

OHD-Core 18.1.1 Release Notes

Build and Package Date: 10/28/2019. Tested against: FEWS: 2018.02 build 89626, patched from 87833.
Part of CHPS Build: 19.1.1 Release Date: December, 2019

Overview

This release contains 14 Bug fixes & Enhancements which are new since the release of OHD-Core-17.1.1

Known Issues and Limitations

None at this time.

Scripts / Documentation

Scripts

LRO.py

Documentation

The following pieces of documentation have been modified since the last release and can be found in the directory at the root of the package. All the CHPS documentation may be found online at <https://vlab.ncep.noaa.gov/group/chps/wiki/-/wiki/OWP+Documentation/FrontPage>

- *Modified:*
 - Calibration Configuration Guide
 - LongRangeOutlook Operations Guide
 - MEFP Configuration Guide Data ingest
- *New:* None
- *Removed:* None

Fixes

Redmine ID	Reported By	Title
27113	ABRFC	RESSNGL inputs need to be extended in WaterCoach
53541	CNRFC	Graphgen Aggregator end date issue.
54565	OHRFC	Lag/K mod error when default lag is zero
58561	CNRFC	MEFP Extreme Members (possibly due to random sampling technique?)
60725	HQ	Replace deprecated `string.atof` method in LRO.py
68636	MARFC	AEI via AEICQN modifier artificially bounded by -5 and 5

Enhancements

Redmine ID	Requested By	Title
53457	CBRFC	Add CSV support to EVS.
54083	HQ	Testing the new GraphGen template for the HEFS 10-day product.
59891	HQ	Update GEFS gather script to reflect change from NCEP.
59355	WGRFC	ModuleConfigFiles Template WATBAL_SACSMA_Calibration provided in 18.1.1 is incorrect.
61011	HQ	Remove ensmodels.climatologyFewsAdapter from CHPS Baseline.
61000	OHRFC	Reduce precision of exceedance probabilities in LRO.py
61022	NWRFC	Make scp destination an argument passed by module in LRO.py
68552	OHRFC	UNITHG doesn't show expect warnings in log file or window.

Detailed Description of Software Changes and Enhancements

Fixes:

Redmine	27113 – RESSNGL inputs need to be extended in WaterCoach
Description	We (ABRFC) are having issues running WaterCoach for RESSNGL modules. Normally the PELV and RQOT inputs stop at T0. RESSNGL runs fine in normal ops with the configuration. However, in WaterCoach mode RESSNGL fails as it says it needs PELV data out to the end of the run. I talked with Alaina at MARFC and they have the same issue but were able to make a workaround by adding modules to extend the inputs. However, we have many more reservoirs would hope to not have to make changes to every single one to have WaterCoach work. I'm not sure if it's an issue with FEWS or if it can be fixed in the RESSNGL itself.
Cause	N/A
Fix	OHD common code was updated to allow for truncated input time series. It will check for the condition of allowing the Model input time series to be extended beyond T0 if that datatype is allowed missing values based on the nwsrfs_datatype_mapping_file.txt file.
Notes	N/A

Redmine	53541 – GraphGen Agreggator End Date issue
Description	<p>CNRFC use Graphgen to compute quantiles for peak flows and date estimates during snowmelt season (Apr-Jul). They've noticed an issue with Graphgen's "wild card" year logic. When the start date of the aggregation (T0) has the same month and day as the end date (0001-08-01 in this case), the end date year remains the same as the T0 year. This causes the Graphen product to fail. Currently, the end date year is selected as the first year beginning AFTER OR ON the start date year. We'd like to see this logic changed so that the end date year is selected as the first year AFTER the start date year.</p> <p>Here are some examples of how we'd like to see the end date year selection work:</p> <p>For T0=12/1/2017, end date (0001-08-01) would be 8/1/2018 for T0=4/1/2018, end date (0001-08-01) would be 8/1/2018 for T0=8/1/2018, end date (0001-08-01) would be 8/1/2019</p>
Cause	What CNRFC is pointing out is a bug, or perhaps undesirable feature, in how calendar dates specified in GraphGen templates with the year starting with 0 are processed. This is an existing capability in GraphGen and CNRFC is merely

	<p>recommending a change in how it is computed. Here are two good examples of the capability for a current system time is 8/7/2018 12Z:</p> <p>8/1/0001 12:00:00 would yield 8/1/2019 12:00:00, because 0001 indicates the first date/time matching the month, day, hour, minutes, seconds AFTER OR ON the current system time. Notice the "OR ON" portion of this, which is the problem (see below).</p> <p>9/1/0001 12:00:00 would yield 9/1/2018 12:00:00 for the same reason; i.e., its the first Sept 1 AFTER OR ON the current system time.</p> <p>Now here is an undesirable result:</p> <p>8/7/0001 12:00:00 would yield 8/7/2018 12:00:00, because that is the first date/time AFTER OR ON the current system time; in this case, "ON". Hence, if that date is the end time of an aggregation with the start time being T0, then the total length of aggregation is 0 and GraphGen errors out. This is not what CNRFC wants. They would prefer to remove the "OR ON" part and have all dates be determined based on only AFTER. Thus, 8/7/0001 12:00:00 should yield 8/7/2019 12:00:00.</p>
Fix	A code change in the GraphGen was required to solve this problem, after correcting the way date are handled the error was solved.
Notes	N/A

Redmine	54565 – Lag/K mod error when default lag is zero
Description	If the default lag is zero and you try to make a lag mod you get an error. It does not matter if you use the OHD core 17.1.1 or the old 16.2.1, you get the same error. The odd thing about this is that if the default K is zero, the mod will work. This does suggest that it is possibly a module parameter issue of some sort and a configuration change could possibly fix it. If that is true, it would be nice to know what that configuration change is so we can make the change.
Cause	The current location has default PAIR_QT_LAG_CARRYOVER set to 0 in the statesl.txt file, so the user cannot make a Lag mod.
Fix	The Lag/K source codes have been updated to handle this problem without changing the statesl.txt file.

Notes	N/A
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Redmine	58561 – MEFP Extreme Members (possibly due to random sampling technique?)
Description	<p>The option for additional INFO-level logging requested to aid in the RFCs diagnosing extreme precipitation amounts output by the MEFP. The original ticket description is as follows:</p> <p>“We (CNRFC) have seen very large outlier members being generated by MEFP from time to time that don't seem very realistic. They can happen within the first 24-72 hours where we don't expect such behavior. We documented a case for the San Diego River at Fashion Valley recently. In this case, we noticed a very large outlier member that was due to an extreme precip value for period 5 (24-30 hour lead time). Our MEFP configuration uses the RFC forecast as the seed forecast for the first 3 days. In this case, the RFC forecast was zero for all future periods. The MEFP canonical events in play for this case are 1) the base event for period five, and 2) the modulation event that covers days 0 to 3. We suspected that this member might be due to the random sampling technique where a value at the extreme tail of the distribution was selected. We re-ran the mefp pre-processing again, and the extreme member disappeared, and all members looked more realistic. We have a hard time defending these extreme members to our partners; especially when they can completely disappear from a re-run using the same inputs. We've documented some of this in the google sheets link below. Can this be proven that it is due to random sampling? Or is it possibly something else? If it is due to the stratified random sampling technique, is there a way to eliminate such behavior in HEFSv2 without other adverse impacts (underdispersed forecasts)?”</p>
Cause	N/A.
Fix	<p>Implemented the option to include additional logging information related precipitation amounts generated by MEFP for each canonical event and member through the EPT algorithm. The message includes the following (see the <i>MEFP User's Manual</i> for information on the EPT algorithm):</p> <ul style="list-style-type: none"> · the canonical event involved (multiply the start and end by 6-hours to identify the time period); · the standard normal deviate sampled; · the value of the precipitation forecast in normal space; · the probability resulting from pushing both numbers through the EPT linear algorithm and then taking the inverse standard normal QPF; · the quantile corresponding to that probability based on the distribution of observations; and

	<ul style="list-style-type: none"> · the parametric distribution of those observations. <p>The log output will only be generated if the probability (fourth bullet above) exceeds a threshold specified when the logging is turned on. An example log output line:</p> <pre><line level="3" description="EPT Algorithm for event CanonicalEvent(number = 34, start = 21, end = 24, numens = 5): After application of EPT linear function to standard normal deviate 1.2658583109229777 with QPF in normal space of 0.8774589927066887, the probability used is 0.9228119594449637 resulting in quantile 34.43493995199982 mm sampled from distribution GammaDist: parameters = [19.61381, 0.58197, 0.249]."/></pre> <p>To turn on the logging, in the MEFPEnsembleGeneratorModelAdapter module configuration file, add the following run file property, which includes the aforementioned threshold as the “value”:</p> <ul style="list-style-type: none"> · key = eptThresholdToIncludeSamplingLogMessages · value = the threshold that, when a probability equals or exceeds it, a log message is output. Must be between 0.0 (results in one message per event and ensemble member) and 1.0 (results in no messages). <p>For example, the file Config/ModuleConfigFiles/hefs/CachePutah/CachePutah_MEFP_FMAP_Forecast.xml could be edited to include this XML element within runFileActivities in order to see <u>all</u> generated precipitation amounts:</p> <pre><double key="eptThresholdToIncludeSamplingLogMessages" value="0.0"/></pre> <p>This would result in a flood of information messages. To restrict it only to precipitation amounts wherein the corresponding probability is in the upper tail, for example greater than 0.9, the following could be used (you may choose to use a value even greater than 0.9, such as 0.95 or 0.99, to capture more extreme events):</p> <pre><double key="eptThresholdToIncludeSamplingLogMessages" value="0.9"/></pre>
Notes	N/A

Redmine	60725 – Replace deprecated `string.atof` method in LRO.py
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Description	O&M noticed the use of <code>string.atof()</code> in <code>DetermineExceedanceValue()</code> . That conversion function was deprecated back in Python 2.0 and will be removed in Python 3.0. They recommend the following replacement now while we've noticed the issue, so it doesn't sneak up on us later. Replace <code>string.atof(theValue)</code> with <code>float(theValue)</code>
Cause	N/A
Fix	The LRO.py script has been updated as proposed.
Notes	N/A

Redmine	68636 – AEI via AEICQN modifier artificially bounded by -5 and 5
Description	The value entered for the AEICQN mod is being applied to the AIADJ mod too. Any value greater than 5.0 gives a warning in the log viewer and only sends 5.0 value to the model - even if the configured maximum is greater than 5.
Cause	N/A
Fix	Fixed the Fortran code to apply the AEICQN mod properly.
Notes	N/A

Enhancements:

Redmine	53457 – Add CSV support to EVS.
Description	CHPS has a csv ensemble export available. We have switched to this format as it takes up to a third less disk space. Also, this format is faster to parse for scripting applications. It would be nice for EVS to support this format for re-forecasting verification.
Cause	N/A
Fix	Added the ability to: <ol style="list-style-type: none"> 1. The ability to read the prescribed CSV format, uncompressed. 2. The ability to read the prescribed CSV format, gzip compressed.

Redmine	54083 – <i>Testing the new GraphGen template for the HEFS 10-day product</i>
Description	We will provide a new GraphGen template for the HEFS 10-day product. We would like it tested. We will document how to use it in the CHPS/HEFS workflows and would like the template and documentation added into the CHPS baseline.
Cause	OHD common code was updated to allow for truncated input time series. It will check for the condition of allowing the Model input time series to be extended beyond T0 if that datatype is allowed missing values based on the nwsrfs_datatype_mapping_file.txt file.
Fix	Updated GraphGen files are provided with the release. Files are also attached to the Redmine ticket.

Redmine	59891 – Update GEFS gather script to reflect change from NCEP
Description	NCEP has migrated their NOMADS traffic from HTTP to HTTPS server. The GEFS gather script (gefs_data.sh) used for HEFS will need to be updated to reflect this change.
Cause	OHD common code was updated to allow for truncated input time series. It will check for the condition of allowing the Model input time series to be extended beyond T0 if

	that datatype is allowed missing values based on the nwsrfs_datatype_mapping_file.txt file.
Fix	Updated script with the needed change has been provided with the release. Steps to update the existing script have also been provided in the Redmine ticket.

Redmine	59355 – ModuleConfigFiles Template WATBAL_SACSMA_Calibration provided in 18.1.1 is incorrect.
Description	<p>Andrew (at WGRFC) found a number of errors in the WATBAL_SACSMA_Calibration.xml template file in CHPS-18.1.1 OHD-Core-17.1.1</p> <ol style="list-style-type: none"> 1. Tries to obtain RO components from SACSMA module at timeStep "00Z" instead of at timestep unit="hour" multiplier="6" 2. LZFSF is not used, only LZFSF is used, and LZFSF erroneously placed where LZFSC should be expected (right after LZFPC). 3. The WATBAL template should allow for an instantaneous timestep other than 6 hour by using a variable multiplier instead of hardcoded at 6 (which is how it was done for the PEAKFLOW_Selection_Calibration_HOURS.xml) <p>I've attached that version as well as "proposed" and am including a sample "proposed" Stats_Calibration workflow that can use it.</p>
Cause	
Fix	<p>According to Andrew's suggestion, some template configuration XML files have been updated.</p> <ol style="list-style-type: none"> 1. ModuleConfigFiles/calibration/templates/WATBAL_SACSMA_Calibration.xml <ul style="list-style-type: none"> - Rename all variableId *_00Z and *_6h to *_hourly - Change RO components timeStep <timeStep id="00Z"/> to <timeStep unit="hour" multiplier="\$TSS"/> - Using a variable multiplier instead of hardcoded at 6 (<timeStep unit="hour" multiplier="\$TSS"/>) - LZFSF is not used, only LZFSF is used, and LZFSF erroneously placed where LZFSC should be expected (right after LZFPC). 2. SystemConfigFiles/DisplayGroups.xml and DisplayGroups.xmlWithoutSNOW17 <ul style="list-style-type: none"> - Replace parameterId LZFSF with LZFSC in the plot ids <plot id="WATBAL_SACSMA_CONTENT_Multi-year"> and

	<pre><plot id="WATBAL_SACSMAL_ENDOFMONTH_Wateryear"></pre> <p>3. RegionConfigFiles/Filters.xml</p> <ul style="list-style-type: none"> - Replace parameterId LZFSF with LZFSC in the filterID <pre><filter id="Monthly_End_Of_Month_Soil_Moisture_Storage_Contents_MY" name="Monthly End Of Month Soil Moisture Storage Contents"> <filter id="Annual_End_Of_Year_Soil_Moisture_Storage_Contents_MY" name="Annual End Of Year Soil Moisture Storage Contents"> <filter id="Monthly_End_Of_Month_Soil_Moisture_Storage_Contents_WY" name="Monthly End Of Month Soil Moisture Storage Contents"> <filter id="Annual_End_Of_Year_Soil_Moisture_Storage_Contents_WY" name="Annual End Of Year Soil Moisture Storage Contents"></pre> <p>4. WorkflowFiles/calibration/XXXXX_Stats_Calibration.xml</p> <ul style="list-style-type: none"> - Add property TS key (<string key="TS" value="6"/>) to WATBAL_SACSMAL_Calibration <moduleConfigFileName> tag.
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Redmine	61011 – Remove enmodels.climatology.ClimatologyFewsAdapter from CHPS Baseline.
Description	OWP thinks that this application is now obsolete and would like to hear from the RFCs if they still have a need for it. We polled the 13 RFCs and it was reported back that they no longer have a need for this adapter.
Cause	
Fix	We updated the build.xml to remove the classes needed to create the climatology adapter and the test cases. Climatology adapter will not be included in the distribution jar file. Source code was not changed only it will not be compiled.
Notes	In an effort to "clean up" and streamline our development environment, we have removed this application from the OHD-Core baseline package starting with OHD-Core-18.1.1 in the CHPS-19.1.1 Release since it is no longer used. The less code we need to support, maintain, and test, the better.

Redmine	61000 – Reduce precision of exceedance probabilities in LRO.py
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Description	Reduce the significant digits of the probabilities shown via the tool tip hover on the website. Showing exceedances to the hundredth of a percentage point (ie. 52.39%) is implying precision way beyond our accuracy. Whole numbers (52%) would be much more appropriate.
Cause	N/A
Fix	The LRO.py script has been updated as proposed.
Notes	N/A

Redmine	61022 – Make scp destination an argument passed by module in LRO.py
Description	The LRO.py script has a hard-coded destination for sending LRO output: Idad@ls1:/data/ldad/public/images/lro. This is problematic for testing on SA or devTest, as output from a test gets sent to the operational destination. We would like the destination changed to an argument that may be passed by the general adapter that calls the LRO script. This way, the destination may be set by a global property.
Cause	N/A
Fix	The LRO.py script has been updated as proposed.
Notes	<p>The configuration needs to be updated as below.</p> <ol style="list-style-type: none"> 1. Add a destination variable to global_properties file LRO_SCP_DEST=/<scp_destination> <p>Note: If LRO_SCP_DEST variable is blank (LRO_SCP_DEST=), then the default destination is used "ldad@ls1:/data/ldad/public/images/lro"</p> <ol style="list-style-type: none"> 2. Add the third "<argument>\$LRO_SCP_DEST\$</argument>" tag to after the "<argument>\$LRO_DIR\$</argument>" tag in the LRO module General Adapter file (Config/ModuleConfigFiles/graphgen/GraphGen_AHPS_Products_LRO.xml)

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Redmine	68522 – UNITHG doesn't show expect warnings in log file or window.
Description	The issue is we are having a difficult time trying to get any UNIT-HG adapter warning or error messages to show up in the IFD log, or any other log for that matter.
Cause	<p>Not all the WARNING and ERROR messages were being triggered and displayed correctly.</p> <p>ERROR messages are logged when the PrintDebugInfo value is 1 or greater.</p> <p>WARNING messages are logged when the PrintDebugInfo value is 2 or greater.</p>
Fix	Reviewed, corrected (if needed), and verified that all the WARNING and ERROR level messages listed in the Unit Hydrograph documentation are triggered and displayed correctly for the corresponding PrintDebugInfo value.
Notes	N/A