

CDF New Time Variable

- Current CDF_EPOCH time scheme is nominally continuous Gregorian time from 0AD with no leap seconds or defined coordinate system (ms or ps resolution).
- New CDF data type, CDF_TIME_TT2000 includes leap seconds
 - 8-byte signed integer of nanoseconds from a fixed Time_Base=J2000
 - Julian date 2451545.0 TT or 2000 January 1, 12h TT
 - Resolution=nanoseconds, Time_Scale=Terrestrial Time (TT), Units=nanoseconds, Reference_Position=rotating Earth Geoid.
 - Sufficient precision for nanosecond accuracy $\pm \sim 250$ years from J2000
 - Given a current list of leap seconds, conversion between TT and UTC is straightforward
 - $TT = TAI + 32.184s$; $TT = UTC + \text{deltaAT} + 32.184s$, where deltaAT is the sum of the leap seconds since 1960; for example, for 2009, deltaAT = 34s
 - See writeups under Announcements on <http://cdf.gsfc.nasa.gov>

CDF Schedule

- Version 3.3.1
 - Multiple bug and security fixes, extended OS and platform support, extensive pre-release (beta) test period
 - Final release in June 2011
- Version 3.3.2/3.3.3
 - Includes support for leap seconds via `cdf_timeTT2000` datatype and `CDF_INT8`
 - Series of incremental “beta” releases (3.3.2Bn) for additional languages
 - C, Fortran, Java, SKTeditor (B1, 5/11)
 - IDL (B2, 7/11); post as pre-alpha release on CDF website week of July 11th
 - Perl, C# (B3, 9/11); MATLAB (B4, 10/11)
 - When all incremental releases are done, complete release as version 3.3.3
- Version 3.4
 - 3.3.3 plus re-implementation of several data compression functions
 - ZLib library license to match NASA open source license (vs GNU license)
 - Full and fully tested release in Winter 2012

New CDF_TT2000 IDL Routines

CDF_TT2000: similar to CDF_EPOCH

CDF_PARSE_TT2000: similar to CDF_PARSE_EPOCH

CDF_ENCODE_TT2000: similar to CDF_ENCODE_EPOCH

CDF_EPOCH_TOJULDATES: convert a single or array of epochs (in CDF_EPOCH, CDF_EPOCH16 or CDF_TIME_TT2000) to date/time in integers or string.

CDF_EPOCHS_COMPARE: expanded from CDF_EPOCH_COMPARE. Compare a single or array of source epoch(s) (in CDF_EPOCH, CDF_EPOCH16 or CDF_TIME_TT2000) against a single or array of base epoch(s)

CDF_EPOCHS_DIFF: Expanded from CDF_EPOCH_DIFF. Compute the difference(s) of a single or array of epoch(s) (in CDF_EPOCH, CDF_EPOCH16 or CDF_TIME_TT2000) against a single or array of base epoch(s)

CDF_LEAPSECONDS_INFO: get the leap seconds table info.