

Update on WSR-88D Level II Build 10 Changes
2 May 2008

NEW UPDATE AS OF 5/2/08:

1. Build 10 Release Begins the Week of 5 May. As scheduled, the Radar Operations Center will begin releasing Build 10 software kits to operational sites the week of 5 May 2008. The shipment schedule is at:
http://www.roc.noaa.gov/ssb/cm/csw_notes/compsw.asp. Click on "SW 43" under "SW Note." Sites have 60 days from the receipt of the Build 10 software kit to install the software.
2. Build 10 Level II Data Transmittal. Level II Super Resolution data will only be sent from NWS WSR-88Ds. The weather forecast office (WFO) also has to have NOAANet communications installed at the site, for the necessary bandwidth, to transmit Level II Super Resolution data. Build 10 will be deployed with Recombined data being the default Level II to be distributed. The Software Note instructs WFOs when NOAANet has been implemented at their site, to enable transmission of Level II Super Resolution data. Many sites already have NOAANet available and installations continue. All of the DOD and FAA sites currently sending Level II data will send only Recombined data until further notice.
3. NWS Common Operations Development Environment (CODE) Website Update. The CODE Web Site (http://www.weather.gov/code88d/code_b10.html) now contains the Final Version of Build 10 CODE - Public Edition. Build 10 CODE supports Super-Resolution and the new Message 31 version of Level 2 data. You may recall that we posted early versions of Build 10 CODE last August and again this past February. If you downloaded an earlier version, you should replace it with this final version.
4. Additional information:

The ROC web site

(http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/b10main.aspx) contains extensive information on Super-Resolution and on the status of Build 10.

You can check which sites are running Build 10 at the site

<http://www.osf.noaa.gov/ops/build.asp>

If you process live level 2 data, the version being distributed from each site is reported at the site <http://weather.noaa.gov/monitor/radar2/>

Questions can be addressed to: Tim.D.Crum@noaa.gov.

Update on WSR-88D Level II Build 10 Changes
11 April 2008

NEW UPDATE AS OF 4/11/08:

Change in Level II Data Format from KVWX. Build 10 was loaded on the Evansville, IN (KVWX) radar on 8 April. We had anticipated the Level II data available via NWS Level II Data Collection and Distribution Network would remain in MSG1 format and the software change would be transparent to users. However, once installed we learned the data can be sent with MSG1 or MSG31 format – MSG31 being the default.

We are sorry for this unannounced change. But with the data now being transmitted in MSG31 format we plan to leave the VWX Level II in the MSG31 format. In the long run this should be a benefit to real-time Level II users to only have to maintain one decoder when Build 10 is loaded on the rest of the WSR-88Ds.

We will update the Build 10 Level II Interface Control Document to reflect only using the MSG31 format.

In Build 10, the LDM version identifier for KVWX will remain at Version 1. However, LDM Version 1 now refers to MSG31 radials in legacy data resolution at KVWX. Version 1 and Version 2 will be identical in terms of radial format and data resolution.

Questions can be addressed to: Tim.D.Crum@noaa.gov.

Update on WSR-88D Level II Build 10 Changes
2 April 2008

NEW UPDATES AS OF 4/2/08:

1. Build 10 Beta Test at Minneapolis, MN. Build 10 was successfully loaded on the Minneapolis, MN (KMPX) WSR-88D on 1 April. Transmission of Super Resolution Level II data began right after installation. The Beta Test schedule and status are below.

Paducah, KY WSR-88D - INSTALLED

Yuma, AZ WSR-88D - INSTALLED (**Installation of the needed bandwidth to start Super Resolution data now scheduled for 7 May.**)

South Kauai, HI WSR-88D - INSTALLED (no Level II available)

Edwards AFB, CA WSR-88D – Week of April 1 (no Level II available)

Minneapolis, MN WSR-88D - INSTALLED

2. Build 10 Installation Updates/Type of Level II Data Being Transmitted.

(1) The ROC has a URL (<https://www.roc.noaa.gov/ops/ssm.asp>) for users to obtain:

- (a) A list of sites and which RPG and RDA software build the site is using, and
- (b) A list of sites and which volume coverage pattern the site is using, during the last automated hourly ROC call to the RPG.

(2) The NWS Level II Radar Receive Status web site (<http://weather.noaa.gov/monitor/radar2/>) now appends a two-digit suffix to the site identifier when Build 10 is loaded. The web page has the legend which is repeated here: 01=Legacy Msg1; 02=Legacy Msg31; 03=Super-Res; 04=Recombined. For example, KPAH03 means Super Resolution data is being transmitted, KYUX04 means Recombined data is being transmitted.

Questions can be addressed to: Tim.D.Crum@noaa.gov.

Update on WSR-88D Level II Build 10 Changes
28 March 2008

NEW UPDATES AS OF 3/28/08:

1. Build 10 Beta Test at Yuma, AZ. Build 10 was successfully loaded on the Yuma, AZ (KYUX) WSR-88D on 18 March. Transmission of Super Resolution Level II data is scheduled to begin around 4 April when the required added communications bandwidth (NOAANet) is scheduled to be installed. The remainder of the Beta Test schedule is below. Delays in installing the software due to weather or other factors could lead to an installation date later in the designated week. Watch for Free Text Messages issued by the sites when Build 10 is loaded: (<http://weather.noaa.gov/monitor/radar/>).

Paducah, KY WSR-88D - INSTALLED

Yuma, AZ WSR-88D - INSTALLED (Super Resolution likely not available until 4 April when required bandwidth scheduled for installation)

South Kauai, HI WSR-88D - INSTALLED (no Level II available)

Edwards AFB, CA WSR-88D – April 1(no Level II available)

Minneapolis, MN WSR-88D - April 1

2. Build 10 Deployment Schedule. The planned shipment schedule of the Build 10 software kits from the Radar Operations Center to WSR-88D sites is now available at: http://www.roc.noaa.gov/ssb/cm/csw_notes/compsw.asp. Click on SW 43 under SW Note, it will provide the deployment schedule for Build 10. However, there is an issue for Level II Super Resolution to be sent from a NWS WFO. The WFO also has to have NOAANet installed at the site. Build 10 will be deployed with recombined data being distributed. The Software Note instructs the site to make the change so that if NOAANet has been implemented at their site, to enable Level II Super Resolution. If NOAANet is not available, then they will not turn it on until NOAANet is available. In addition, sites have 65 days from the receipt of the Build 10 package to do the actual install. All of the DOD and FAA sites currently sending Level II data will send only Recombined data.
3. Updated Level II Interface Control Document (ICD) Posted. The updated Build 10.0 draft of the Archive II/User ICD is available for download at: http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/Build10ICDS.aspx. The reserved number of segments in the meta data for the clutter map were wrong (as well as the total expected size of the meta data). This change corrects these errors and makes the data consistent with the documentation.
4. Level II users should periodically check "news" at: http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/b10main.aspx.

Questions can be addressed to: Tim.D.Crum@noaa.gov.

Update on WSR-88D Level II Build 10 Changes
12 March 2008

NEW UPDATES AS OF 3/12/08:

1. Build 10 Beta Test at Paducah, KY. Build 10 was successfully loaded on the Paducah, KY (KPAH) WSR-88D on 11 March. Transmission of Super Resolution Level II data began around noon on 12 March. The remainder of the Beta Test schedule (below) remains unchanged, though delays in installing the software due to weather or other factors could lead to an installation date later in the designated week. Watch for Free Text Messages issued by the sites when Build 10 is loaded: (<http://weather.noaa.gov/monitor/radar/>).

Paducah, KY WSR-88D - INSTALLED

Yuma, AZ WSR-88D - March 18 (Super Resolution likely not available until 4 April when required bandwidth scheduled for installation)

South Kauai, HI WSR-88D - March 19 (no Level II available)

Edwards AFB, CA WSR-88D - March 25 (no Level II available)

Minneapolis, MN WSR-88D - April 1

2. A question has been asked why reflectivity data are being sent from all Surveillance scan in the "Split Cuts." Please see the following information:

In WSR-88D Super Resolution Level II data, reflectivity data will be transmitted during both the Doppler and Surveillance scans on "Split Cuts" - where more than two scans are made at a given elevation angle. In the Surveillance scan, only reflectivity data will be sent. In the Doppler scan, data from all three moments will be sent. The RPG Recombination Algorithm requires the second cut of reflectivity data. Our recommendation is for users to use the reflectivity data from the first scan (Surveillance). The first scan of reflectivity data is collected using a long PRT so that the data is range unambiguous. The data range is 460 km and will be either 1 km resolution (if Recombined data) or 0.25 km if Super Resolution data.

The second scan of reflectivity is collected using a short PRT and therefore the data requires range unfolding in the RDA. Furthermore, the reflectivity data on the second scan has a maximum range of 230 km, the same as the Doppler information. This data will be 0.25 km resolution, same as the Doppler data.

3. The version of the Build 10 software being used in the Beta Test is available on the National Weather Service Common Operations and Development Environment (CODE) web site (<http://www.weather.gov/code88d/>).
4. Level II users should periodically check "news" at: http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/b10main.aspx.

Questions can be addressed to: Tim.D.Crum@noaa.gov.

Update on WSR-88D Level II Build 10 Changes
29 February 2008

NEW UPDATES AS OF 2/29/08:

1. Build 10 Beta Test at Paducah, KY Date Change. The Build 10 Beta Test scheduled for next week at Paducah, KY has been delayed to the week of 10 March due to the likelihood of severe weather in the area next week. The remainder of the Beta Test schedule remains unchanged. The plan now is to load Build 10 software on the Paducah, KY (KPAH) WSR-88D on 11 March, weather and operations permitting. Need for delays due to weather or other factors could lead to an installation date later that week. Watch for Free Text Messages issued by the site (<http://weather.noaa.gov/monitor/radar/>). When the radar is brought back up on Build 10, the Radar Operations Center Beta Test team plans to operate the radar using Recombined data through the next morning. Then after the radar is taken off line the next morning to execute some tests, the radar will be brought back on line (around noon) and be transmitting Super Resolution data.

Paducah, KY WSR-88D - March 11

Yuma, AZ WSR-88D - March 18

South Kauai, HI WSR-88D - March 19 (no Level II available)

Edwards AFB, CA WSR-88D - March 25 (no Level II available)

Minneapolis, MN WSR-88D - April 1

2. The version of the Build 10 software that will go to Beta test will be available on the National Weather Service Common Operations and Development Environment (CODE) web site (<http://www.weather.gov/code88d/>) on 3 March.
3. VCP121 will not change format in Build 10, but its performance in reducing range folded data will be increased. The new VCP121 implements the Sachidananda – Zrnic Algorithm (SZ-2) processing and Multi-Pulse Repetition Frequency Dealiasing Algorithm (MPDA) to mitigate range/velocity aliasing (the Doppler Dilemma). More details are available in: Zittel et al, 2008: Combined WSR-88D technique to reduce range aliasing using phase coding and multiple Doppler scans. 24th Conf. on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology, New Orleans, LA. Paper P2.9.
4. Level II users should periodically check "news" at:
http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/b10main.aspx.

Questions can be addressed to: Tim.D.Crum@noaa.gov.

Update on WSR-88D Level II Build 10 Changes
25 February 2008

NEW UPDATES AS OF 2/25/08:

1. Build 10 Beta Test. The dates and locations for the Build 10 Beta Test remain as stated in the 1/31/08 update and shown below. The plan is to load Build 10 software on the Paducah, KY (KPAH) WSR-88D on 4 March, weather and operations permitting. Need for delays due to weather or other factors could lead to an installation date later that week. Watch for Free Text Messages issued by the site (<http://weather.noaa.gov/monitor/radar/>). When the radar is brought back up on Build 10, the Radar Operations Center Beta Test team plans to operate the radar using Recombined data through the next morning. Then after the radar is taken off line the next morning to execute some tests, the radar will be brought back on line (around noon) and be transmitting Super Resolution data.

Paducah, KY WSR-88D - March 4

Yuma, AZ WSR-88D - March 18

South Kauai, HI WSR-88D - March 19 (no Level II available)

Edwards AFB, CA WSR-88D - March 25 (no Level II available)

Minneapolis, MN WSR-88D - April 1

2. The Beta Test version of the Build 10 operator training is now available at: <http://www.wdtb.noaa.gov/buildTraining/Build10/>. Please note that the material must be considered preliminary and will be updated based on comments received during the Build 10 Beta Test/Use period which begins the week of 3 March 2008.

Questions can be addressed to: Tim.D.Crum@noaa.gov.

Update on WSR-88D Level II Build 10 Changes
31 January 2008

NEW UPDATES AS OF 1/31/08:

1. Build 10 Beta Test. Below are the dates and locations for the Build 10 Beta Test. The date represents the first possible date Build 10 software will be loaded on that system. Need for delays due to weather or other factors could lead to an installation date later that week. A Radar Operations Center Beta Test team will be on site during the week the software is loaded.

Paducah, KY WSR-88D - March 4
Yuma, AZ WSR-88D - March 18
South Kauai, HI WSR-88D - March 18
Edwards AFB, CA WSR-88D - March 25
Minneapolis, MN WSR-88D - April 1

The Level II data from the Paducah, Yuma, and Minneapolis WSR-88Ds will use MSG31 immediately upon loading the Build 10 software on the systems. Additionally, the NOAA Net required bandwidth will be available at Paducah and Minneapolis when Build 10 is installed, so the Level II data should be Super Resolution from those sites. The required bandwidth to support transmission of Super Resolution data from the Yuma WSR-88D is not expected to be available until the first week of April. We will provide an update on that schedule later. In the interim, the Level II data from Yuma will be in MSG31 format, but not Super Resolution data.

2. Update on Transmission of Super Resolution Data with Build. The NWS intends to transmit Super Resolution Data from NWS WSR-88Ds upon installation of Build 10 at the remaining NWS WSR-88D sites. The required NOAA Net bandwidth is currently scheduled to be at sites before they receive the Build 10 software. Deployment of Build 10 software is scheduled to begin 5 May. However, DoD or FAA Level II data streams will not be upgraded to Super Resolution data until funding is identified. If this changes, we will advise users in advance. Thus, DoD and FAA Level II data with Build 10 installed will be in MSG31 format, but not Super Resolution data.
3. Schedule of Level II Build 10 data from NOP3. Our current schedule for Level II Dissemination from NOP3 through the end of the Build 10 Operations Test currently underway at the Radar Operations Center is listed below. Times are local Central Standard Time.

Feb 1: 08:00 to 16:00. Live. We will change VCPs and vary among Legacy/Super Resolution/Recombined throughout the day.

Feb 1: (16:00) thru Feb 4 (7:00): Live, Recombined, No VCP changes

Feb 4: (7:00) thru Feb 8 (16:00): Playback, Recombined

Feb 8: (16:00) thru Feb 11 (7:00): Live, Legacy, No VCP changes

Feb 11: (7:00) thru Feb 13 (16:00): Playback, Legacy

Feb 13: (16:00) thru Feb 15 (16:00): Live. We will change VCPs and vary among Legacy/Super Resolution/Recombined from 8:00 to 16:00 on the 14th and 15th.

Feb 15: (16:00) thru Feb 19 (7:00): Playback, Super Res

Feb 19: (12:00) thru Feb 22 (16:00): Live. We will change VCPs and vary among Legacy/Super Resolution/Recombined from 8:00 to 16:00 each day

Feb 22: (16:00) thru Feb 25 (7:00): Live, Recombined, No VCP changes.

NOTES:

(1) VCP = Volume Coverage Pattern

(2) Legacy data refers to data processed in the RDA without applying Super Resolution processing. These data will be identical in format as the Recombined data.

4. Family of Services WSR-88D Briefing. The NEXRAD Program presented and update on WSR-88D Level II data and products at the 24 January 2008 NWS Family of Services meeting. The slides presented are available at:
http://www.roc.noaa.gov/NWS_Level_2/NEXRAD_FOS0108_Rev4.pdf.

Questions concerning the data should be addressed to: Tim.D.Crum@noaa.gov.

NEW UPDATES AS OF 11/20/07:

1. We are planning a conference call on Build 10 Level II changes for 11 am to 12:30 pm EASTERN on 5 December. All interested users may participate. If you have suggested topics to cover, please send them to Tim.D.Crum@noaa.gov, in advance of the call. This will be a “meet me” conference call. You can dial in up to 15 minutes early. Below is the call contact information:

PHONE NUMBER: 877-546-1565

PARTICIPANT PASSCODE: 12162

- We will start the call with a short summary of the information about the data format and content changes and then ask for audience questions. This will be free format to ensure Level II users are getting the information they need and to hear any questions/suggestions users may have.
2. We plan to issue a NWS Technical Implementation Statement concerning the change in Level II format and content later this month.
 3. Users should continue to check the WSR-88D Build 10 web site: http://www.osf.noaa.gov/NWS_Level_2/BuildInfo/b10main.aspx for updated information, the schedule for real-time transmittal of sample data via the NWS Level II Data Collection and Distribution Network, interface control documents, etc.
 4. There has been some confusion in regard to the Level II message format and data content the NWS will be distributing after each WSR-88D site installs the Build 10 upgrade. Please let me try to clarify our plan:

All sites, except the Evansville radar (KVWX), will be using MSG31 when they install Build 10. (The Evansville radar (KVWX) will remain on MSG1 indefinitely.) The Build 10 installation period will be from when the first site installs Build 10 at the start of the Beta Test in late February/early March until the last radar on the Level II network loads Build 10 (could be as late as mid summer). With Build 10, the data format will change to MSG31, whether recombined (legacy resolution data) or Super Resolution data is sent. Thus, there will be a period of several months where sites will be on Build 9 (MSG1) while other sites are installing Build 10 (MSG31). User decoders will need to be able to handle both formats.

We are still working on a transition plan on when we will be able to start sending Super Resolution data. We are coordinating an announcement on the plan within the NWS now. We don't have a date yet on when we can release the plan for Super Resolution data distribution from all sites. Transmitting the Super Resolution data requires added bandwidth that we don't have funding for. However, the NWS is planning a transition to NOAANet in 2008 that may be able to accommodate the added bandwidth within our budget. We are coordinating a transition to that network.

Update on WSR-88D Level II Build 10 Changes
19 October 2007

NEW UPDATES AS OF 10/19/07:

1. The NOP3 Level II data are being archived at NCDC. Use the following URL to quickly get to the data:
<http://www.ncdc.noaa.gov/nexradinv/chooseday.jsp?id=NOP3>.
2. The NOP3 Level II data should be in the “final” format. If needed changes arise, we will post the date when new changes will be included in the NOP3 data stream, what the changes were and when the interface control document will be changed.
3. Users have asked for the metadata for the NOP3 Level II data; here it is: the location is 35 14 18, -97 27 36; the feed horn elevation is 400.7 m MSL.
4. The Build 10 Beta Test is now scheduled to begin on 6 March 2008. We expect to have approximately five Build 10 Beta Test sites (locations and installation dates to be announced). A 6-week deployment of Build 10 to field sites is scheduled to begin the first week of May 2008. The deployment schedule will be announced in advance. Sites will have 60 days to install the software. The MSG31 format change will take effect when a site installs Build 10 on their WSR-88D, whether Recombined or Super Resolution Level II data are transmitted. Thus, users’ Level II software will need to be flexible to ingest both MSG1 and MSG31 format data; and legacy/recombined resolution data or Super Resolution data as there will be combinations of these data being transmitted from sites beginning with the Build 10 Beta Test start.
5. An early version of the Build 10 software is posted on the Common Operations Development Environment web site: <http://www.weather.gov/code88d/>. Source code for the Build 10 Level II MSG31 format and the Recombination Algorithm are available at the site.
6. We are planning a conference call on Build 10 Level II changes for 11 am to 12:30 pm EASTERN on 5 December. All interested users may participate. If you have suggested topics to cover, please send them to Tim.D.Crum@noaa.gov, in advance of the call. We will announce the dial-in information and agenda topics in November.

BACKGROUND:

Reference the NWS Public Information Statement of 2 March 2007 (http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/pdfs/pns_wsr-88d_levelII_modfctn-1.pdf), the WSR-88D Radar Operations Center (ROC) is sending test WSR-88D Level II data in real time via the NWS Level II Data Collection and Distribution Network. This connection simulates an operational WSR-88D site in the NWS Southern Region and thus is sent to the Level II Top Tier sites. The data are transmitted with the ICAO nomenclature of “NOP3.” The data, collected by the ROC WSR-88D test bed radar located in Norman, OK, will be transmitted as a mix of real-time and replay data. When

possible, the ROC will cycle through many/all of the current volume coverage patterns during a live/replay scenario.

The NOP3 Level II test data are not be sent continuously. The ROC has posted a planned schedule for transmission of NOP3 data at:

(http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/pdfs/Build10_LDM_schedule.pdf),

and a document which contains an overview of technical aspects of this change is at:

http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/pdfs/SuperRes88D_Change_Summary_21sep2007.pdf. Users should frequently consult the ROC Build 10 web site:

(http://www.roc.noaa.gov/NWS_Level_2/BuildInfo/b10main.aspx) for announcements of changes to the NOP3 Level II data transmission schedule and any changes to the format of the data made as a result of testing.

The Build 10 software is in System Test which is now scheduled to conclude 21 December. An Operations Test will then be conducted at the ROC before going to select (approximately 5) field sites for a Beta Test beginning 6 March 2008.

Questions concerning the data should be addressed to: Tim.D.Crum@noaa.gov.