EARTH EXPLORER MISSION CFI SOFTWARE

Release Notes - Version 3.4

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 3.4 - 18/11/05
- EXPLORER_DATA_HANDLING -- Version 3.4 - 18/11/05
- EXPLORER_LIB -- Version 3.4 - 18/11/05
- EXPLORER_ORBIT -- Version 3.4 - 18/11/05
- EXPLORER_POINTING -- Version 3.4 - 18/11/05
- EXPLORER_VISIBILITY -- Version 3.4 - 18/11/05

The following Software User Manuals have been updated accordingly:
- EXPLORER_FILE_HANDLING issue 3.4
- EXPLORER_DATA_HANDLING issue 3.4
- EXPLORER_LIB issue 3.4
- EXPLORER_ORBIT issue 3.4
- EXPLORER_POINTING issue 3.4
- EXPLORER_VISIBILITY issue 3.4
- GENERAL issue 3.4

2.2 Compilation software and platform

This release of the CFI libraries are provided for SOLARIS, LINUX, MACOS and WINDOWS platforms.
- SOLARIS:
    - Solaris 2.7 (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
- LINUX:
    - Linux 2.4.18 (RedHat 8.0) Operating System
    - gcc compiler version 3.3.1 (for linking the software to a C application)
    - glibc version 2.3.2
    - 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.

- 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
  - 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)

Note that the distributed binaries have been generated with no debug and no optimization flags (no SIMD optimization either).

2.3 Installation executables.

New installation programs are provided for:

- WINDOWS
  - "Earth Explorer CFI 3.4.exe" -- Version 3.4- 18/11/04
- MACOS
  - EE_CFI_Installation_3.4.dmg -- Version 3.4- 18/11/04

3 CLOSED SPRS

The following SPR have been solved:

- EXPCFI-SPR-059: Quality Index are not read from orbit files.
- EXPCFI-SPR-060: **xp_multi_target_inter** does not compute the sat-target LOS rate
- EXPCFI-SPR-064: Wrong results for **xp_target_inter** with XP_CRYOSAT_MODEL.
- EXPCFI-SPR-065: The value in <Attitude_Data_Type> is not read in attitude files.
- EXPCFI-SPR-066: The time reference in an ascii time string is not checked against the time reference used as input in time transformation functions.
- EXPCFI-SPR-067: **xg_gen_pof** and **xg_gen_rof** do not write the creation date.
- EXPCFI-SPR-068: Wrong stop validity time from **xo_orbit_init_file**.
- EXPCFI-SPR-069: Incorrect MLST and TLST when initializing the orbit with **xo_orbit_init_def** and XO_NOSUNSYNC_INCLINATION
- EXPCFI-SPR-070: **xl_cart_to_geod** sets internally the velocity vector to zero.
- EXPCFI-SPR-071: In data structures defined to get/set the ID data, the corresponding enumeration values for the fields describing reference frames are not exposed.
- EXPCFI-SPR-072: The propagation results do not have continuity when changing from one orbit to the next one if the propagation is reinitialized (This happens when the orbit is initialized with drift mode XO_NOSUNSYNC_INCLINATION)
- EXPCFI-SPR-073: Wrong error list for xo_orbit_info in the SUM.
- EXPCFI-ANR-185: Memory access violation when the attitude is initialized with a matrix

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):

- The library EXPLORER_GEN_FILES has been removed.The file generation routines have been moved to EXPLORER_ORBIT.
- EXPLORER_DATA_HANDLING:
  - The library is now exposed to the users. It contains a set of functionsfor reading and writing Earth Explorer Mission Files.
  - The file formats for all the files used by the Earth explorer CFI software are described in the EXPLORER_DATA_HANDLING User Manual (see Section 8)
- EXPLORER_LIB:
  - Change in the behaviour of the function **xl_default_sat_init**. Related to this change, a new routine has been added: **xl_default_sat_close**.
  - Global variables have been removed.
- EXPLORER_ORBIT:
  - A new element (utc_time) has been added to the structure xo_osc_rec.
- EXPLORER_POINTING:
  - New algorithm for the ADM attitude model
  - New routine **xp_dem_compute**.
  - New interfaces defined for specular reflection target routines: **xp_target_reflected** and **xp_target_extra_specular_reflection**.
  - New routine **xp_target_extra_target_to_moon**.
  - New axis defined for the attitude calculation: XP_ORBIT_POLE and XP_SC_EF_VEL_VEC.
  - Structure xp_star_tracker_aux has been simplified
- EXPLORER_VISIBILITY:
  - Changes in the interface of **xv_swath_pos.**
  - Mofifications in the function enumeration id and error enumeration of function **xv_gen_swath**

Note the following:

- The Fortran interfaces as specified in the SUMs are obsolete (Fortran interfaces do not work with Fortran 77).
- Envisat ASCII file format is not supported.
- As a consequence of the correction of EXPCFI-SPR-059, 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 will disappear in the next delivery (it makes use of global variables). The existing routine xf_basic_error_msg shall be used to retrieve the error messages.
- DEM Configuration file: Model tag has changed from V3.3 (<ACE_model>) to V3.4 (<ACE_Model>).