RDA 8.11.0 Release Notes (13 Dec 2006)

These release notes cover changes made to the SIGMET Radar Data Acquisition platform. The last public release was RDA-8.10.10 dated 28 October 2006. If you are upgrading from an earlier version please also read the release notes that have been published since then.

Important Upgrade Notes

1. Starting with this release, you will need to install the Kvaser canbus library in order to compile or run the RCP8. This is available on our release cdrom, and can be installed as follows:

```
# cd /mnt/cdrom/sigmet/drivers/kvasercan–4.2.1–3
# rpm –Uvh lib.i686.rpm
```

   This will install on any version of RedHat Linux. However for canbus support you should be at RHEL4 or higher. Documentation files are installed at location /usr/share/doc/can-lib–1.0.1.

   If you are using the Vaisala antenna pedestal, then you will be using the canbus you will need to install the Kvaser kernel module. You need to match it to your specific kernel version. Here are instructions from the cdrom. If you need a kernel module for a different kernel version, contact sigmet.

```
# cd /mnt/cdrom/sigmet/drivers/kvasercan–4.2.1–3
# rpm –Uhv kmod–common–i686.rpm
# rpm –Uhv kmod–smp–2.6.9_5.EL.i686.rpm
```

   If you are installing from the web, you can pick up these same rpms from our ftp site:

```
ftp.sigmet.com://outgoing/os_patches/linux/RHEL4/kvasercan–4.2.1.3
```

Bug Repairs

1. The acquisition of (I,Q) data from the **RVP8/Rx card** would sometimes fall behind when the PCI data rate exceeded ~40MBytes/sec. This would only happen in a very heavily loaded dual-pol system.

2. A bug fixed in **HydroClass** that caused all the echoes to appear in the “NoMet” class, when the melting layer height was at a value below 300 m (MSL), approx.

3. **HydroClass** generates more informative messages in cases the configuration file missing and/or inconsistent. Note: this item covers closed Trac #41, #42, #58.

4. The **HydroClass dpolapp** utility is significantly enhanced, please check the –help option to see details. This includes generating a default dpolapp.conf file with the “–generate” option.

5. **HydroClass** data type is now set invalid in **ascope** whenever ZDR cannot be computed. Fixed a bug in which HydroClass fault pop-ups in **ascope** were only visible for a fraction

of a second. Also we signal and do not computer HydroClass whenever the melting level is set to undefined. Trac #39, #38, #68,

6. In **HydroClass**, the default rule strength (RS) threshold values of the CSU hydrometeor classifier have been updated such that bins of low consistency (RS < 0.3, previously no thresholds, 0.0) are now classified as non-metrological echoes. Such bins enter into 'NoMet', or are thresholded, depending on the threshold settings in dpolapp.conf. These settings in dpolapp.conf can be tuned by advanced users to optimal performance for each climate and site, as before.

7. **HydroClass** configuration file (**dpolapp.conf**) comment lines have been improved, for example two dimensional CSU hydrometeor classifier membership function MBF(Zdr) is now quoted as MBF(Zdr,dBZ), similarly with Kdp and altitude.

8. Excess messages in rvp8.log "Shared global section already there <rvp8_hclass>" removed.

9. The RVP8 tries to assemble a CPI, even during config errors. A typical config error would be requesting dual polarization on a signal pol radar. A side effect of skipping the CPI assembling was that the time, az, and el of all rays were set to zero. This could cause users to waste time trying to figure out why angles are missing, rather than looking for the config error.

New Features

1. The **RCP8** now supports the Canbus used on Vaisala pedestals. Canbus enables connecting multiple sensors through a pair of wires to the system. Data from sensors is encapsulated to the the canbus messages with identifiers, which are sent to the canbus for system control and monitoring. Messages from sensors are processed and BITE packets are sent for BITEX to show the status of system.

   To use the Canbus on your radar system, be sure to install the kernel module as discussed above under Important Upgrade Notes. Then in the RCP8 setups accessible via antx, in the site custom section you will find a question "Use CAN–Bus serial control/status:". Set this to "Yes" and it will enable the Canbus thread. You can also enter here the IDs of the two BITE packets in which the sensor data is sent.

   Canbus is written into two parts:

   can_kvaser.c: Interface to the canbus using Kvaser USBcanII. If the interface to the canbus is changed, this software module might need to be rewritten.

   canbus_main.c: Software module to handle incoming messages from canbus and to send outgoing commands to canbus. This is using the can_kvaser interface. Current version has handling for messages from azimuth and elevation encoders, azimuth and elevation tachometers, temperature sensors (az–motor, el–motor, radome, equipment bay), motor currents and status of motor drivers. More handlers can be added if needed. Data is sent further in BITE packets.

Definitions needed are located in file canbus.h. This file includes canbus speed definitions, message IDs, scale factors for sensors and other canbus specific timers and limits.