EARTH EXPLORER MISSION CFI SOFTWARE

Release Notes - Version 3.6

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 3.6 - 24/11/06
- EXPLORER_DATA_HANDLING -- Version 3.6 - 24/11/06
- EXPLORER_LIB -- Version 3.6 - 24/11/06
- EXPLORER_ORBIT -- Version 3.6 - 24/11/06
- EXPLORER_POINTING -- Version 3.6 - 24/11/06
- EXPLORER_VISIBILITY -- Version 3.6 - 24/11/06

The following Software User Manuals have been updated accordingly:

- EXPLORER_FILE_HANDLING issue 3.6
- EXPLORER_DATA_HANDLING issue 3.6
- EXPLORER_LIB issue 3.6
- EXPLORER_ORBIT issue 3.6
- EXPLORER_POINTING issue 3.6
- EXPLORER_VISIBILITY issue 3.6
- GENERAL issue 3.6

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 2.6.22 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

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_6_WINDOWS.exe-- Version 3.6 - 24/11/06
- MACOS 32-bit
  - EXPLORERCFI_3_6_MACOS.dmg -- Version 3.6 - 24/11/06
- MACOS 64-bit
  - EXPLORERCFI_3_6_MACOS64.dmg -- Version 3.6 - 24/11/06

3 CLOSED SPRS

The following SPR have been solved:

- EXPCFI-SPR-085 (AN-241, explorer_visibility): Loop caling xv_multizones_vis_time with mode= XV_SDF. Maximum number of file descriptors was reached.
- EXPCFI-SPR-086 (AN-245, general): Segmentation fault when trying to show an error message with very long strings.
- EXPCFI-SPR-087 (AN-243, explorer_pointing): Wrong attitude initialization with Cryosat quaternion files and XP_SEL_TIME.
- EXPCFI-SPR-088 (AN-247, explorer_orbit): The status vector ierr cannot be decoded for functions xo_gen_osf_add_drift_cycle and xo_gen_osf_change_repeat_cycle.

- EXPCFI-SPR-089 (AN-248, explorer_visibility): Error in xv_station_vis_time with mode=XV_SDF
- EXPCFI-SPR-090 (AN-186, explorer_file_handling): xml empty tags sometimes are written as <tag/> and sometimes as <tag></tag>
- EXPCFI-SPR-091 (AN-224, explorer_data_handling): Quality tag for orbit files read as double instead of string.
- EXPCFI-SPR-092 (AN-257, explorer_orbit): xo_orbit_info does not return the ANX longitude if the orbit is initialized with xo_orbit_init_def. This SPR had impact on xv_swath_pos.
- EXPCFI-SPR-093 (AN-262, explorer_file_handling): An incorrect error is returned when reading an empty field in the fixed header.
- EXPCFI-SPR-094 (AN-258, explorer_pointing): Error when calling xp_target_extra_aux: "Error computing pointing after crossing the Earth's atmosphere"
- EXPCFI-SPR-095 (AN-259, explorer_pointing): Error when calling xp_target_extra_tarhet_to_sun: "Internal Computation Error: Target Not Found"
- EXPCFI-SPR-096 (AN-260, explorer_pointing): In xp_target_star/xp_target_tangent a warning should be returned when Tangent point is behind the looking direction
- EXPCFI-SPR-097 (AN-261, explorer_pointing): Incorrect LOS outputs for xp_target_tangent_sun(moon) if the tangent point is behind the looking direction

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:
  - Fortran 95 header files and examples
  - XML Schemas and file examples
  - Support for mission SENTINEL-1
  - The runtime performances given in the SUMs have been updated
- EXPLORER_DATA_HANDLING:
  - New routine **xd_xml_validate** and **xml_validator** executable program for validating XML files with respect to its schema.
- EXPLORER_LIB:
  - Support for new coordinate reference systems (Barycentric 1950 and Galactic CS) in **xl_change_cart_cs**.
  - New transport time format: SMOS UTC Proteus
  - New routines for conversions between unitary direction and right ascension/declination: **xl_radec_to_cart** and **xl_cart_to_radec**
  - New routine to convert right ascension/declination between different star catalogues: **xl_star_catalog**.
  - New routines for routines to transform between Earth Fixed coordinates to topocentric angles: **xl_ef_to_topocentric** and **xl_topocentric_to_ef**.
  - New routines for transforming Euler angles to a rotation matrix and viceversa: **xl_euler_to_matrix** and **xl_matrix_to_euler**.
- EXPLORER_ORBIT:
  - New routine for checking the consistency of an Orbit Scenario File: **xo_check_osf**
  - New routine for checking the consistency of an Orbit Event File: **xo_check_oef.**
  - New routine for generating Orbit Event Files: **xo_gen_oef**.

- EXPLORER_POINTING:
  - New routine for computing reflection targets: **xp_target_reflected** and **xp_target_extra_specular_reflection**.
  - New Zero-Doppler attitude mode is available in **xp_sat_nominal_att_mode**
  - Sentinel-1 attitude mode has been defined in **xp_sat_nominal_att_model**

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