

# Release Notes

RDA

**8.13.x**



**VAISALA**

PUBLISHED BY

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## Table of Contents

<b>1. About This Document</b>	<b>3</b>
1.1 Version Information	3
1.2 Related Documents	3
<b>2. RDA 8.13.7 Release Notes (June 2017)</b>	<b>5</b>
2.1 Upgrade Notes	5
2.2 New Features	6
2.3 Bug Repairs	6
<b>3. RDA 8.13.6 Release Notes (April 2016)</b>	<b>7</b>
3.1 Upgrade Notes	7
3.2 New Features	9
3.3 Bug Repairs	10
<b>4. RDA 8.13.5 Release Notes (17 December 2014)</b>	<b>11</b>
4.1 New Features	11
4.2 Bug Repairs	11
<b>5. RDA 8.13.4 Release Notes (23 September 2014)</b>	<b>13</b>
5.1 New Features	13
5.2 Bug Repairs	13
<b>6. RDA 8.13.3 Release Notes (1 October 2013)</b>	<b>15</b>
6.1 Important Upgrade Notes	15
6.2 New Features	15
6.3 Bug Repairs	16
<b>7. RDA 8.13.2 Release Notes (18 March 2013)</b>	<b>19</b>
7.1 New Features	19
7.2 Bug Repairs	19
<b>8. RDA 8.13.1 Release Notes (30 August 2012)</b>	<b>21</b>
8.1 Important Upgrade Note	21
8.2 New Features	21
8.3 Bug Repairs	22
<b>9. RDA 8.13.0 Release Notes (24 February 2012)</b>	<b>23</b>
9.1 Important Upgrade Notes	23
9.2 New Feature	23
9.3 Bug Repairs	23
<b>Warranty</b>	<b>25</b>
<b>Technical Support</b>	<b>25</b>
<b>Recycling</b>	<b>25</b>



# 1. About This Document

## 1.1 Version Information

This document provides release notes for RDA 8.13.x.

Table 1 Document Versions

Document Code	Date	Description
DOC236902EN-A	June 2017	RDA 8.13.7
--	April 2016	RDA 8.13.6
--	December 17 2014	RDA 8.13.5
--	September 23 2014	RDA 8.13.4
--	October 1 2013	RDA 8.13.3
--	March 18 2013	RDA 8.13.2
--	August 30 2012	RDA 8.13.1
--	February 24 2012	RDA 8.13.0

## 1.2 Related Documents

Table 2 Weather Radar Documentation

Document Code	Name
M211806EN	<i>Weather Radar WRM100/200 User Guide</i>
M211805EN	<i>Weather Radar WRM100/200 Installation Guide</i>
M211838EN	<i>Weather Radar WRK100/200 User Guide</i>
M211839EN	<i>Weather Radar WRK100/200 Installation Guide</i>
M211315EN	<i>IRIS and RDA Software Installation Guide</i>
M211318EN	<i>IRIS Programming Guide</i>
M211316EN	<i>IRIS and RDA Utilities Guide</i>
M211319EN	<i>IRIS Product and Display Guide</i>
M211317EN	<i>IRIS Radar User Guide</i>
M211452EN	<i>IRIS and RDA Dual Polarization User Guide</i>
M211322EN	<i>RVP900 Digital Receiver and Signal Processor User Guide</i>

Document Code	Name
M211320EN	<i>Radar Control Processor RCP8 User Guide</i>

For information on changes made since your current release was installed, download the latest document versions and check the IRIS and RDA Release Notes from [www.vaisala.com](http://www.vaisala.com).

Vaisala encourages you to send your comments or corrections to [helpdesk@vaisala.com](mailto:helpdesk@vaisala.com)

## 2. RDA 8.13.7 Release Notes (June 2017)

These notes cover changes made to RDA since version 8.13.6 of April 2016. If you are upgrading from an earlier release, please read those notes as well.

This release uses the term “RVP” to refer to features in RVP900.

### 2.1 Upgrade Notes

- IRIS/RDA KickStart DVD is upgraded to support CentOS 7 operational system. It also supports now configuring a computer with RAID. Standard Vaisala RVP computers and IRIS workstations can now be installed using KickStart DVD.
- If you are upgrading Vaisala WRM or WRK radar system and not using the **sigconfig** script, you may need to manually install following rpms depending on the version of your system.

CentOS 7.1:

```
dkms-kvasercan-5.18.0-1.el7.centos.x86_64.rpm
dkms-kvasercanleaf-5.18.0-1.el7.centos.x86_64.rpm
dkms-kvasercanmhydra-5.18.0-1.el7.centos.x86_64.rpm
dkms-linux-gpib-3.2.21-1.el7.x86_64.rpm
dkms-moxauport-1.2.9-1.el7.x86_64.rpm
```

CentOS 6.4:

```
dkms-kvasercan-5.18.0-1.el6.i686.rpm dkms-
kvasercanleaf-5.18.0-1.el6.i686.rpm
dkms-kvasercanmhydra-5.18.0-1.el6.i686.rpm dkms-linux-
gpib-3.2.21-1.el6.i686.rpm
dkms-moxauport-1.1-1.el6.i686.rpm
```

## 2.2 New Features

1. There are new data moments available to be recorded. Maximum number of moments in raw data is, however, limited to 16. These new data moments are not compatible with previous versions of IRIS/RDA so if these moments are recorded, all systems that are processing data must be upgraded to 8.13.7. (IRIS-1290)

New data moments:

- **Ah, Av**: Integral attenuation for horizontal (H) and vertical (V) channels.
  - **Azdr**: Integral attenuation of ZDR (dB) format.
  - **CCOR**: Polar cross-correlation, uncorrected **RhoHV**. Because this value is not noise corrected, it is a direct indicator of the **PHIDP** uncertainty
  - **CSR**: Doppler channel clutter-to-signal ratio (CSR).
  - **LOG**: Log receiver signal-to-noise ratio.
  - **PMI**: Polarimetric meteorological index.
2. **IrisTo0dimHdf5** pipe now supports **0dimHdf5** versions 2.0, 2.1 and 2.2. version of the data format can be selected in pipe configuration file. (IRIS-1327)
  3. New formatting pipe to convert Leosphere Windcube 400S wind scan into IRIS data format. (IRIS-1304)
  4. Maximum antenna rotating velocity was increased to 120deg/s. (IRIS-1393)

## 2.3 Bug Repairs

1. The dual polarization attenuation correction in RVP was working correctly only when RVP **PhiDP** offset was close or equal to 180°.

The root cause was that **PhiDP** values were not properly prepared for use in DP attenuation correction algorithm. There was a bug in processing **PhiDP** range. This RDA version fixes that bug and contains additional improvements in calculating weather mask for attenuation correction.

All systems that use attenuation correction benefit from this upgrade. (IRIS-1250, IRIS-1251)



## 3. RDA 8.13.6 Release Notes (April 2016)

These notes cover changes made to RDA since version 8.13.5 of 17 December 2014. If you are upgrading from an earlier release, please read those notes as well.

This document uses the term “RVP” to refer to features in both RVP900 and RVP8.

### 3.1 Upgrade Notes

1. The Intel IPP library used by RVP900 has been updated to support 64-bit operating systems.

To install, copy the *sigmet-ipp.conf* file and execute **ldconfig** as **root**:

```
# cp /usr/sigmet/config_template/LINUX/etc/ld.so.conf.d/sigmet-  
ipp.conf /etc/ld.so.conf.d  
# ldconfig
```

2. There are several updated RPM packages to support hardware interfaces with a 64-bit operating system.  
Systems with 8.13.5 or older running in RHEL6/Centos6 do not need to update these packages. In addition, 8.13.6 will run with the old drivers.  
Kvaser drivers must be updated only if the new Kvaser USBcan Professional is installed. Kvaser drivers can be updated for the old Kvaser USBcan II, if desired. All debuginfo packages are optional. The packages are on the release .iso and on [ftp.sigmet.com/outgoing/os\\_patches/RHEL6/RPMS](http://ftp.sigmet.com/outgoing/os_patches/RHEL6/RPMS). The packages are:

```
dkms-moxauport-1.1-1.el6.i686
dkms-linux-gpib-3.2.21-1.el6.i686
linux-gpib-kmod-common-3.2.21-1.el6.i686
linux-gpib-lib-3.2.21-1.el6.i686
dkms-2.1.1.2-1.noarch
dkms-nrpzmodule-3.7-1.el6.i686
nrpz-lib-3.7-1.el6.i686
dkms-kvasercanleaf-5.8.0-2.el6.i686
dkms-kvasercan-5.8.0-2.el6.i686
kvasercan-lib-5.8.0-1.el6.i686
```

Centos7 requires new 64-bit drivers:

```
dkms-2.2.0.3-28.git.7c3e7c5.el7.noarch
dkms-moxauport-1.2.9-1.el7.x86_64
dkms-linux-gpib-3.2.21-1.el7.x86_64
linux-gpib-kmod-common-3.2.21-1.el7.x86_64
linux-gpib-lib-3.2.21-1.el7.x86_64
dkms-nrpzmodule-4.2.2-1.el7.centos.noarch
libsrnpz-3.0.0-1.el7.centos.x86_64
libnrp-4.11-1.el7.centos.x86_64
dkms-kvasercanleaf-5.8.0-2.el7.x86_64
dkms-kvasercan-5.8.0-2.el7.x86_64
kvasercan-lib-5.8.0-1.el7.x86_64
```

Optional:

```
linux-gpib-lib-debuginfo-3.2.21-1.el6.i686
dkms-kvasercan-debuginfo-5.8.0-2.el6.i686
kvasercan-lib-debuginfo-5.8.0-1.el6.i686
```

Optional:

```
linux-gpib-lib-debuginfo-3.2.21-1.el7.x86_64
dkms-kvasercanleaf-debuginfo-5.8.0-2.el7.x86_64
kvasercan-lib-debuginfo-5.8.0-1.el7.x86_64
dkms-kvasercan-debuginfo-5.8.0-2.el7.x86_64
librsnrpz-devel-3.0.0-1.el7.centos.x86_64
libnrp-devel-4.11-1.el7.centos.x86_64
```

## 3.2 New Features

1. This release includes general improvements and fixes to RVP900 and RCP8 to incorporate new RCP903 and RCP904 interface control panels. These interfaces are used for the ASR9 and WSR88D radar systems, respectively.
2. This release is built for the 64-bit CentOS7 and 32-bit CentOS6 operating systems. Support for the CentOS5 operating system has been dropped.
3. Dual Pulse Repetition Time (DPRT) processing mode has been added to RVP900 to support staggered PRT operations. This operating mode has now been ported from the RVP8 code base to RVP900. Triple-PRT trigger periods are now supported in RVP900. (IRIS-1057, IRIS-997.)
4. A Kaiser windowing function has replaced a Blackman window for optimizing the signal-to-noise ratio with NLFM pulse compression. This causes in changes to the tuning parameter functionalities for optimizing the waveform:
  - *Tuning parameter 1* controls the shape of the modulation waveform, varying from a pure Linear FM (LFM) with a value of 0 to a full tangent function, approaching infinite sloped values at the start and end with a value of 1.
  - *Tuning parameter 2* controls the depth of a Kaiser window used on the receiver filter, where a value of 0 denotes a rectangular window and a value of 1 denotes a very deep Kaiser window, similar to a Blackman window.
  - *Tuning parameter 3* denotes the amplitude tapering of the transmit pulse envelope where a value of 0 is rectangular (no tapering) and a value of 1 is a raise cosine with no flattening in the middle. IRIS-1108
5. A new control/status interface supports the latest magnetron transmitter used Vaisala WRM200. This interface is over a CAT5 ethernet cable between the RCP8 computer and the transmitter's modulator. (IRIS-938)
6. Added support for controlling signal generators over an Ethernet connection. (IRIS-1066)
7. Added support for a new Klystron transmitter serial interface used in Vaisala WRK100/200.
8. Added a new tool in BITE utility to export bite status as a csv file on a configured interval. (ECR-10641)

## 3.3 Bug Repairs

1. RVP900 main process crashed when in dual polarization operating mode with more than 2400 range gates in each radial. This has been fixed so that dual polarization supports up to 4200 maximum range gates, the same number supported by single polarization operations. (IRIS-1062)
2. There were many issues discovered with angle syncing and trigger timing when testing the RVP900 with the WSR-88D BATCH modes, DPRT modes, and super resolution. These are all resolved. (IRIS-1073, IRIS-1075, IRIS-1090, IRIS-100)
3. When stopping and starting the ingest processes in IRIS or recycling RVP900 power, it was possible in the WRM200 radar system to cause an invalid pulse width and pulse repetition frequency combination putting a transmitter at risk to over duty cycle. RVP900 now starts with a PRF respecting the duty cycle of any PW and remain in that state until the controlling host software issues a request to change the PW/PRF. A patch for this issue was issued on 9 March, 2015. (IRIS-1076)
4. A bug introduced in version 8.13.3 caused a data artifact in **RPHASE** processing mode while performing range averaging. The data artifact could be seen in **dB**T and **V** data. This bug has been fixed. (IRIS-1059)
5. A bug in **zauto** when using wideband noise sources during the calibration caused a 3 dB error. This was introduced in the 8.12.8 version. (IRIS-976)
6. Primary **SQI** was incorrectly used in place of secondary **SQI** when the user selected **LOG&CSR&SQI&PMI** as the threshold criteria. This bug has been fixed. (IRIS-1111)
7. The antenna model used in RVP900 to predict the antenna's current position during a pulse would sometime jump position 0.1 – 0.2 °, resulting in pulse data angle positions also having sudden jumps. The prediction model now uses the last 10 angle reports with a quadratic extrapolation to provide a much smoother motion state in the pulse data. (IRIS-1103)
8. When using a built-in signal generator in the Vaisala Antenna Mounted Receiver, Bitex error and log messages were incorrectly reported. This bug has been fixed. (IRIS-917)
9. Bitex history graphs crashed in version 8.13.5 due to missing **xorg-x11** fonts in the CentOS6.4 builds. The installation procedures have been modified to add the **xorg-x11** fonts to CentOS6.4. (IRIS-1128)

## 4. RDA 8.13.5 Release Notes (17 December 2014)

These notes cover changes made in the RDA since version 8.13.4 of 23 September 2014. If you are upgrading from an earlier release, please read those notes also. In these release notes, “RVP” refers to a feature that is in both the RVP900 and RVP8.

### 4.1 New Features

1. **ZAUTO** has new command line options for use with the Vaisala AMR product. The options choose to force horizontal or vertical polarization when calibrating. (IRIS-933)
2. Added support Ethernet link support between RCP8 and Pulse Systems TR-1163. (IRIS-1019)
3. The FIR matched filter band widths are now stored as **aux** information in the *zcalib.conf* file. (IRIS-654)

### 4.2 Bug Repairs

1. **ZAUTO** process would sometimes hang up when conducting a pulse width change in autocal mode. (IRIS-1003)
2. RVP900 had problems with both dynamic and static angle syncing causing various symptoms, such as missing rays and failure to run some scan configurations. These were mostly happening in dual-prf and BATCH mode scans. We have added over 200 additional tests to automated regression testing to catch additional errors of this type prior to being released. These problems started in version 8.13.1. (IRIS-1018, IRIS-986, IRIS-956, IRIS-991)
3. An approximately 3dB anomaly in calibration was found in the **ZAUTO** utility when using wideband noise sources, which are now commonly built into radar receivers. This was broken in version 8.12.8. (IRIS-976)
4. A bug was introduced in the version 8.13.4 release that sometimes caused the Real Time Display to only show **RHI** scans even though **PPI** scans were running. (IRIS-1036)



## 5. RDA 8.13.4 Release Notes (23 September 2014)

These notes cover changes made in IRIS since release 8.13.3 of 1 October 2013. If you are upgrading from an earlier release, please read those notes also. In these release notes, RVP refers to a feature that is in both the RVP900 and RVP8.

### 5.1 New Features

1. Real-time attenuation correction of the High Sensitivity Reflectivity data type, **dBZe**, which is derived from the **|Rhv|** correlation was implemented. The correction comes from the definition:

$$dBZe = \frac{dBZh + dBZe}{2}$$

which implies that the attenuation of **dBZe** is:

$$Ae = \frac{Ah + Ah}{2}$$

**Ah** is computed from iteratively constrained **PhiDP** as described in the Dual Polarization manual. (IRIS-420)

2. The Non-Linear Frequency Modulation (NLFM) used for compressed pulses was improved. Since the first implementation the non-linear modulation was conducted by defining three linear segments having different slopes for the frequency modulation. The new implementation uses true curves allowing a more gradual ramp of frequency change in the time domain. This allows the removal of the blackman windowing function used during down conversion and restores ~3 dB. (IRIS-907)
3. The RVP900 software process no longer requires the RVP901 IFDR hardware to be present. This allows time series playback for processing **IQ** data having just a computer with RVP900 software installed. It also allows a second signal processor computer within the radar system capable of receiving **IQ** in realtime across the network for parallel processing, perhaps with different configurations. (IRIS-879)
4. **Zauto** was modified to support autocalibration using an internal signal generator for the new Vaisala AMR product. There are new command line options of **-amr** and **-pol H** or **V**.

The **amr** flag should only be used on the Vaisala AMR product while the **-pol** flag can be used to set the transmit polarization during any use of autocalibration.

### 5.2 Bug Repairs

1. A sporadic error message `HostCmds: Trigger waveform was alterered (Pattern)` was incorrectly being flagged by the RVP900 process's and being issued. The source of the incorrect determination of this error has been found and fixed. (IRIS-825)

2. During RVP900 computer booting the scripts to start the software process were executed in the needed pre-defined order. However, sometimes a process which had dependencies from others would take a longer time starting causing a segmentation violation crash. The startup script has been modified to ensure the process are started and completed in a serial manner which fixes the race condition. (IRIS-899, IRIS-914)
3. It was found in 8.13.2 that when the **PMI** threshold was being applied to **Z** data, that if **SQI** was applied on **V** it inadvertently was also applied to **RhoHV** and **PhiDP** data. This has been fixed. (IRIS-900)
4. When viewing ZDR data in ASCOPE the ZDR data quantities would be different when Range Normalization function was on vs. off. This problem does not appear when IRIS is controlling the RVP. ASCOPE was not using the RVP API interface correctly. (IRIS-919)



## 6. RDA 8.13.3 Release Notes (1 October 2013)

These notes cover changes made in IRIS since release 8.31.2 of 18 March 2013. If you are upgrading from an earlier release, please read those notes also. In these release notes, RVP refers to a feature that is in both the RVP900 and RVP8.

### 6.1 Important Upgrade Notes

1. It has been discovered with RDA 8.13.2 and RHEL5.x that the Synchro to Digital hardware interface and processing is not functioning at the speeds needed to resolve real movement of the antenna system. It is functioning correctly with RHEL6 releases. As we will soon drop support of RHEL5 altogether, we are not fixing this bug due to its complication.
2. In this release we are switching our default factory operating system to CentOS 6.x. CentOS is a free enterprise class computing platform which is 100% binary compatible with RHEL. This release introduces a CentOS installation guide and kickstart. For those customers required to use RHEL, we will also continue to provide a separate kickstart CD for that environment.

### 6.2 New Features

1. The GMAP clutter filter is now compatible with dual-polarization processing. As GMAP can be used in any major processing mode the default factory configurations for clutter filtering now become:

Filter #1 - Type:3(Gaussian Adaptive)	Win:1	Spectrum width: 0.100 m/sec
Filter #2 - Type:3(Gaussian Adaptive)	Win:1	Spectrum width: 0.200 m/sec
Filter #3 - Type:3(Gaussian Adaptive)	Win:1	Spectrum width: 0.300 m/sec
Filter #4 - Type:3(Gaussian Adaptive)	Win:1	Spectrum width: 0.400 m/sec
Filter #5 - Type:3(Gaussian Adaptive)	Win:1	Spectrum width: 0.500 m/sec
Filter #6 - Type:3(Gaussian Adaptive)	Win:1	Spectrum width: 0.600 m/sec
Filter #7 - Type:3(Gaussian Adaptive)	Win:1	Spectrum width: 0.700 m/sec

2. Each filter index now becomes sequentially more aggressive when stepping from index 0 to 7. If you are upgrading from previous versions it might be a good idea to modify the 'mf' section of dspix to a similar state, taking advantage of GMAP and improved useability.
3. It is highly recommended to use the GMAP ground clutter filter during the collection of any data, if ground clutter removal is desired. As a result of this work the Variable Least Square fit, **Var LSQ**, ground clutter filter has been removed.

4. The thresholding of all the dual polarimetric moments now follows the settings for the **ZDR** data type. Previously all dual polarimetric moments, with the exception of **ZDR**, were thresholded in same manner as **V**. In practice the dual-pol moments do not require Doppler coherence and using a threshold such as **SQI**, sometimes needed on **V**, would inadvertently threshold dual pol moments in areas with good quality. Labeling of text fields in **Ascope** and the **Task Configuration Menu** now state Dual Polarimetric versus **ZDR**. (IRIS-708, IRIS-753)
5. Additional to above, the secondary **SQI** value is used if it is applied to any dual-polarimetric moment. This allows setting a stronger **SQI** threshold for **V** and weaker values for dual-pol. (IRIS-755)
6. The Redundant System Switch Over feature in the RCP02 has been ported to the RCP8. This is to support managing the active sub-systems for sites having duplicate transmitters/receiver racks through single antenna/pedestal. (IRIS-628)
7. Improved the output from productx for the calibration metadata from the **RAW** product files. Users can now easily see and compare the noise floor values used in the **H** and **V** receivers at time of the data acquisition. (IRIS-727)

## 6.3 Bug Repairs

1. The 'Any Spectrum Size' bit in the **SOPRM** Opcode was being stored correctly, causing incorrect results when reported back with GPARM. This is now fixed. (IRIS-655)
2. The **rvp9main** process was hanging in rare instances when data packets were dropped in the UDP time series stream from the RVP901 IFDR to the RVP902 computer. In the normal field install with direct link between IFDR and the computer this was not a problem. However when adding routers/switches/media convertors between the IFDR and RVP902 this become an intermittent problem every few days. Modified the IFDR and **rvp9main** process to handle dropped/reordered packets eliminating this lock-up event. (IRIS-723)
3. In release 8.13.1 we introduced a new feature in the RVP to correct the **Z** calibration constant (that is, "**Z0**") for changes in noise level between calibration time and the current time. However this led to conflicting calibration information stored in the raw product header.
4. When using sector blanking, the last ray of data at the start of sector blanking was sometimes repeated for the first ray at the end of the sector. This was related to the direction of antenna movement and how angle syncing is performed in the boundary conditions. (IRIS-791, IRIS-795)
5. Total Reflectivity (**T**) should be preserved but in the past some functions were modifying **T**, such as micro clutter suppression during range averaging and the point clutter filter. (IRIS-715)
6. The introduction of the dual pulse hybrid pulse compression concept in RDA version 8.13.1 did not properly pass the noise floor levels from each pulse into the **RPHASE** processing mode. This has been fixed. (IRIS-799)
7. Starting with version 8.13.2, **Ascope** would become extremely slow or freeze if both bin and range style plots were configured to be shown at the same time. Fixed. (IRIS-802)
8. When implementing the hybrid pulse compression scheme in version 8.13.1 the vertical and enhanced reflectivity data were not obtaining calibration values from the two different pulses. Now all reflectivity data types use the same **dBZ0**. (IRIS-733)

9. During development of GMAP for dual polarization data processing, it was discovered that at times the last step of adapting the windowing function was not being performed per user's request resulting lower amounts of clutter mitigation when Clutter to Signal Ratio (CSR) was high or to aggressive filtering when CSR is low. (IRIS-761)
10. The thresholding of data and execution of the 1D speckle filter were not acting as intended on single-polarization data in the **PPP** processing mode. These errors have been building up since the implementations of Dual Polarimetric Attenuation Correction and computation of the new Adaptive **KDP** in **PPP** processing mode. Several fixes were implemented to restore thresholding and speckle filtering to function as described in the product manual on single polarization data. (IRIS-819, IRIS-823)



## 7. RDA 8.13.2 Release Notes (18 March 2013)

These notes cover changes made in RDA since release 8.13.1 of 30 August 2012. If you are upgrading from an earlier release, please read those notes also. In these release notes, “RVP” refers to a feature that is in both RVP900 and RVP8.



**CAUTION!** It has been discovered that with RDA 8.13.2 and RHEL5.x the Synchro to Digital hardware interface and processing is not functional. Do not use this combination if your radar system uses Synchro angles.

### 7.1 New Features

1. The online manuals supplied with IRIS and RDA are now shipped as single PDF files, and are built using modern tools, so more features, like a side-panel Table of Contents are available. (IRIS-700)

### 7.2 Bug Repairs

1. In the RVP, the ZDR Offset did not take effect if the dual-pol attenuation correction was enabled. (IRIS-468)
2. The RVP was outputting a power level too high before processing data. This would effect the zauto program if the RVP was reset before it was run. The bug was introduced in svn [28166] so it was in release 8.13.1. There is a patch on the ftp site for 8.13.1 The power was 8 dB too high on the RVP900, 6 dB too high on the RVP8, and 4.5 dB too high on the RVP7. (IRIS-660, IRIS-646)
3. Fixed a bug in the RVP calculation of **KDP**. It was getting occasional rays containing all bad data. (IRIS-704)
4. The **HClass** data frequently has bad ray segments with data type set to **NoMet**. These segments usually are half the range interval. This happens more frequently on the RVP8, less often on the RVP900. (IRIS-577)
5. When installing the RCP8, the sigconfig script did not install the kvasercan-lib RPM on RHEL5. It worked correctly on RHEL6. (IRIS-608)
6. In the RVP the 1D Speckle filter controls were not working independently for dual-pol data. Instead, the Doppler control bit turned it on for all data types. This is now changed so that the Log control bit controls **T**, **SNR**, **Z**, **Ta**, **Za**, **Te**, **Ze**, **ZDR**, **LdrH**, and **LdrV**, while the Doppler bit controls Width, Velocity, **KDP**, **RhoHV**, **RhoH**, and **RhoV**. HydroClass and SQL do not have the 1D speckle filter applied ever. (IRIS-629)
7. In the RVP the 2D speckle filter (also known as the 3x3 speckle filter) was not working in PPP mode. (IRIS-630)

8. In release 8.13.1 we introduced a new feature in the RVP to correct the Z calibration constant (AKA “Z0”) for changes in noise level between calibration time and the current time. This caused problems for upgraded systems which may not have a stored calibration-time noise level. So, we have enhanced the RVP code to make this adjustment optional, and defaulted the option to “No”. It also now detects if the `zcalib.conf` file contains the calibration-time noise, and forces this off if not. Zcal is also enhanced to allow easy entry of the calibration-time noise. (IRIS-645)
9. There is a setup question to specify the maximum power level for the signal generator controlled by the RCP8. Unfortunately this value had to be entered twice. Once in the RCP8 non-volatile setups accessible via `antx`, and once in the setup utility RCP section. This caused problems if they were set differently. We removed the RCP8 non-volatile setup question, so this miss-configuration is no longer possible. (IRIS-657)
10. The RVP900 had a bug in the wide dynamic range mode. After a reset, it was taking many seconds to update the calibration coefficients in the IFDR. As a consequence, it could run for a while with the incorrect gain. This was particularly visible in `zauto`, where a jump in gain would happen about 10 points into the calibration. (IRIS-679)
11. We no longer require config files `AGC1.DAT`, `COGAIN1.DAT`, and `COSTCTAB1.DAT`. These files were used by the RVP6 to calibration AGC and STC, but we were still reading these files at startup. (IRIS-690)
12. The feature of locking the licenses to the RVP900 IFDR hardware instead of to the computer hardware was broken since release 8.13.1 when we removed the `/usr/sigmat/bin/rda` directory. (IRIS-717)
13. In the RVP, the Point Clutter filter was not working in the PPP major mode. In all major modes, the filter now considers the point targets left after Doppler filtering i.e. `dBZ` (and `dBZv`, `dBZe` in dual-pol), while it was previously considering the unfiltered echo. In addition, the filter has been changed to not apply to unfiltered echo (`dBt`, `dBtv`, and `dBte`). (IRIS-631)
14. Also the maximum look-aside bin distance in the point clutter has been raised from 3 to 5 bins in **Ascope** and the IRIS **Task Configuration Menu**. (IRIS-632)
15. In the RVP, the filter of Micro Clutter Suppression was not functional in PPP mode. The functionality is now restored in all major modes, and it can be activated in `dspX`, in order to improve range averaged data in clutter. (IRIS-672)
16. The `tsarchive` daemons are now started and stopped using a service command. This is similar to how IRIS and the RVP900 are started. Generally, this is invisible to the user. It solves a problem in which the owner of the time series buffer was different depending on which application started first. (IRIS-584)

## 8. RDA 8.13.1 Release Notes (30 August 2012)

These notes cover changes made in RDA since release 8.13.0 of 24 February 2012. If you are upgrading from an earlier release, please read those notes also.

### 8.1 Important Upgrade Note

There were changes in the recommended template *dualpol.conf* file. After upgrading to 8.13.1, copy that file with the following command:

```
$ cp /usr/sigmet/config_template/dualpol.conf $IRIS_CONFIG
```

### 8.2 New Features

1. RVP900 now supports a new Wide Dynamic Range mode.  
This is implemented using two IF sampling at different gains, and will work in dual-polarization mode.  
Upgrade will require new IFDR firmware with rdaflash. IRIS-503
2. RVP900 now supports a hybrid pulse transmission and processing. IRIS-403, IRIS-514, IRIS-516, IRIS-517, IRIS-519, IRIS-520, IRIS-521, IRIS-522, IRIS-525, IRIS-526, IRIS-527, IRIS-531, IRIS-541  
In hybrid-pulse mode, the RVP900 transmits a long (say 50 microseconds), typically compressed pulse followed by a sort (say 1 microsecond) conventional pulse. The short pulse data is used to fill in near range weather, while the long pulse is used at larger ranges. This is important for low-power large-duty-cycle transmitters, such as TWTs. This included a whole range of changes and features listed here.  
Please contact the Vaisala weather radar service team to get your hybrid pulse radar configured and calibrated.
  - a. Adding double sets of pulse-dependent meta-data to the time series recording. This includes: Number of (I,Q) samples, burst sample magnitude and phase, pulse width, band width, dBZ calibration, noise power, noise power at calibration, and burst power at calibration. Of these, the band width, noise power at calibration, and burst power at calibration were previously missing. The structure version numbers were incremented.
  - b. Raised the maximum pulse width supported to 100 microseconds, up from 50.
  - c. RVP900 will record time series data from the second shorter pulse for twice as long at the dead zone created by the primary pulse. We then merge data over the overlap region to make a smooth transition.

3. Added support for the new WSR98D connector panel. This panel connects using two cables to J3 and J6 on the RVP900 IFDR box. The various output and input signals are accessible to both the RVP900 and RCP8 programs. The RCP8 interface signals are controlled in the *softplane.conf* file. IRIS-329, IRIS-558, IRIS-559, IRIS-560  
If you wish to use this, you need to do the following:
  - a. `$ softplane -resave`
  - b. Edit the *softplane.conf* file and set `splConfig.Rvp9[0].lInUse = 1`.  
If you change the file, rerun: `$ softplane -resave`
  - c. Edit the *softplane.conf* file and set `splConfig.Rvp9[0].sNetPanel = "WSR98D"`.
  - d. Rerun: `$ softplane -resave`

Your file will be populated with all the signals on the WSR98D panel, and their default RCP8 signal assignments.

## 8.3 Bug Repairs

1. RVP900 and RVP8 were signaling `UNIX Signal: Unexpected RVP9/Proc termination` when starting the antenna daemon. This causes the fault bit to stick indicating that there was a fault on power up. This was introduced in our new way of starting the antenna daemons in 8.13.0. (IRIS-530, IRIS-531)
2. Fixed intermittent RCP8 segmentation faults on startup when using canbus for angles.
3. Starting in release 8.12.9, **V** and **W** output of the RVP900 in PPP major mode, single polarization were always zero. (IRIS-403)
4. The `tsview` utility was not showing the last range bin of the time series data. It also did not show the full RVP900 bin count.
5. Netflash was not signaling errors correctly.
6. All the RDA-related programs, such as `rcp8`, and `rvp9`, were moved from `/usr/sigmat/bin/rda` to the *normal* `/usr/sigmat/bin`.
7. Fix cases of blank ray segments in RDA HydroClass. (IRIS-577)
8. Fixed the RVP900 and RVP8 warning `Trigger waveform was altered (Period)` when we are at the exact maximum PRF. (IRIS-566)



## 9. RDA 8.13.0 Release Notes (24 February 2012)

These notes cover changes made in RDA since release 8.12.9 of 15 July 2011. If you are upgrading from an earlier release, please read those notes also.

### 9.1 Important Upgrade Notes

1. Read the **Important Upgrade Notes** in *IRIS 8.13.0 Release Notes*.
2. RCP8 Systems only: If you are using the GPIB interface to talk to peripherals such as a signal generator, you need to upgrade your kernel module when upgrading. First remove the old rpms:

```
# rpm -e kmod-linux-gpib
# rpm -e linux-gpib-kmod-common
# rpm -e linux-gpib-lib
```

3. Install the new rpms from the installation media, from the *RHEL6/extras/RPMS* directory:

```
# rpm -Uhv dkms-2* (Probably already installed)
# rpm -Uhv linux-gpib-lib-*
# rpm -Uhv linux-gpib-kmod-common-*
# rpm -Uhv dkms-linux-gpib-*
```

If you do not have the release dvd, you can download these from our FTP site.

### 9.2 New Feature

The RVP900 now can compute new **dBTe** and **dBZe** data types. The **e** stands for “enhanced”. This is the dual-polarization cross-correlation power measurement. In other words, this is  $|T\theta hv|$  and  $|R\theta hv|$ .

See IRIS 8.13.0 Release Notes, New Features bullet 8 for more details. IRIS-442

### 9.3 Bug Repairs

1. RVP900 was generating an incorrect trigger pattern when using an external trigger. This is fixed.

2. The RCP8 canbus interface was improved to support improved gear heating. Requires a solid state relay installed in the pedestal controlled by DI16 con2 pins 12(+) and 13(-). IRIS-301
3. RVP900 was getting messed up when the firewall feature of Linux is turned on. It was computing an MTU of 0 between the computer and the IFRD. This is changed to return a minimum of 1500. IRIS-349
4. Because of changes made to the size of stored time series in the RVP900 and RVP8, it was necessary to increase the maximum shared memory size to 50 MB, from the default of 32MB. This is now done by the **sigconfig** script automatically at install time, and is documented in *IRIS/RDA Software Installation Manual*. IRIS-339
5. We improved the **sigconfig** script to correctly configure network device eth1 when we install an RVP900. IRIS-351
6. We fixed a long standing bug in the RCP8. It seemed to only show up on RHEL6, and usually with the RVP900. It was seen on several radars running IRIS 8.12.9. The symptoms were:
  - a. The system runs for a day or two before failure.
  - b. IRIS stops recording data with no error message.
  - c. The antenna utility shows the antenna not moving. On real radars, the antenna may still moving.
  - d. If you access the RCP8 using antx, the RCP8 and interface will lock up when you restart the threads.
7. Fixed a bug in the RCP8 on Klystron radars only. The RCP8 crashed occasionally with a Unix Segmentation fault in the klystron thread. Usually there has also been an "Unknown +message header" fault report from klystron thread before the crash. IRIS-390

# Warranty

For standard warranty terms and conditions, see [www.vaisala.com/warranty](http://www.vaisala.com/warranty).

Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

# Technical Support



Contact Vaisala technical support at [helpdesk@vaisala.com](mailto:helpdesk@vaisala.com). Provide at least the following supporting information:

- Product name, model, and serial number
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information on the problem

For more information, see [www.vaisala.com/support](http://www.vaisala.com/support).

# Recycling



Recycle all applicable material.



Follow the statutory regulations for disposing of the product and packaging.





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