EARTH EXPLORER MISSION CFI SOFTWARE

Release Notes - Version 3.7

1 INTRODUCTION

This note describes the changes introduced in the new release of the Earth Explorer 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:

- EXPLORER_FILE_HANDLING -- Version 3.7 - 13/07/07
- EXPLORER_DATA_HANDLING -- Version 3.7 - 13/07/07
- EXPLORER_LIB -- Version 3.7 - 13/07/07
- EXPLORER_ORBIT -- Version 3.7 - 13/07/07
- EXPLORER_POINTING -- Version 3.7 - 13/07/07
- EXPLORER_VISIBILITY -- Version 3.7 - 13/07/07

The following Software User Manuals have been updated accordingly:

- EXPLORER_FILE_HANDLING issue 3.7
- EXPLORER_DATA_HANDLING issue 3.7
- EXPLORER_LIB issue 3.7
- EXPLORER_ORBIT issue 3.7
- EXPLORER_POINTING issue 3.7
- EXPLORER_VISIBILITY issue 3.7
- GENERAL issue 3.7

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 3.3.2 (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 3.4.2 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later
- LINUX (32-bits):
  - Linux 2.4.18 (RedHat 8.0) Operating System
  - gcc compiler version 3.3.1 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later

Note that there is an incompatibility between gcc compiler version 3.3 and the RedHat 7.x Operating System. The standard C library (libc.a) is not fully compatible with gcc V3.x.

- LINUX (64-bits):
  - Linux 2.6.9 (RedHat Enterprise 4) Operating System
  - gcc compiler version 3.4.6 (for linking the software to a C application)
  - glibc 2.3.4
  - libxml2 version 2.6.16 or later
- PC WINDOWS:
  - Microsoft Windows 2000 or XP Operating Systems.
  - Microsoft Visual C++ 6.0 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 10.3.9
  - gcc compiler version 3.3 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later

  The Earth Explorer CFI software is compatible with Mac OS X 10.4 Xcode release (using gcc 4.0)
- MACOSX (64-bits):
  - Mac OS X version 10.4.6
  - gcc compiler version 4.0.1 (for linking the software to a C application)
  - libxml2 version 2.6.22 or later

  Mac OS X Power PC 64-bit libraries are for G5 architecture only.
- MACOSX on Intel (32-bits):
  - Mac OS X version 10.4.9
  - gcc compiler version 4.0.1 (for linking the software to a C application)
  - libxml2 version 2.6.16 or later
- MACOSX on Intel (64-bits):
  - Mac OS X version 10.4.9
  - gcc compiler version 4.0.1 (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 executables.

New installation programs are provided for:

- WINDOWS 32-bit
  - EXPLORERCFI_3_7_WINDOWS.exe -- Version 3.7 - 13/07/07
- MACOS (Power PC) 32-bit:
  - EXPLORERCFI_3_7_MACOS.dmg -- Version 3.7 - 13/07/07
- MACOS (Power PC) 64-bit:
  - EXPLORERCFI_3_7_MACOS64.dmg -- Version 3.7 - 13/07/07
- MACIN (Intel) 32-bit:
  - EXPLORERCFI_3_7_MACIN.dmg -- Version 3.7 - 13/07/07

- MACIN (Intel) 64-bit:
  - EXPLORERCFI_3_7_MACIN64.dmg -- Version 3.7 - 13/07/07

3 CLOSED SPRS

The following SPR have been solved:

- EXPCFI-SPR-098 (AN-264): Different results for xp_target_XXX functions in different OS.
- EXPCFI-SPR-099 (AN-265): Significant differences have been found for the satellite-to-target azimuth and elevation when running the test for xp_target_ground_range in different platforms
- EXPCFI-SPR-100 (AN-267): Double initialisation mode is not possible for the propagation initialisation when the propagation time is between the ANX Time of orbit N+1 and the OSV Time of orbit N+1 from the FPO.
- EXPCFI-SPR-101 (AN-246): The runtime performance of xl_geodistance is too high for LINUX64 platform
- EXPCFI-SPR-102 (AN-277): xo_gen_pof/rof/dnf do not need an initialised time_id as input parameter.
- EXPCFI-SPR-103 (AN-278): In xo_gen_pof, when using a POF as reference file whose OSV are not located at ANX, the selected times for the ANXs were not correct
- EXPCFI-SPR-104 (AN-280): In xo_gen_rof, if the OSV in a ROF begin an instant after the ANX of an orbit, the determination of the ANX for that orbit is quite inaccurate.
- EXPCFI-SPR-105 (AN-281): xo_orbit_to_time/xo_time_to_orbit:If the orbit was initialised with xo_orbit_init_file+ POF, the two functions are assuming the the OSV are located at the ANX
- EXPCFI-SPR-106 (AN-282): The format of an inertial STF is not described in DATA HANDLING SUM. Correct also the associated XML Schema.
- EXPCFI-SPR-107 (AN-291): Segments are not filtered correctly in xv_priority_zones.
- EXPCFI-SPR-108 (AN-268): Output variables in xo_orbit_rel_from_abs are not initialised.
- EXPCFI-SPR-109 (AN-266): xv_station_vis_time (with mask): Implement generic algorithm for XV_Sat_alt.
- EXPCFI-SPR-110 (AN-269 & AN-283): xp_change_frame does not work for BM1950 and Galactic CS.
- EXPCFI-SPR-111 (AN-292): Segmentation fault in xo_gen_rof with input flag XO_OSV_PRECISE_MINUTE.
- EXPCFI-SPR-112 (AN-297): xl_cart_to_radec does not initialise the output values.
- EXPCFI-SPR-113 (AN-295): xo_gen_XXX: The field <File_Name> is not filled with the physical file name.
- EXPCFI-SPR-114 (AN-296): xl_euler_to_matrix returns the transposed matrix.
- EXPCFI-AN-287: xo_orbit_init_file: Segmentation fault when setting List_of_OSVs.count=0 in the orbit file
- EXPCFI-AN-300: xo_orbit_init_file: Error in XO_Interpol_Init_ANX “No convergence to get ANX”

4 NEW REQUIREMENTS

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

- GENERAL:
  - Functions/executable to perform library integrity checks.
  - Library version for MAC OS X on Intel platforms (32 and 64 bits).
- EXPLORER_VISIBILITY:
  - New finction **xv_zone_vis_time_no_file**: This function provides a new interface for the **xv_zone_vis_time** CFI function. The function uses data structures for the zone and the swath data instead of files.
  - New finction **xv_station_vis_time_no_file**: This function provides a new interface for the **xv_station_vis_time** CFI function. The function uses data structures for the station and the swath data instead of files.
  - New finction **xv_gen_swath_no_file**: This function provides a new interface for the **xv_gen_swath** CFI function. The function uses data structures for the swath definition file, and the output of the function is an structure with the swath data instead of a swath template file.
  - New function **xv_gen_scf:** This function generates a XML Swath Control File used to visualize the segments using the ESOV tool.

Note the following:

- Envisat ASCII file format is not supported. Envisat DORIS Navigator files are not supported either.
- As a consequence of the correction of EXPCFI-SPR-059 (V3.4), POFs and ROFs generated using the CFI file generation routines previuos to V3.3 will not be accepted by the current CFI SW.
- The explorer_file_handling function xf_error_msg has been removed from the SW since V3.5 (it was not thread-safe, it made use of global variables). The existing routine xf_basic_error_msg shall be used to retrieve the error messages.
- To link correctly the applications with the EE CFI SW, the pthread library has to be added to the list of libraries to link with.

5 KNOWN PROBLEMS

See section “Known Problems“ at the end of each of the SUMs to check limitations of the current release