

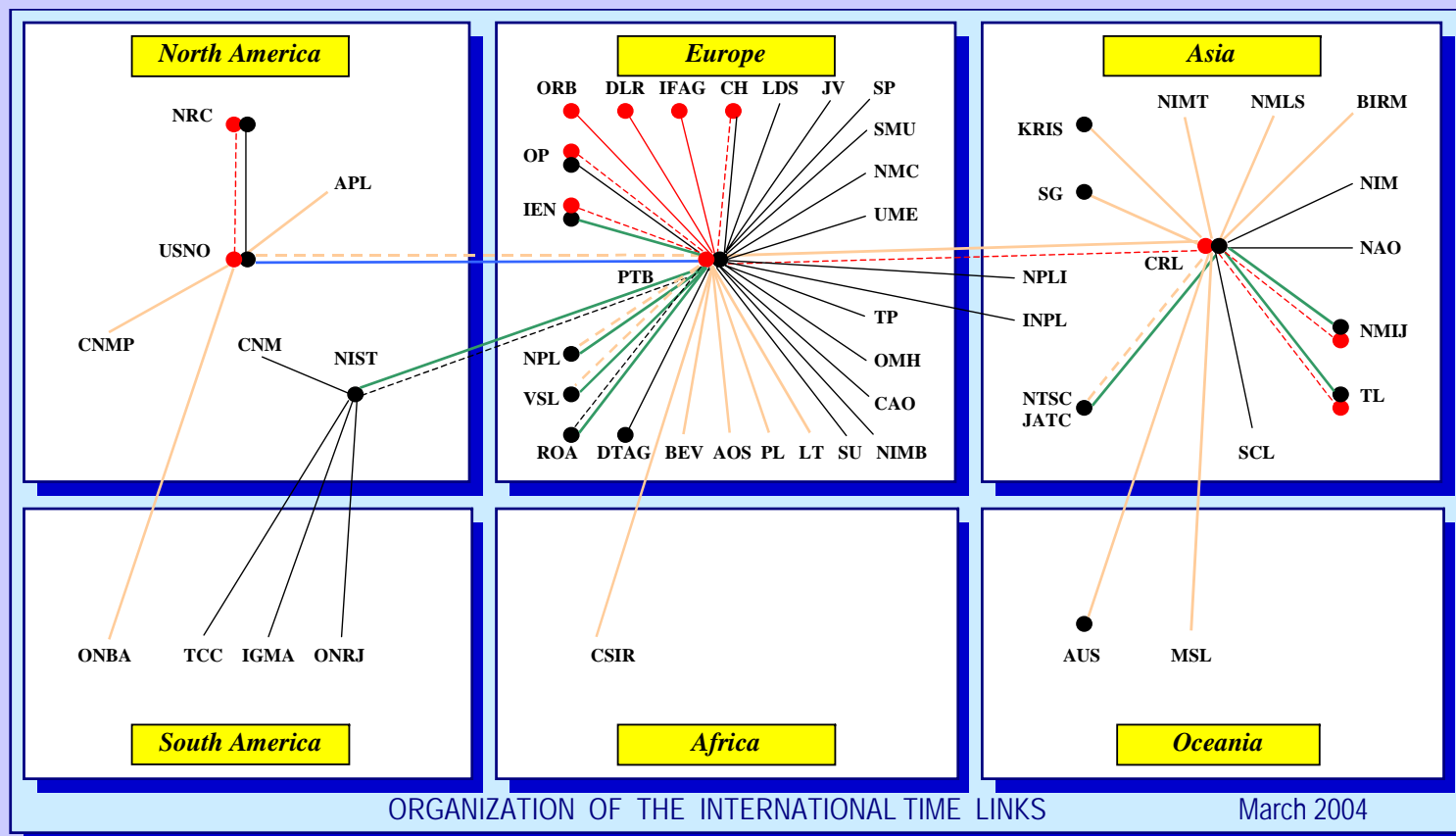
BIPM Comparison of Time Transfer Techniques

BIPM Time section

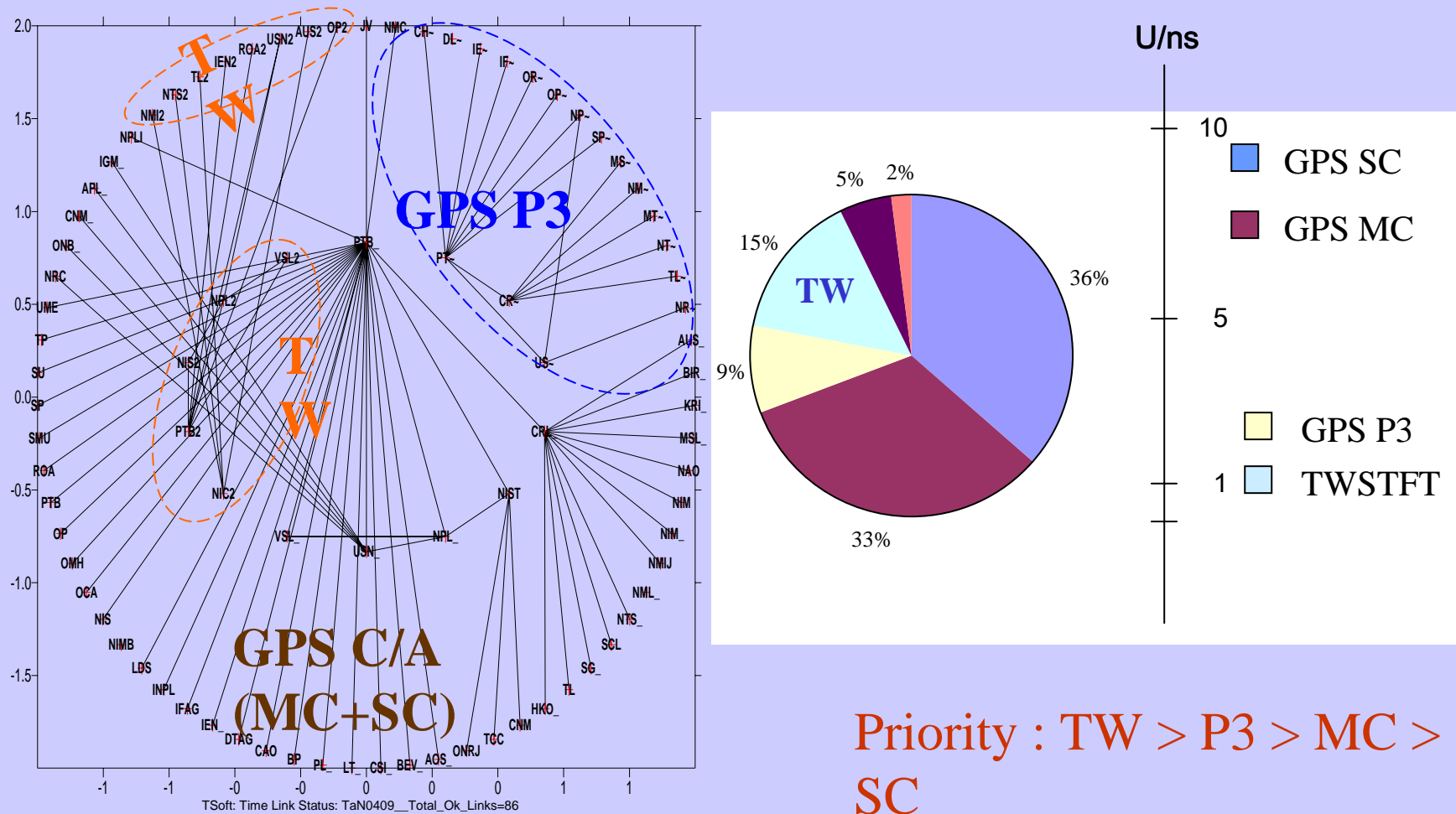
Basic Considerations

- Publish the main results of the time links computed for TAI.
- Include all comparisons between different techniques.
- Monthly updates of the BIPM ftp “*TimeLink*” Site.
- For information only. Not an official source for the data used in actual computations used in TAI.
- The results are arranged on [ftp://maia.bipm.fr](#) or [http://maia.bipm.fr](#) under the main directory “TimeLink/LkC” with one sub-directory for each month YYMM
- Data available since Jan. 2005, announced 12 July 05 to WG and SG chairs

International time links



TAI Time Links Status










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Main Directory: ... \TimeLink\LkC

Index of ftp://tai.bipm.org/TimeLink/LkC/

[Up to higher level directory](#)

 0501	12/07/2005 09:51:00
 0502	20/07/2005 16:18:00
 0503	20/07/2005 16:17:00
 0504	12/07/2005 09:56:00
 0505	12/07/2005 10:01:00
 0506	20/07/2005 16:20:00
 ReadMe LinkComparison ftp v6.doc	172 KB 12/07/2005 11:47:00

- **YYMM : Monthly data**
- **Read me file**

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ReadMe_LinkComparison_ftp_v6.doc

BIPM TAI Time Link Comparison on ftp

Last edit: 27 May 2005
Contact: tai@bipm.org

This is the Read Me file of the ftp site on the TAI time link results calculated by the BIPM Time Section. The comparison results since January 2005 are published each month after the BIPM Circular T in <http://tai.bipm.org/TimeLink/LkC>

1. Introduction and directory structure

The monthly comparisons are in \LkC\YYMM where YYMM corresponds to the year and month of the calculated Circular T, for example, 0501 is for 2005 January. They contain plots and data files for link values and link comparisons for all measurement dates. See section 2.

The general directory tree looks like:

<http://tai.bipm.org/TimeLink/LkC>

```
ReadMe
|
+---0501      : results for 2005 January
|   |         | Dlk0501.sum
|   |         |
|   |         | +-Lab2Lab1: results for link Lab2-Lab1 of 0501
|   |         |   +-Dlk: Link comparisons for Lab2-Lab1
|   |         |   +-Lnk: Link results for Lab2-Lab1
|   |         | +- ... ..
|   |         |
+---0502      : results for 2005 February
|   |         |
|   |         | ... ..
|   |         |
```

A link, Lab2Lab1 is always defined as: $Link = UTC(Lab2) - UTC(Lab1)$. Here Lab1 is usually the so called pivot laboratory.

A comparison of links is always defined as $dLink = Link1 - Link2$
By default, the unit for all the tables and plots is 1 ns.

In the present version, the link comparisons concern all links for which Two Way time transfer is available. Comparisons between the Two Way link and all other available GPS links are presented. In addition, for each type of GPS link, the comparison between the "Common view" and "All in view" computations is presented.














The link results are computed without any time or receiver jumps introduced.

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Sub-Directory: \YYMM\

Index of ftp://tai.bipm.org/TimeLink/LkC/0502

[Up to higher level directory](#)

 Dlk0502.SUM	9 KB	11/07/2005	12:13:00
 IENPTB		12/07/2005	09:53:00
 NISTPTB		12/07/2005	09:53:00
 NMIJNICT		12/07/2005	09:53:00
 NPLNIST		12/07/2005	09:53:00
 NPLPTB		12/07/2005	09:53:00
 NPLVSL		12/07/2005	09:53:00
 OPPTB		12/07/2005	09:53:00
 ROAPTB		12/07/2005	09:53:00
 TLNICT		12/07/2005	09:54:00
 USNONPL		12/07/2005	09:54:00
 USNOPTB		12/07/2005	09:54:00
 VSLPTB		12/07/2005	09:54:00

- **DlkYYMM.SUM** : Summary of link comparison statistics
- **SSSSTTTT** : Results for the link SSSS to TTTT

Summary link comparison statistics

\TimeLink\0502\DIk0502.SUM

```

----- X:\TAN\RAW\T31645.OUT
Combined dLink Statistic NMIJNICT.TPTC5 : N, Min, Max, Mean, RMS, SD= 27 -39.167 -36.735 -38.169 38.174 0.598
Comments. None
Combined dLink Statistic NMIJNICT.TSTC5 : N, Min, Max, Mean, RMS, SD= 27 2.721 6.636 4.497 4.622 1.070
Comments. None
Combined dLink Statistic NMIJNICT.TPTA5 : N, Min, Max, Mean, RMS, SD= 27 -39.022 -36.767 -38.151 38.155 0.556
Comments. None
Combined dLink Statistic NMIJNICT.TSTA5 : N, Min, Max, Mean, RMS, SD= 27 3.933 8.040 5.681 5.780 1.067
Comments. None
Combined dLink Statistic TLNICT.TPTC5 : N, Min, Max, Mean, RMS, SD= 18 -5.941 -3.817 -4.626 4.655 0.521
Comments. Some inconsistency in TW data points on MJD 53430.
Combined dLink Statistic TLNICT.TSTC5 : N, Min, Max, Mean, RMS, SD= 18 46.269 53.068 50.172 50.211 1.984
Comments. Some inconsistency in TW data points on MJD 53430.
Combined dLink Statistic TLNICT.TPTA5 : N, Min, Max, Mean, RMS, SD= 18 -6.017 -3.817 -4.695 4.730 0.576
Comments. Some inconsistency in TW data points on MJD 53430.
Combined dLink Statistic TLNICT.TSTA5 : N, Min, Max, Mean, RMS, SD= 18 47.919 55.644 51.971 52.011 2.047
Comments. Some inconsistency in TW data points on MJD 53430.
Combined dLink Statistic IENPTB.TPTC5 : N, Min, Max, Mean, RMS, SD= 128 -24.872 -15.422 -20.961 21.050 1.938
Comments. Data gaps in GPS P3 around MJD 53414 and 53429.
Combined dLink Statistic IENPTB.TMTC5 : N, Min, Max, Mean, RMS, SD= 128 -4.439 4.782 -0.809 2.027 1.858
Comments. None
Combined dLink Statistic IENPTB.TPTA5 : N, Min, Max, Mean, RMS, SD= 128 -25.015 -15.427 -20.981 21.071 1.945
Comments. Data gaps in GPS P3 around MJD 53414 and 53429.
Combined dLink Statistic IENPTB.TMTA5 : N, Min, Max, Mean, RMS, SD= 128 -4.621 4.795 -0.894 2.047 1.841
Comments. None
  
```

File name:
Identifies
comparison



Mean/ns
Std
Dev.

Sub-Directory \YYMM\SSSSSTTTT

-- Results and plots for link SSSS to TTTT--

Index of ftp://tai.bipm.org/TimeLink/LkC/0502/NMIJNICT/

[Up to higher level directory](#)

 Dlk	12/07/2005 09:53:00
 Lnk	12/07/2005 09:53:00

**Dlk: Results of comparisons between techniques
(plots and data files)**






Lnk: Results of link computations (plots)

Sub-Directory \YYMM\SSSSTTTT\Lnk

-- Results for link SSSS to TTTT--

Index of ftp://tai.bipm.org/TimeLink/LkC/0502/NMIJNICT/Lnk

[Up to higher level directory](#)

 NMIJNICT.PPPA .Gif	30 KB	15/04/2005	13:21:00
 NMIJNICT.PPPC .Gif	30 KB	15/04/2005	13:22:00
 NMIJNICT.SMSA .Gif	29 KB	15/04/2005	13:21:00
 NMIJNICT.SMSC .Gif	29 KB	15/04/2005	13:22:00
 NMIJNICT.TTTT .Gif	15 KB	15/04/2005	13:22:00













Extension of file name identifies the link computation technique

Sub-Directory \YYMM\SSSS\TTTT\DIK

-- Comparison of techniques for link SSSS to TTTT--

Index of ftp://tai.bipm.org/TimeLink/LkC/0502/NMIJNICT/DIk

[Up to higher level directory](#)

 NMIJNICT.PPCAS	366 KB	15/04/2005	13:21:00
 NMIJNICT.PPCAS.Gif	24 KB	15/04/2005	13:24:00
 NMIJNICT.SSCAS	196 KB	15/04/2005	13:21:00
 NMIJNICT.SSCAS.Gif	21 KB	15/04/2005	13:24:00
 NMIJNICT.TPTAS	5 KB	15/04/2005	13:21:00
 NMIJNICT.TPTAS.Gif	16 KB	15/04/2005	13:23:00
 NMIJNICT.TPTCS	5 KB	15/04/2005	13:21:00
 NMIJNICT.TPTCS.Gif	15 KB	15/04/2005	13:23:00
 NMIJNICT.TSTAS	5 KB	15/04/2005	13:21:00
 NMIJNICT.TSTAS.Gif	15 KB	15/04/2005	13:23:00
 NMIJNICT.TSTCS	5 KB	15/04/2005	13:21:00
 NMIJNICT.TSTCS.Gif	15 KB	15/04/2005	13:23:00

TW vs. GPS (All-in-View and Common-view)

GPS All-in-View vs. Common-view

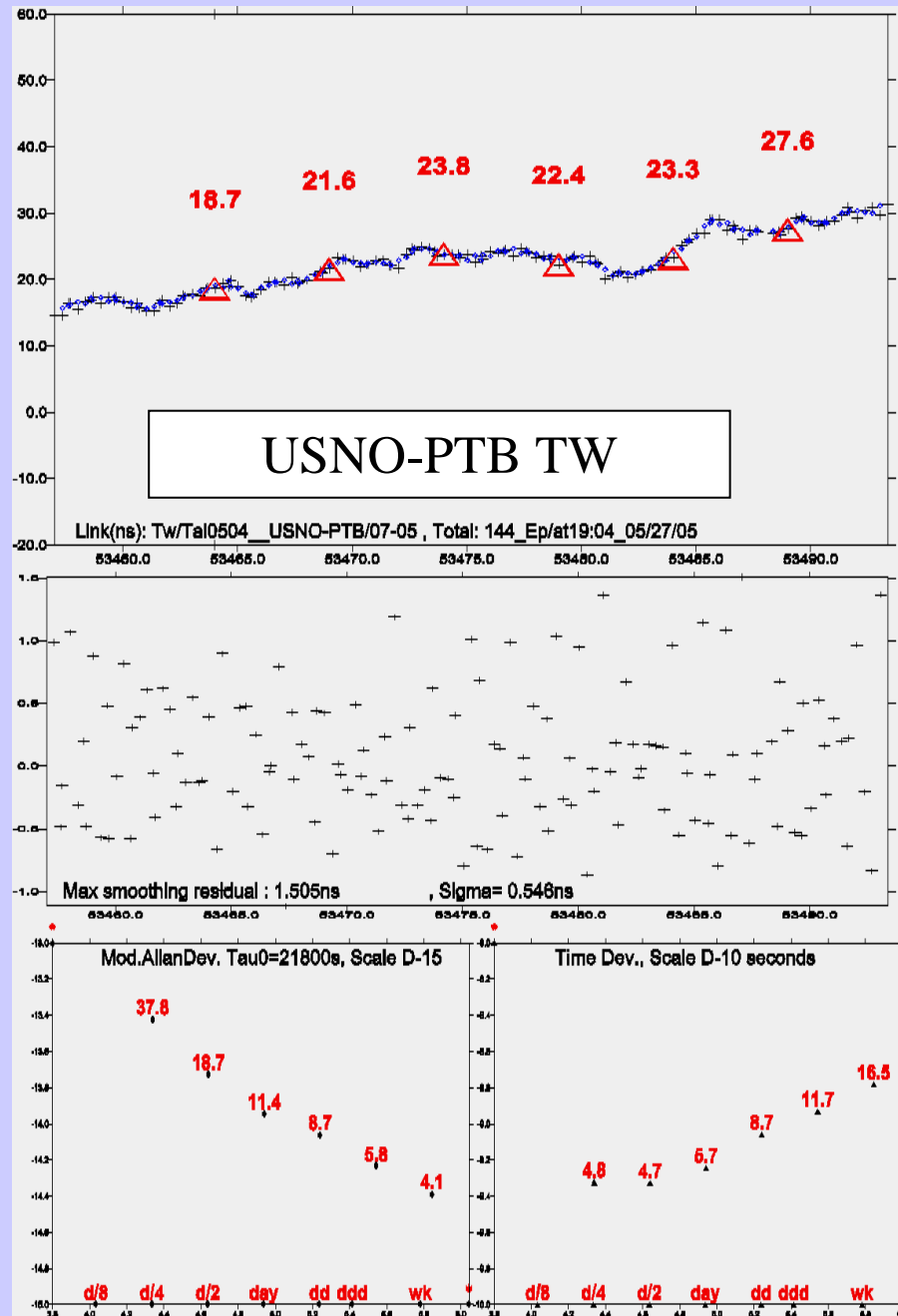
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Comparison TW to P3 All-in-view (ASCII)

```

! 0502      Mjd      Link1      Link2      dLink      Jump1      Jump2      dLink_      X:\Tan\0502\D1k\NMIJNICT.TPTA3
  1 53398.0614      0.580      38.950     -38.370      0.000      0.000     -38.370
  2 53398.0670      0.600      38.952     -38.352      0.000      0.000     -38.352
  3 53402.0593      0.510      38.119     -37.609      0.000      0.000     -37.609
  4 53402.0642      0.640      38.106     -37.466      0.000      0.000     -37.466
  5 53402.0698      1.200      38.091     -36.891      0.000      0.000     -36.891
  6 53405.0684      1.540      39.284     -37.744      0.000      0.000     -37.744
  7 53405.0739      2.490      39.257     -36.767      0.000      0.000     -36.767
  8 53409.0614      2.280      40.540     -38.260      0.000      0.000     -38.260
  9 53409.0670      1.970      40.561     -38.591      0.000      0.000     -38.591
 10 53409.0718      1.970      40.578     -38.608      0.000      0.000     -38.608
 11 53416.0593     -5.320      33.005     -38.325      0.000      0.000     -38.325
 12 53416.0656     -5.840      32.996     -38.836      0.000      0.000     -38.836
 13 53416.0705     -5.850      32.989     -38.839      0.000      0.000     -38.839
 14 53416.0760     -6.040      32.982     -39.022      0.000      0.000     -39.022
 15 53419.0600     -1.880      36.497     -38.377      0.000      0.000     -38.377
 16 53419.0656     -1.750      36.517     -38.267      0.000      0.000     -38.267
 17 53419.0705     -1.820      36.534     -38.354      0.000      0.000     -38.354
 18 53419.0760     -1.490      36.554     -38.044      0.000      0.000     -38.044
 19 53423.0600      4.630      42.879     -38.249      0.000      0.000     -38.249
 20 53423.0656      4.230      42.895     -38.665      0.000      0.000     -38.665
 21 53423.0711      4.240      42.911     -38.671      0.000      0.000     -38.671
 22 53426.0607     13.220      51.030     -37.810      0.000      0.000     -37.810
 23 53426.0656     13.620      51.019     -37.399      0.000      0.000     -37.399
 24 53426.0774     13.240      50.993     -37.753      0.000      0.000     -37.753
 25 53430.0614     11.290      49.531     -38.241      0.000      0.000     -38.241
 26 53430.0663     11.000      49.542     -38.542      0.000      0.000     -38.542
 27 53430.0718     11.540      49.554     -38.014      0.000      0.000     -38.014
! 0502      Mjd      Link1      Link2      dLink      Jump1      Jump2      dLink_      X:\Tan\0502\D1k\NMIJNICT.TPTA3
! Combined dLink Statis. NMIJNICT.TPTA5: N,Min,Max,Mean,RMS,SD= 27  -39.022  -36.767  -38.151  38.155  0.556

```



A complete example of link comparison

USNO-PTB with plots (TAI0504 Avril 2005)

Between:

TW (4 points/Day)

GPS MC CV
GPS MC AV

GPS P3 CV
GPS P3 AV

In the ftp, the plot looks like this

