IRIS 8.10.9 Release Notes (19 Oct 2006)

These notes cover changes made in IRIS since release 8.10.8 of 20 September 2006. If you are upgrading from an earlier release, please read those notes also.

Data Format Changes

1. The time series file format produced by **tsarchive** was extended to add additional header information, primarily to support INU information. See the include/rvp8.h file for data format details. The new fields in rvp8PulseInfo are:

fGdrOffset	GDR offset
fXdrOffset	XDR offset

   The new fields in rvp8PulseHdr are:

iPedAz	Pedestal relative azimuth
iPedEl	Pedestal relative elevation
iAzV	Earth azimuth velocity
iElV	Earth elevation velocity
iRoll	Platform roll angle
iPitch	Platform pitch angle
iHead	Platform heading
iRollV	Platform roll rate
iPitchV	Platform pitch rate
iHeadV	Platform heading rate
iLatitude	Latitude of radar
iLongitude	Longitude of radar
iHeight	Altitude of radar
iVelEast	Radar velocity, east component
iVelNorth	Radar velocity, north component
iVelUp	Radar velocity, vertical component

   The rvp8PulseHdr version was incremented from 1 to 2 for these INU additions. When you playback old time series data you will get zero in all the new fields. Tsview was enhanced to display the new fields, as well as print out time to microsecond resolution. Time recorded to nanosecond resolution was included in the 8.10.2 release. Unfortunately the nanosecond time playback was missing in 8.10.2, so if you played back the time series and re-recorded it, you will have lost the nanoseconds. This bug is now fixed.

Developer Changes

1. In Sigmet supplied source files, all Makefiles were changed to not be self modifying. Instead they put the dependencies into a makefile.d file. Also the **compall** script is removed. To compile multiple directories please use “make –sw” in the parent directory. Also the **mk_iris_dir** script is removed.

Bug Repairs

1. In **color_setup** the out-of-box colors for the HClass data type were not the same as the values yet get with “Open/Example”.

2. The default location of the BUFR *.csv files is moved from ${IRIS_CONFIG} to ${IRIS_CONFIG}/bufr, and the IrisToBufr.conf and BufrToIris.conf files now have an option to specify this directory. Also fixed the bug in release 8.10.8: The *.csv files are now shipped in the standard locations.

3. If someone manually replaced the bitex.conf file while the antenna library was running, then ran **bitex**, it would appear to run, but the configuration was badly messed up. This is fixed by checking the file at startup. If changed then **bitex** will exit and popup the error message “Bite driver data does not equal bitex.conf file, please run qant”. This is similar to the current behavior for the **antenna** utility if someone changes the antenna setup from while the antenna library is running.

4. Fixed bugs in the contents of the release *.tgz files from 8.10.8. The source.tgz file was missing, and there were some extra files and extra .svn directories caused by our switch to subversion. Also for some time the config.tgz file has contained duplicates of many files, adding up to an extra 10 MB.

5. **Suncal** will now produce BEAM products using shorter 23-character filenames. This means you can manually copy them into the ${IRIS_PRODUCT} directory, and later run **siris** without a problem due to long filenames.

New Features

1. In release 8.10.9 is the new **HydroClass** feature is now operational. This fuzzy logic algorithm uses dBZ, ZDR, KDP and the melting level to determine the type of precipitation detected. This is configured by a configuration file called dpolapp.conf. Please see this file for helpful comments. Also sigmet will provide separate documentation for customers who purchase HydroClass.

2. **Bitex** is changed to raise the maximum number of different BITE packets it can handle from 8 to 16.

3. In the utils/custom/GpsToSetup.C file is source for a new example utility showing how to set latitude, longitude and altitude in the IRIS setup file from GPS data. This is useful for a truck based radar which does not move while operating.

4. The zauto program was changed to store it’s internal configuration state in ASCII name value pairs in a file called zauto.conf. The old binary config file was ZAUTO1.DAT. It will automatically read and convert the file when you run.

IRIS 8.10.8 Release Notes (20 Sep 2006)

These notes cover changes made in IRIS since release 8.10.7 of 11 August 2006. If you are upgrading from an earlier release, please read those notes also.

Important Upgrade Notes

1. If you wish to use the new BUFR features discussed below, you will need to install the new BUFR related *.csv files in your /usr/sigmet/config directory. Normally these files are supplied in the /usr/sigmet/config_template/init directory, but they were omitted from the 8.10.8 release by mistake. Please contact Vaisala to get them. Also the pipe programs **IrisToBufr** and **BufrToIris** were by mistake shipped in the /usr/sigmet/bin directory. Please copy them to the /usr/sigmet/config/pipes directory before use.

2. Starting with this release, you will need to install various ImageMagick rpms on your linux system. Instructions are different depending on your OS version:

RHEL4 Runtime Environment:

Install these rpms which are included on your RHEL4 cdroms:

```
# rpm –Uvh ImageMagick–6.0.7.1–5.i386.rpm
# rpm –Uvh ImageMagick–c++–6.0.7.1–5.i386.rpm
```

RHEL4 Development Environment:

In addition to the above, also install these:

```
# rpm –Uvh libexif–devel–0.5.12–5.i386.rpm
# rpm –Uvh ImageMagick–devel–6.0.7.1–5.i386.rpm
# rpm –Uvh ImageMagick–c++–devel–6.0.7.1–5.i386.rpm
```

RHEL3 Runtime Environment:

Install these rpms which are on our ftp site:
ftp.sigmet.com: /outgoing/os_patches/linux/RHEL4/ImageMagick

```
# rpm –ivh libstdc++–3.4.3–9.EL4.i386.rpm
# rpm –Uvh ImageMagick–6.0.7.1–5.i386.rpm
# rpm –Uvh ImageMagick–c++–6.0.7.1–5.i386.rpm
```

RHEL3 Development Environment:

In addition to the above, also install these:

```
# rpm –Uvh libexif–0.5.12–5.i386.rpm
# rpm –Uvh libexif–devel–0.5.12–5.i386.rpm
# rpm –Uvh ImageMagick–devel–6.0.7.1–5.i386.rpm
# rpm –Uvh ImageMagick–c++–devel–6.0.7.1–5.i386.rpm
```

Bug Repairs

1. The log files created when using a copy script for network output were always empty.
2. Significant enhancements and bug fixes were made to the **BUFR** interface programs in IRIS. The **BufrToIris** and **IrisToBufr** pipes, as well as the OPERA **decbufr** utility now use version 2.3 of the OPERA BUFR library. The BUFR pipes were enhanced to read and write IRIS TOPS products. We added explicit control of the BUFR edition, table version, centers to the IrisToBufr.conf file. There was a bug in **BufrToIris** for rectangular product sizes: the X and Y sizes were reversed. This would mess up the picture a lot. **BufrToIris** was changed to convert Rainrate maps to IRIS SRI products. BufrToIris was also not filling in the earth radius and standard parallels in the projection definition section.

New Features

1. The major new feature in release 8.10.8 is the beta release of the new **HydroClass** feature. This is a licensed feature which uses data from a dual-polarization radar to determine the type of precipitation detected. It will separate targets into 6 classes of:

   1:Non–Meteorological (things like clutter and insects), 2:Rain, 3:Wet Snow, 4:Snow, 5:Graupel, 6:Hail

   This data type can be computed inside the RVP8 processor, or computed by the IRIS software. The enhancement includes full support for a new “HClass” datatype throughout IRIS. Since these classes cannot be numerically averaged, there is a special smoother implemented inside the IRIS product generator. As of this release, the CAPPI and XSECT products do not work correctly on HClass data.

   This beta HydroClass release is intended for developers only. The actual HydroClass algorithm is not implemented. Instead you get the classes based on dBZ only: Below melting level: Rain only; Above melting level: Below –10 dBZ: Thresholded, Below 0 dBZ: Rain, Below 10 dBZ: Wet Snow, Below 20 dBZ: Snow, Below 30 dBZ:Graupel, Above: Hail.
2. The network output configuration in setup now supports output in .png format.
3. IRIS now supports a configuration to automatically output a radar picture for display on Google Earth.
4. Now when retrieving files from DVD/LDA in the archive menu, the files will be restored in order from oldest to newest in data time.. This helps the product scheduler and reingest to work correctly. Previously they were restored in reverse time order.
5. In the **IrisToHDF5** pipe, IRIS default projections were mapping to zero earth radius. We now use the correct mean earth radius.

Retired Features

6. *HP–UX Platforms only:* We no longer support output of graphics formats like tiff, jpeg, bmp, gif, as well has output to Postscript printers. Please upgrade to a linux platform. All upgrade support for HP–UX will stop at the end of the year.

IRIS 8.10.7 Release Notes (11 Aug 2006)

These notes cover changes made in IRIS since release 8.10.6 of 30 June 2006. If you are upgrading from an earlier release, please read those notes also.

Data Format Changes

1. In version 8.10.1 we added a new field to the ingest_header structure to store the Radar Constant in dB. Unfortunately this number was being stored wrong, in linear rather than dB units. In linear units it far overflowed the 16-bits allocated, so the number was meaningless. This is now fixed. This bug effected both data from IRIS, and from **suncal**.

Bug Repairs

1. In **colorsetup**, the HydroClass example color set now uses the recommended colors.
2. In the **rtdisp** utility, the the incorrect resource file was being loaded, causing incorrect font sizes to be used. Only seen in RHEL4.
3. **Rtdisp** can now load from a specified file on startup by using the –file option. Also you can run up to 3 rtdisps on the same computer, but the 3 rtdisps must connect to different ports. To do this make sure to use the –file option and load-up a file with different port. Also in order to get 3 rtdisps we changed the shared memory key file /usr/sigmet/bin/keys/IRIS_RTDISP to ..IRIS_RTDISP0, ..IRIS_RTDISP1 and ..IRIS_RTDISP2. This should automatically install on an upgrade.
4. When IRIS network output is using a copy script to transfer data to the target (such when using sig_ftp to do an ftp transfer) it produces a log file to record the results. This log file was always empty. This is fixed.

New Features

1. IRIS/Radar will now set the melting level in the RVP8 to match the current setup value on the IRIS machine (stored in the ingest_header). This is required for the HydroClass algorithm.

IRIS 8.10.6 Release Notes (30 Jun 2006)

These notes cover changes made in IRIS since release 8.10.5 of 30 May 2006. If you are upgrading from an earlier release, please read those notes also.

Setup Changes

1. The maximum number of archive devices was raised from 8 to 24.
2. The maximum number of overlay points was raised from 500K to 1M.

Bug Repairs

1. The product generator now better handles PPIs with elevation in 90–270 range.
2. The bug fix done on 5 May 2006 was supposed to fix the stopping of the 60sec checkin timer. This fix did not work completely. This has now been rewritten entirely.

New Features

1. The IRIS/HDF5 pipes **IrisToHDF5** and **HDF5ToIris** now will read/write ellipse info from proj4 string. Also when converting HDF5 product=”RR” files (rainfall accumulation) to IRIS, it will now produce a PROD_RAIN1 file if the integration time is 1 hour or less. We added full support for fractional hours both ways.
2. Changed ingest_dir_lookup_sweep() to support interleaved volume scan sweeps. This effects immediate products PPI, RHI, RAW, RTI, and SHEAR only.
3. Add “About IRIS” to the top help menubar.
4. The WARN product now allows HCLASS input. Also, added HCLASS to RAW Product Configuration Menu.

IRIS 8.10.5 Release Notes (30 May 2006)

These notes cover changes made in IRIS since release 8.10.4 of 8 May 2006. If you are upgrading from an earlier release, please read those notes also.

Data Format Changes

1. There were two new data types added to IRIS:

   ZDRc — This is a corrected version of ZDR. The usual correction is for differential intervening attenuation.

   HClass — This is a small number indicating what class the detected hydrometeors are. Typically there are about 6 classes covering rain, snow, hail, etc.

Setup Changes

1. Significant changes were made to **color_setup** to support new dual-polarization data types. From the point of view of **color_setup**, there are two new data types: Rho and SQI are now separate, and there is a new HClass type. After upgrading the old configuration you had for the "Rho&SQI" selection will now be under the "Rho" button, while the "SQI" button is uninitialized. You can ignore these changes unless you wish to use either the SQI or HClass data types.

   Here is a list of the new features:

   In the Color Set Editor tool, there is a new 3rd choice to the File/"open example palette" in menubar. "Default" picks a new default which contains nice distinct colors for Hydrometeor class displays. The choice "Old Default" gets you the old palette with 16 grayscale colors.

   Also in the Color Set Editor tool, there are 2 new choices to the File/"open example set". "ZDR" picks our suggested ZDR colors, and "HClass" picks our suggested Hydrometeor Classification colors. HClass assumes you are using the new default color palette.

   Back on the main Color Configuration Menu, there are new File/"Open Example" values for ZDR, Rho, and HClass.

   Finally there is a whole new tool called the "HydroClass Name Editor". This tool allows the customer to assign their own ASCII names for each of the Classes. For example you can use your local language, or you can adjust the class rules to make a custom class, and assign it a name here. If you are doing this, please use one of the reserved USER classes. We wish to keep the meaning of the basic classes constant and well defined.

   If you wish to use the new features, then after upgrading run **color_setup** and do the following:

   - Launch the Color Set Editor.
   - Select File/Open Example Palette/Default

- Press “Save All”.
- Delete old color sets for ZDR or HClass, if applicable.
- Press the Color Set button, select “New”, type in “ZDR”.
- Press “Save All”.
- Select File/Open Example Set/ZDR.
- Press the Color Set button, select “New”, type in “HClass”.
- Select File/Open Example Set/HClass.
- Press “Save All”.
- Dismiss the Color Set Editor.
- On the main Color Configuration Menu, select data type ZDR.
- Set the color set on the bottom to “ZDR”.
- Select File/Open Example.
- Press “Save All”.
- Select data type Rho.
- Select File/Open Example.
- Press “Save All”.
- Select data type SQI.
- Select File/Open Example.
- Press “Save All”.
- Select data type HClass.
- Set the color set on the bottom to “HClass”.
- Select File/Open Example.
- Press “Save All”. All done, you can exit.

Bug Repairs

1. The **HDF5ToIris** pipe now supports floating point input for all Cartesian data. For output, the **IrisToHDF5** pipe now will output rainfall rates and rainfall accumulations in floating point.
2. Fixed missing rotated font on RHEL4 in IRIS Display color scale label.
3. Fixed a bug in **color_setup**. If you exited without making a change it would resave to the file. This was a problem if someone else changed the file while you were running.

New Features

1. The HClass and ZDRc data types were added to the product configuration menu.
2. The HClass data type was added to the Color Scale Tool in both the product output menu and the QLW. Also Rho and SQI are now separate configuration in the Color Scale Tools.
3. The new HClass data type was added to the Plot Params buttons in **ascope**.

IRIS 8.10.4 Release Notes (8 May 2006)

These notes cover changes made in IRIS since release 8.10.3 of 13 April 2006. If you are upgrading from an earlier release, please read those notes also.

Setup Changes

1. Added a new **setup** question to the Ingest section button. Please leave the "Hydro Classification in ReIngest" question set to "Disabled". This feature is not implemented yet. Coming soon.

Bug Repairs

1. The maximum GIF output size was raised from 1500x1100 to 5000x5000

2. Changes were made in **UfToIris** and **IrisToUf** regarding the default mapping of UF data types to IRIS data types. I show the changes here. If you are dependant on the old values the be sure to set them in your .conf files.

Iris Type	Old UF	New UF
DB_DBZ	CZ	DZ
DB_DBZC	CZ	CZ
DB_ZDR	DR	
DB_DBT	DZ	ZT
DB_LDRH	LH	
DB_LDRV	LV	
DB_PHIDP	PH	
DB_RHOHV	RH	
DB_SQI	—	SQ
DB_WIDTH	SW	
DB_VEL	VR	

3. **UfToIris** now supports RHIs. I**risToUf** was already working with RHIs.

4. Fixed bug of not being able to make RAINN products from composited RAIN1 products.

5. Fixed a bug in the IRIS client menus introduced on Feb 10, 2006 in release 8.10.2. After using the POM, ISM or PSC menus the menu connection to the server would fail after a few minutes. This problem was introduced while fixing a crash which was happening when if making multiple selections while an update was received.

6. In release 8.10.2 we allowed **rays** and **productx** to specify extremely long line widths. This allowed us to see a new bug: These programs were not stopping when the end of the ray was reached. They continued to print data for the full specified line length. This is fixed to stop at the end of the ray if it is reached.

IRIS 8.10.3 Release Notes (13 Apr 2006)

These notes cover changes made in IRIS since release 8.10.2 of 29 March 2006. If you are upgrading from an earlier release, please read those notes also.

New Features

1. Announcing the new **Archive2ToIris** pipe which can read the NEXRAD archive2 format ".raw" files produced by the LDM software. In this first release it can only process sweeps which match format to fit in a normal IRIS task (that is not a hybrid task). Effectively this means we can only get the low few reflectivity scans. The **archive2view** utility also reads the LDM files. The source for all the archive2 programs is now in the new utils/archive2 directory.
2. IRIS now supports conversion of lightning flash data in Vaisala UALF format into an IRIS WARN product. This allows displays overlaying lightning and radar data. The lightning data updates on a 15-second time scale which compares favorably with radar volume scans which update on more of a 5-minute time scale. Please contact Sigmet if you would like to purchase this feature.
3. The DWELL product configuration menu was enhanced for dwells of WARN product inputs. These inputs are used for airplane, bird, and lightning tracking. You can now explicitly specify the icon suffix changes as old data is dwelled in. To get the legacy behavior set the Suffix1 to "d", and use no Suffix2. The purpose of this is to allow you to show older data with a smaller icon.

Bug Repairs

1. Fixed error if IRIS_KEYS not defined. This could cause memory faults on many programs.
2. Cleaned up crashes caused by funny printer configurations, in **iri**s menus, and other programs.
3. In the **IrisToBufr** pipe added optional WMO message length option.
4. UF data name overriding was broken for **IrisToUf**. It worked in **UfToIris**.
5. Printers were not being listed properly by sig_lpstat on RHEL4 Linux platforms.
6. Raised the maximum image size in IRIS from 3100x3100 to 5000x5000. The max product size remains at 3100. The main reason to do this is to support bigger underlay files.
7. In **suncal**, the azimuth beam widths were to high by 1/cos(el). We also added explicit display of how much the sun has moved since the calibration started.
8. Fixed a bug causing window process resize events with uninitialized size on power up. This could cause the window to crash.

IRIS 8.10.2 Release Notes (29 Mar 2006)

These notes cover changes made in IRIS since release 8.10.1 of 19 January 2006. If you are upgrading from an earlier release, please read those notes also.

Installation Changes

1. The scripts used to automatically start Sigmet programs at boot time have been moved. They are not in the ${IRIS_ROOT}/config_template/rc.d directory, rather than the init directory. The installation manual is changed to match.

Data Format Changes

1. The time series archive data format now includes a field called iNanoUTC. This is the time in nanoseconds. Previously we only logged to the nearest millisecond

Setup Changes

1. Added a new **setup** question to the product button. In the *Product Transmission and Display* section you will see “Network Send Timeout”. This is the timeout value introduced in release 8.09.10. It turned out that a hard coded value of 60 seconds was not correct for some slow networks, so you can now set this as you wish.

Bug Repairs

1. The **real-time display** site status menu was sometimes alternating between OK and idle about once a second.
2. **Zauto** was not doing the single point calibration on noise source systems when invoked from the shell using the –cal option
3. The Live Action Tool in the QLW was not working on the HP-UX platform due to byte swapping problems.
4. There was a memory leak in the MAX product. Each time MAX was run on a single sweep volume scan it would abort with an informative signal, but also leave the input file open. This Bug dates back to before code was ported from FORTRAN in Feb 5, 1998 in release 6.13.
5. The IRIS Product Scheduler Menu, Ingest Sum Menu, and Product Output Menu would crash if the menu was updating while selecting multiple lines.
6. Fixed a bug in **IrisToGrib1**. It was potentially generating incorrect uninitialized error messages.
7. Ported the **iris_agl_svr** code to Linux. This is used to automatically determine the runway directions at an airport based on the Airport Ground Lighting system.

8. Fixed a bug introduced in release 8.10.1: The QLM would crash when popping down the cursor tool.

9. Fixed a bug in the **IrisToAsterix** pipe. The intended EOP message at the end of a product actually contained the SOP command.

10. Many improvements were made to **suncal**. Fixed alternating azimuth position errors. It corrects for the motion of the sun during the calibration. The output files now include a prefix based on the site code. It computes the peak power and beam width. The calculated position of the sun was off by one day. Errors will product a nicely formatted string on the error output which can be piped into the new **signal_iris**.

New Features

1. .The **UfToIris** pipe will now handle individual ray data times which come before the volume scan start time.

2. The **tsimport** utility now recovers better from a missing packet. Logging now includes the time. It will now will log a missing last packet of a ray. Many other improvements to the log.

3. The QLW cursor readout is now based on the projection map units.

4. The IRIS GIF underlay maps now fully support the new ellipsoid earth shapes and standard parallels.

5. The maximum number of icons supported in IRIS overlays and display was raised from 40 to 200.

6. Raised the maximum line width in **productx** and **rays** from 200 to 30000 characters. This is helpful when the output is piped into another program. Also fixed a bug in **productx**: on RAW products it was ignoring the command line and using a hard coded value of 85.

7. Introducing a new utility to IRIS called **signal_iris**. This program will read the standard input and signal that text to the IRIS message log. It can be used for lots of things including error output from exec tasks like **suncal**.

IRIS 8.10.1 Release Notes (19 Jan 2006)

These notes cover changes made in IRIS since release 8.10 of 11 December 2005. If you are upgrading from an earlier release, please read those notes also.

Installation Changes

1. Starting with release 8.10.1 the release media includes Tomcat 5.0. The **install** program is enhanced to include a button to install this. All existing IRIS/Web customers should upgrade to RHEL 3.0 or 4.0 and the new tomcat. Be sure to follow the new instructions in Appendix F of the Software Installation Manual. You need to install the Tomcat 5.0 first before installing the IRIS/Web.

Data Format Changes

1. To better support calibration using the sun, the following numbers were added to the task_calib_info and product_end structures:

   - I0 value at calibration in dBm.
   - Noise level at calibration in dBm.
   - Radar constant in dB.
   - Receiver bandwidth in kHz (RVP8 only).

   See the *IRIS Programmer's Manual* for format details. The current noise level has been recorded for many years.

Documentation Changes

1. The chapter documenting the **rtdisp** utility was moved from the *IRIS Radar Manual* to the *IRIS/RDA Utilities Manual* because **rtdisp** is supplied with both IRIS and RDA.
2. There is a new chapter in the *IRIS/RDA Utilities Manual* covering the new **suncal** utility.

Bug Repairs

1. In **BufrToIris** added support for incoming data present indicators in site lists.
2. The XSECT product was widening individual range bins which were surrounded by thresholded data by half a radial in azimuth.
3. The IRIS product configuration menu for the RAIN1 product did not allow you to select SRI input products which were not generated on the local system.
4. With all the new support for elliptical earth projections introduced in 8.10, the cursor tool in the web look window was broken. This is now fixed.

5. **Productx** was enhanced to take line width and to display a summary of data from all Cartesian products. This is printed in file units for 8-bit data only.

6. The **UfToIris** pipe now has a sweep offset feature. This allows you to input data with an initial sweep of 0 or negative.

7. *RHEL4 Platforms only:* There were bugs introduced in the OS sleep timer functions. We have made changes to make this more consistent across platforms.

8. Fixed a bug in the IRIS Ingest process. If the process crashed it was not correctly unmapping and removing all shared memory. This would usually cause the automatically restarted process to get a memory error on the next task. In the interest of fault recovery, we also changed Ingest to continue trying to run the task which just crashed.

9. The DWELL product was changed to indicate area-not-scanned for an area in which any of the inputs had missing data. Previously it would so indicate only where all inputs were missing.

New Features

1. Announcing the new **suncal** utility. This program will perform a PPI sector scan about the expected sun's position. It will make a special BEAM product from this data, then process the BEAM product to compute the antenna positioning errors and peak power. Please read about this in the *IRIS/RDA Utilities Manual*.

2. The Cross Section Tool in the Quick Look Window has a neat new feature. If you click on the middle of the cross section line, it will allow you to shift the line keeping the same orientation and length.

3. Another neat new feature of the Cross Section Tool is that if you also bring up the Cursor Tool, it will now correctly display data and position information from the cross section window.

4. The **UfToIris** pipe program is enhanced to allow adding an offset to the UF sweep numbers. For example, if your UF data starts with sweep number 0, you can now add one to all sweeps. See the UfToIris.conf file example in the config_templates directory for details.