UTC at CfA and Environs

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Smithsonian Astrophysical Observatory

SAO-associated Observatories

- Submillimeter Array
- Optical Observatories (MMT)
- Spitzer/IRAC
- Chandra X-ray Observatory
- VERITAS

  - PanStarrs
  - Solar High Energy

Radio

- SMA:
  - Clock: GPS
  - Leap seconds and DUT1: IERS

- No impact

Optical

- Not sensitive to UTC definition

- But prefer a time scale that remains close to UT1:
  - Safer and prevents confusion

Chandra

- Space-based
- Use of UTC is a bit absurd
- Leap second insertion procedure is ad hoc:
  - While no science operations are ongoing
  - During upload of new ephemeris
  - Certainly not when it is supposed to happen
- Even so, there are always problems
- On the other hand: much legacy software on FOT side
- All science data tagged with TT

VERITAS

- Uses GPS clock

- Claims it delivers DUT as well

- Pulsar community will adopt same set-up

- Precision: 10 μs

Minor Planet Center

- Converts all times to TT

- Prefers UTC to stay close to UT1:
  - To reduce chances of confusion

Virtual Observatory

- Problematic
- In principle, standards should take care of proper use of time
- But the varied collection of data providers does not ensure that all will get it right – or know their assumptions

AAVSO

- Arne Henden says:

    - Dropping leap seconds should not be a problem

    - But don't fix it if it ain't broke

Standards

- We are involved in two time-related standards protocols:
  - FITS WCS on Time – 2012 (?)
  - IVOA Space-Time Coordinate metadata – 2007

- Both are agnostic with respect to constraints on the value of DUT1

Accurate Timing

- |DUT1| < 0.9 s ensures:

  - Timing accuracy better than $1.5 \times \cos(latitude)$ μs if one assumes UTC = UT1

  - This will not hold any more if |DUT1| is allowed to exceed 0.9 s

Bottom Line

- Clear preference to leave things as they are, because of considerable apprehension

- Even though no great problems are expected (but who knows?)

- And even though it would simplify life for Chandra

Final Comment

- As others have said already:

- Why yet another linear time scale, with constant offset, like TAI, TT, and, within certain limits, GPS?

- Preference to distribute TAI, DTAI, and DUT1