278.00 | .14 | .11 | .30 | - | - | - | |