

# GSAS v3.3 Release Notes

## Introduction

GSAS 3.3 adds functionality to GSAS. Major features new to v3.3. are waveform scaling, QAP03, and PAD degradation functionality.

## Release Information

The ClearCase label for this release is RELEASE\_3.3.

The release date is February 14, 2003.

Internal version numbers have been updated to "V3.3 February 2003" for the following:

```
./data/anc07_001_01_0000.dat
./data/anc07_001_01_0001.dat
./data/anc07_001_01_0004.dat
./data/anc07_001_01_0005.dat
./bin/GLAS_L1A
./bin/GLAS_Alt
./bin/GLAS_Atm
./lib/libanc.sl
./lib/libplatform.sl
./lib/libprod.sl
./lib/libl1a.sl
./lib/libwf.sl
```

This should be verified during operation by checking the version information in the appropriate ANC06 files.

All other internal version numbers remain at "V3.1 December 2002", "V3.2 January 2003", "V3.2.1 January 2003", or "V3.2.2 February 2003".

## SMDS Impact

The distribution tarfile is on [glasdev.wff.nasa.gov](http://glasdev.wff.nasa.gov) at the following location:

```
/glasdev1/v3/dist/gsas_V3.3.tar.Z.
```

New versions of the following anc07 data files are required (and provided):

```
data/anc07_001_01_0000.dat
data/anc07_001_01_0001.dat
data/anc07_001_01_0004.dat
data/anc07_001_01_0005.dat
```

All libraries and binaries should be recompiled using the top-level Makefile. The newly-created versions should be installed within the testbed (pending CCB release for operations).

## Product Changes

No product sizes were changed.

The structure of the attflg1 variable (product side) and of the attflg variable (algorithm side) were altered to accommodate changes in the definitions of the flag words.

Several changes were made to GLA05 units. See the CR2002113-002 detailed change notes for more information.

## Detailed Change Notes

### CR20021213-002 : PAD Degradation Header Support

This set of software changes added the capability to retrieve the attitude degradation information from the ANC09 PAD precision attitude files. The structure of the attflg1 variable (product side) and of the attflg variable (algorithm side) were altered to accommodate changes in the definitions of the flag words. The software translates the degradation data, which is stored in keyword format, into the numerical/bit-wise storage used in the product flags. Although changes in most of the listed modules were small, the *anc09\_pad\_mod.f90* underwent a major overhaul.

### CR20021113-002: Waveform Scaling

Waveform raw counts are converted to volts (using a lookup table of 256 values) - in L1A (L\_Alt) and L1B (WFMgr). All computations on waveforms are done on these re-scaled values. The raw counts are still on the GLA01 product.

The waveform lookup table needs to be in the GLA01 header record(s). Added *gd\_minVolts* & *gd\_maxVolts* to *const\_glob\_mod*. Their values are computed from *d\_cnt2voltTable* when it is read in *anc07\_glob\_mod* and may be used for sanity checks instead of 0 and 255.

*GLA01%%d\_4nsBgMean* is in 0.01 counts. *d\_bgNoiseOb* is obtained from it by interpolating from *d\_cnt2voltTable*. *d\_sDevNsOb* is scaled from the table by converting (*d\_4nsBgMean*+*d\_4nsbgSDEV*), and then *d\_bgNoiseOb* is subtracted.

Temperatures used in the new energy calc are obtained from *gla03* or *gla00* in *L1AMgr\_mod*.

*GLAS\_Alt* requires *anc07\_001\_01\_0001.dat* for the energy calibration coefficients and the waveforms.

*i\_InstState* is checked for the WF digitizer, and temperature detector. *i\_InstState* is set in *L1AMgr\_mod* from *anc33*. Fixed *anc33* so *i\_InstState* indicates digitizer 1 and detector 1.

Everything in *anc07\_001\_01\_0004.dat* that is in counts is converted to volts before being used. *d\_satAmp* was added to *anc07\_Indep*, and *i\_Min4Sat* was changed from 3 to 1.

The energy calculations were updated.

Fixed *CalcInstrCentroid* and problem with *l\_badFrame(2)* in *W\_Assess\_mod*. *l\_badFrame* is used to set *i\_altFrmFlg(3)* (goodness of fit, now is 0 if all WF are good). Fixed centroid QA. *d\_centroid* is an offset from the digitizer address of the last gate.

Changed *d\_gval\_rcv* & *d\_gval\_tx* to *i\_gval\_rcv* & *i\_gval\_tx* on *gla05\_alg*. Changed *i\_areaTrWF* from *i4b(40)* to *i2b(40) + i\_spare2 i2b(40)*. Changed *d\_wfnoiseOb* & *d\_sDevNsOb* to 0.0001 volts on product. Changed units for *d\_maxRecAmp*, *d\_maxSmAmp*, *d\_parm(noise & amp)*, *d\_solnSigmas(noise & amp)*, *d\_wfFitSDev*,

d\_parmTr(noise & amp), d\_sDevFitTr, & d\_maxTrAmp to millivolts on gla05. Changed units for d\_areaTrWF & d\_areaRecWF to 0.01volts \* ns on gla05.

### **AI2002033: QAP03 – Engineering QAP**

QAP03 is a release that provides quality assurance functionality for the GLA03 data product. The GLA03 product underwent three changes as a result of the QAP03 testing and implementation.

The GLA03 product set the sixteenth second to a flag of 3 in the APID Availability flag, this was corrected.

Data that was available during the third second of items that occurred once every four seconds was not being used, this was corrected.

The time and position packet (SCPosPkt) was not passed from GLA00 to GLA03, this was corrected.

QAP 03 was created and includes expected number of APIDs based on the time that is requested in the control file. Stats included in QAP03: Actual number of records per APID, percentage of missing data per APID, granule statistics that include maximum, minimum, average, standard deviation, and number of points for each current, voltage, and temperature. The number of points out of bounds was not in this release. Along track statistics were implemented for each current, temperature, and voltage.

### **Changed files**

```
./Makefile
./data
./data/anc07_001_01_0000.dat
./data/anc07_001_01_0001.dat
./data/anc07_001_01_0004.dat
./data/anc07_001_01_0005.dat
./src/atm_lib/vers_atm_mod.f90
./src/atmosphere/common/A_buff_data_mod.f90
./src/common_libs/anc_lib/anc07_glob_mod.f90
./src/common_libs/anc_lib/anc07_wf_mod.f90
./src/common_libs/anc_lib/anc08_pod_mod.f90
./src/common_libs/anc_lib/vers_anc_mod.f90
./src/common_libs/platform_lib/const_glob_mod.f90
./src/common_libs/platform_lib/const_lla_mod.f90
./src/common_libs/platform_lib/const_wf_mod.f90
./src/common_libs/platform_lib/vers_platform_mod.f90
./src/common_libs/prod_lib/GLA05_Pass_mod.f90
./src/common_libs/prod_lib/GLA05_alg_mod.f90
./src/common_libs/prod_lib/GLA05_prod_mod.f90
./src/common_libs/prod_lib/GLA05_scal_mod.f90
./src/common_libs/prod_lib/GLA06_alg_mod.f90
./src/common_libs/prod_lib/GLA06_prod_mod.f90
./src/common_libs/prod_lib/GLA07_alg_mod.f90
./src/common_libs/prod_lib/GLA07_prod_mod.f90
./src/common_libs/prod_lib/GLA08_alg_mod.f90
./src/common_libs/prod_lib/GLA08_prod_mod.f90
./src/common_libs/prod_lib/GLA08_scal_mod.f90
```

```
./src/common_libs/prod_lib/GLA09_alg_mod.f90
./src/common_libs/prod_lib/GLA09_prod_mod.f90
./src/common_libs/prod_lib/GLA09_scal_mod.f90
./src/common_libs/prod_lib/GLA10_alg_mod.f90
./src/common_libs/prod_lib/GLA10_prod_mod.f90
./src/common_libs/prod_lib/GLA10_scal_mod.f90
./src/common_libs/prod_lib/GLA11_alg_mod.f90
./src/common_libs/prod_lib/GLA11_prod_mod.f90
./src/common_libs/prod_lib/GLA11_scal_mod.f90
./src/common_libs/prod_lib/GLA12_alg_mod.f90
./src/common_libs/prod_lib/GLA12_prod_mod.f90
./src/common_libs/prod_lib/GLA13_alg_mod.f90
./src/common_libs/prod_lib/GLA13_prod_mod.f90
./src/common_libs/prod_lib/GLA14_alg_mod.f90
./src/common_libs/prod_lib/GLA14_prod_mod.f90
./src/common_libs/prod_lib/GLA15_alg_mod.f90
./src/common_libs/prod_lib/GLA15_prod_mod.f90
./src/common_libs/prod_lib/common_flags_mod.f90
./src/common_libs/prod_lib/vers_prod_mod.f90
./src/elevations/anc09_pad_mod.f90
./src/glas_alt/GLAS_Alt.f90
./src/glas_alt/WFMgr_mod.f90
./src/glas_atm/AtmMgr_mod.f90
./src/glas_atm/GLAS_Atm.f90
./src/glas_ll1a/GLAS_L1A.f90
./src/glas_ll1a/L1AMgr_mod.f90
./src/ll1a_lib/C_CalcNrg_mod.f90
./src/ll1a_lib/L_Alt_mod.f90
./src/ll1a_lib/L_Eng_mod.f90
./src/ll1a_lib/Makefile
./src/ll1a_lib/QAP01_mod.f90
./src/ll1a_lib/QAP03_mod.f90
./src/ll1a_lib/vers_ll1a_mod.f90
./src/prod_util/product_test/gla05_minmax_mod.f90
./src/waveforms/W_Assess/W_Assess_mod.f90
./src/waveforms/W_Common/W_LsqFit_mod.f90
./src/waveforms/W_FunctionalFt/W_FunctionalFt_mod.f90
./src/wf_lib/vers_wf_mod.f90
```