EARTH OBSERVATION MISSION CFI SOFTWARE

Release Notes - Version 4.1

1 INTRODUCTION

This note describes the changes introduced in the new release of the Earth Observation CFI software libraries.

2 NEW RELEASE DESCRIPTION

2.1 CFI Software and Documentation Delivery

The new versions of the CFI software libraries are the following:

- EO_FILE_HANDLING -- Version 4.1 - 07/05/10
- EO_DATA_HANDLING -- Version 4.1 - 07/05/10
- EO_LIB -- Version 4.1 - 07/05/10
- EO_ORBIT -- Version 4.1 - 07/05/10
- EO_POINTING -- Version 4.1 - 07/05/10
- EO_VISIBILITY -- Version 4.1 – 07/05/10

The CFI software libraries are available for download at the following URL (registration required):

http://eop-cfi.esa.int/CFI/eo_cfi_software.html

The following Software User Manuals have been updated accordingly:

- EO_FILE_HANDLING issue 4.1
- EO_DATA_HANDLING issue 4.1
- EO_LIB issue 4.1
- EO_ORBIT issue 4.1
- EO_POINTING issue 4.1
- EO_VISIBILITY issue 4.1
- GENERAL issue 4.1

The CFI software User Manuals are available for download at the following URL:

http://eop-cfi.esa.int/CFI/EO_CFI_DOCS/4.1/

2.2 Compilation software and platform

This release of the CFI libraries are provided for SOLARIS, LINUX, MACOS and WINDOWS platforms.

- SOLARIS (32-bits):
  - Solaris 5.7 (or later) Operating System
  - gcc compiler version 4.2.2 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later
- SOLARIS (64-bits):
  - Solaris 5.9 (or later) Operating System
  - gcc compiler version 4.2.2 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later
- LINUX (32-bits):
  - Linux 2.6.16 Operating System
  - gcc compiler version 4.2.2 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later
- LINUX (64-bits):
  - Linux 2.6.16 Operating System
  - gcc compiler version 4.2.2 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later
- PC WINDOWS:
  - Microsoft Windows 2000 or XP Operating Systems.
  - Microsoft Visual C++ 8.0 Compiler (for linking the software to a C application)
  - libxml2 version 2.6.20 or later (including iconv-1.9.1 and zlib-1.2.3)
- MACOSX (32-bits):
  - Mac OS X version 10.4.6
  - gcc compiler version 4.2.1 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later
- MACOSX (64-bits):
  - Mac OS X version 10.4.6
  - gcc compiler version 4.2.1 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later
- MACOSX on Intel (32-bits):
  - Mac OS X version 10.4.11
  - gcc compiler version 4.2.1 (for linking the software to a C application)

  - libxml2 version 2.6.22 or later
- MACOSX on Intel (64-bits):
  - Mac OS X version 10.4.11
  - gcc compiler version 4.2.1 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later

Note that the distributed binaries have been generated with no debug.

2.3 Installation packages

The CFI libraries are provided in different packaging formats depending on the platform:

• Compressed (gzip) tar files are provided for SOLARIS, SOLARIS 64-bit, LINUX and LINUX 64-bit:

  - EOCFI_4_1_SOLARIS32.tar.gz
  - EOCFI_4_1_SOLARIS64.tar.gz
  - EOCFI_4_1_LINUX32.tar.gz
  - EOCFI_4_1_LINUX64.tar.gz

• WINDOWS installation program: EOCFI_4_1_WINDOWS.exe

• MAC OS X PPC installation program: EOCFI_4_1_MACOS32.dmg

• MAC OS X PPC 64-bit installation program: EOCFI_4_1_MACOS64.dmg

• MAC OS X Intel installation program: EOCFI_4_1_MACIN32.dmg

3 NEW FEATURES

The following new features have been implemented (see section “Known Problems” at the end of each of the SUMs to check limitations of the current release):

- EO_DATA_HANDLING:
  - GETASSEv2 DEM supported
  - IERS B Bulletin format 2010 reading supported
  - Ground Station DB 1.4 file reading supported
- EO_LIB:
  - Time initialization with list of files
  - Time initialization with OSF
- EO_ORBIT:

  - Time correlation compatibility check between time_id and orbit file data
- EO_POINTING:
  - Pointing functions support DEM GETASSEv2
  - Sentinel-1 attitude model (roll steering)
  - Instrument offsets for attitude computations
- EO_VISIBILITY:
  - AOS/LOS mask mode from Ground Station DB 1.4 file
  - Visibility across orbital changes

Note: The supported DEM files can be downloaded from the following URL:

GESTASSE v1: http://eop-cfi.esa.int/eo_cfi_distribution/DEM/GETASSE30_2004

GESTASSE v2: http://eop-cfi.esa.int/eo_cfi_distribution/DEM/GETASSE30_2008

4 CLOSED ANOMALIES

4.1 Software Problems

The following Software Problems have been fixed:

Anomaly ID	Description
351	xl_time_ref_init_file: Although the interface of admits a list of files, the function only reads the first one.
356	xp_attitude_compute: Quaternion interpolation (SLERP): use the smallest angle
357	xp_attitude_compute: Quaternion interpolation (SLERP): perform linear interpolation when q0 is close to q1.
358	xp_attitude_compute: Quaternion interpolation (SLERP): the interpolated quaternion is not normalized
360	explorer_orbit: Initialisation of propagator ID in TLE mode fails if the TLE file is composed of more than one entry.
361	explorer_orbit: Initialisation of propagator ID in TLE mode + AUTO mode fails if the TLE file is composed of more than one entry.
362	explorer_orbit: Using xo_gen_tle: when the orbpre file contains more than one OSV per orbit
363	Error in Validating POF with schema version <Earth_Explorer_File xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" [^] xsi:schem...
365	The filename generated by the function xo_gen_oef is not correct
366	Combination Repeat cycle / cycle length: 4 days and 62 orbits should not be allowed
367	ASAR Geometry format incorrect in DATA_HANDLING SUM and SDF schema

370	xo_get_orbit_osv_compute_validity does not return the correct validity time interval
371	XO_Propag_config function not available in header file
374	Problems with orbit<->timefunctions when working with precise propagator (never ending loop)
375	Error message when calling xv_zone_vis_time(_no_file) with a three points swath over northern zones: EXPLORER_VISIBILITY...
378	xv_drsvistime problem coming from ENVCFI (AN 120)
380	Osv structure: Reference frame enumeration is not correct
387	It is not possible to generate an orbit file / swath file for sat_id Sentinel's, Seosat, Generic
389	Memory leak in xv_station_vis_time_no_file (Some memory is being allocated and never released)
390	The functions xv_zone_vis_time(_no_file) exit with segmentation fault under the following conditions: - orbit_id initial...
391	a) Increase the maximum allowed value for the the input cycle length b) The units are not correct in the MLST check: v...
396	xv_station_vis_time / xv_station_vis_time_no_file: The maximum number of [az, el] mask elements is 360. However Maximum number of points defining a station mask is XD_VER...
397	Problem in the propagation within stationvistime when using a small number of mask points (3)
401	The offsets for instrument frame are not taken into account in xp_attitude_compute.
411	the xo_time_to_orbit cfi function. In some special conditions, it returns a negative number of microseconds.
412	xp_target_inter: In same specific conditions, ADM E2S and L1BP fail to determine DEM intersections.
421	xd_read_att.c / xd_write_att.c: typo in string check
426	Error in initialization of orbit_id using a ROF and a non-EF reference frame
431	xv_gen_scf: Remove reference string and microseconds from <Date> field

4.2 New Features

The following new features have been implemented:

Anomaly ID	Description
348	Implement new attitude model for Sentinel-1 (roll steering)
352	new DEM dataset supported (GETASSE v2).
354	AOS/LOS and mask mode (satellite dependent) included in Ground Sation DB file
373	all applicable schema versions for a given EE CFI added in the DATA_HANDLING SUM

Anomaly ID	Description
381	Leap second: insertion checked after 4 dates during the year (end March, end June, end September and end December)
386	Section added in MCD to describe ray tracing and Edlen's law
398	Allow visibility computations across orbital changes
399	consistency check between the time correlations in the time_id and the time correlations in the orbit_id
400	time correlation initialisation allowed with OSF
422	New format of IERS B Bulletin now supported by EO CFI