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## [IGSMAIL-5272]: Switch the absolute antanne model within the IGS

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- *To:* IGSmal <[igsmail@igscb.jpl.nasa.gov](mailto:igsmail@igscb.jpl.nasa.gov)>
  - *Subject:* [IGSMAIL-5272]: Switch the absolute antanne model within the IGS
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  - *Date:* Mon, 19 Dec 2005 14:25:53 +0100 (CET)
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*****  
IGS Electronic Mail      19 Dec 05:26:06 PST 2005      Message Number 5272  
*****
```

Author: Gerd Gendt

Dear colleagues,

At the meeting in San Francisco the IGS Analysis Centers (AC) representatives have discussed the switch to the new absolute antenna model. We came up with the following decisions:

1. ANTEX file:

- 1.1 The new antenna model is accepted by all the ACs. An updated offset for the PRN17 will be added.  
New satellites will be added just after launch with default values (block mean) and updated as soon as possible.

JPL has agreed to make some more validations with their GRACE-based model. The final long-term goal should be the generation of a model which includes also LEO derived PCV maps to have one unique model for ground- and space-based applications including nadir angles to up to 16 degrees.

- 1.2. The GLONASS PCV and offsets will be delivered by CODE.

- 1.3 The ANTEX file name will have the following structure:

base\_www.atx, e.g. igs05\_1325

where

base - basic name which will only be changed if existing values are changed (one exception is a new launched satellite for which the initial values will be updated in the first weeks)

www - is the GPS-week where the last information were added.

- 1.4 Satellite antenna x-, y-offsets:

A unified definition for all satellites and systems will be applied.

The definition will be that one used for Block II/IIA namely:

- z-axis points to the geocenter
- y-axis is cross product of z-axis and sat-sun direction (in that order)
- x-axis completes a right-handed system (x is pointing to the sun)

All adaptations will be done by corresponding settings in the ANTEX file. With the new ANTEX format, having all information in one place, the ACs have not to maintain different files with x-y-z offset and this way one source of inconsistency is removed.

2. ANTEX and SINEX-block GPS\_PHASE\_CENTER

To enable the tracking of information about physically calibrated antennas in the SINEX file the following proposal should be discussed:

The new SINEX 2.00 already states (Remark 11):

Take value S/N '-----' if the phase center offsets apply to all antennas of the same type.

The new proposal goes one step further and states:

Take radome 'NONE' if the phase center offsets apply to all antennas of the same type.

Practically the following sequential test has to be applied to obtain for a given specific antenna the valid (used) PCV:

1. Check ANT + RADOME + S/N , if not found
  2. Check ANT + RADOME + '-----' , if not found
- Proposal:
3. Check ANT + NONE + '-----' (valid for all not explicitly given Radomes)

The test is to apply for searching in the atx-file and in the SINEX block GPS\_PHASE\_CENTER.

Example:

```
+SITE/ANTENNA
*SITE  P      DESCRIPTION      S/N
STA1  A  .... ASH701945B_M     SCIS 12345  -----
STA2  A  .... ASH701945B_M     SCIS CR519  ----- |
STA3  A  .... ASH701945B_M     OSOD 020    --   | |
-SITE/ANTENNA                                | | |
                                           | | |
+SITE/GPS_PHASE_CENTER                       | | |
*      DESCRIPTION      S/N                  | | |
ASH701945B_M     NONE  -----              STA3  <--  | |
ASH701945B_M     SCIS  -----              STA2  <----- |
ASH701945B_M     SCIS 12345      for STA1  <-----
-SITE/GPS_PHASE_CENTER
```

#### 4. SINEX with SATA\_Z

In the new SINEX 2.0 new parameters for satellite antennas are defined. It is recommended to include as a minimum the SATA\_Z parameter in the SINEX file. The parameter should be constrained so that the submitted solution is based on the given standards.

#### 5. Satellite clocks

The antenna model used to for generating the clocks is given in the following comment line:

##### 5.1 SP3:

This information is not only for the clocks of interest.

```
/* ANTENNA MODEL USED: igs05_1325  CLOCKS ALIGNED TO: igs05_1325
```

```
/* ANTENNA MODEL USED: jpl_2005    CLOCKS ALIGNED TO: igs05_1325
```

##### 5.2 CLK-RINEX:

Following comment lines:

```
ANTENNA MODEL FOR ANALYSIS      : igs05_1325
```

```
ANTENNA MODEL FOR CLOCK ALIGNMENT: igs05_1325
```

6. The switch to the new APCV model will be done in parallel with the switch to ITRF2005 (APR/MAY 2006).

Best regards

Gerd Gendt

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*****
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