Proposed changes to "EUM" data readers for ROPP9.0

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(1) Add description of the EUMETSAT to bufr mapping to the ROPP documentation. See https://trac.romsaf.org/ropp/ticket/434. Done.

(2) Allow user to apply EUMETSAT L2-L1 extrapolated data to generate L2. See https://trac.romsaf.org/ropp/ticket/409 and https://trac.romsaf.org/ropp/changeset/4412/ropp_src/branches/dev/Share/dmi_trunk_7.1. Done.

(3) Add time_offset (wrt start time) to time in Sec 1.7.1 of **ropp_io_read_ncdf_put.f90** by changing

```
CALL ncdf_putvar('time', time, rec=irec)
```

to

```
CALL ncdf_putvar('time', time+data%georef%time_offset, rec=irec)
```

(4) Question: My old emails tell me that we also agreed to set **data%georef%time_offset** to zero, in accordance with recommendation 2 of the IROWG-4 action group (http://irowg.org/wpcms/wp-content/uploads/2015/07/IROWG4-BUFR_action_group_20150603_summary_final.doc). So should we:

  - ignore point (3);

  - postpone it until rec. 2 is adopted; or

  - apply (3) and afterwards set **data%georef%time_offset** = 0?
  Some advice please – I'm confused about the various times.

(5) Set PCD_offline bit of PCD if the `environment` attribute is not `Operational`.

(6) Encode "`getlev1a`" option as a character rather than a logical, to say what sort of lev1a data you want to include: cl, cl+rs, cl+ol, or none (the default, and perhaps not needed). See https://trac.romsaf.org/ropp/changeset/4278/ropp_src/branches/dev/Share/dmi_trunk_6.1. The satellite coordinates r_leo and r_gns output by this procedure will be in ECI coordinates. LEAVE THEM ALONE! (This means that https://trac.romsaf.org/ropp/ticket/429 should be killed.)

(7) Allow single-valued r_leo & r_gns to be output (for BUFR purposes) without the need to specify `-b` by replacing

```
IF (getbufr) THEN
```

by

```
IF ( getlevel1a == 'none' ) THEN
```

in **ropp_io_read_ncdf_get.f90**.

(8) Store the the 'reference values' of

```
r_leo = 'occultation/position_rec_fixed' in ECF coords, where
SLTA=0

r_gns = 'occultation/position_gns_fixed' in ECF coords, where
SLTA=0

v_leo = 'occultation/velocity_rec'       in ECI coords, where
SLTA=0 (J2000)

v_gns = 'occultation/velocity_gns'       in ECI coords, where
SLTA=0 (J2000)
```

in (an extended version of) the existing '`georef`' ROprof substructure. (This was Stig's suggestion, because he felt that this information sits naturally there. I agree.)

These single-valued fields are to be read (if possible) and stored, whether `-b` and/or `-l ...` are present or not, because these are the correct reference values that should be written to BUFR files.

This implies changes to **eum2bufr** and **ropp2bufr**, to use these values (if they exist and are non-missing) rather than the first value of the lev1a POD (as it does now). There will need to be changes to **ropp2bufr_mod.f90** and **bufr2ropp_mod.f90** too – the latter to ensure that **ropp2bufr | bufr2ropp** still equals **ropp2ropp**.

(9) If (8) works I think we can delete the `-b`/`getbufr` options of **eum2ropp** and **eum2bufr**, since we should always read these reference values (if possible). This affects (7), clearly.

I think (3) – (7) are straightforward, but (8) & (9) should be developed in a branch.