CRHM\_GUI features assessment:

When clicking "Maximize" button on upper right corner, the GUI window does not show the full size but keeps same size with white margins around. See screen shot below:



"MarmotCreek\_UpperMiddle\_05-

20test\_modified\_26Feb21\_basinaggregationscheme3autoa.prj" is used for discussion here and obs file "Marmot\_Hourly\_ArrayMetData\_withT\_g\_1Oct05-30Sept20\_update\_22Jan2021.obs" should be found from previous GitHub Issue discussion:

# The following is for Project menu:

In Borland CRHM, clicking "AutoRun" button once for the first time will show a check mark beside it, and clicking "AutoRun" button again, the check mark will disappear. Similarly, clicking "AutoExit" button once for the first time will show a check mark beside it, and clicking "AutoExit" button again, the check mark will disappear. Clicking "Log", there are Log options: Last, All, Debug\_Screen, and Summary; these are features can be set for a project to run automatically, automatically close after run completion, and save the selected variables at Log option.

# Take "MarmotCreek\_UpperMiddle\_05-

20test\_modified\_26Feb21\_basinaggregationscheme3autoa.prj", "AutoRun" and "AutoExit" buttons have check marks, and Log is set as All. This means when this prj is called to run, it will run automatically, closes itself automatically and saves the selected variables for entire simulation time period in CRHM\_output\_3.txt (as Run\_ID is set 3). I have screen shot showing that from Borland CRHM.



When viewing this prj in Text Editor, the following values are shown from Lines 389 to 412.

###### Display\_Variable: ###### Netroute\_M\_D basinflow 1 Netroute\_M\_D basingw 1 Netroute\_M\_D ssroutflow 1 2 3 4 5 Netroute\_M\_D runoutflow 1 2 3 4 5 Netroute\_M\_D gwoutflow 1 2 3 4 5 obs hru\_rain 1 2 3 4 5 SnobalCRHM snowmelt\_int 1 2 3 4 5 SnobalCRHM SWE 1 2 3 4 5 SoilDetention soil\_moist 1 2 3 4 5 SoilDetention gw 1 2 3 4 5 frozenAyers meltrunoff 1 2 3 4 5 frozenAyers runoff 1 2 3 4 5 SoilDetention redirected\_residual 1 2 3 4 5 ###### Display\_Observation: ###### ###### Auto\_Run ###### Auto Exit ###### Log\_All

In addition, when Last is selected for Log option and combining with "AutoRun" and "AutoExit" with check marks, this will have prj run and close automatically, but **only** save the selected variables for the last time interval: ie. 2020 09 30. The following will be shown when viewing prj in Text Editor:

###### Auto\_Run ###### Auto\_Exit ###### Log\_Last

# Comment: Last option for Log is not often used.

Moreover, Debug\_Screen option can be clicked when All option is selected, see the screen shot below:



Viewing prj in Text Editor:

###### Auto\_Run ####### Auto\_Exit ###### Log\_All ######

Log\_Screen

This will save the selected variables for all simulation time period in CRHM\_output\_3.txt, and also will save Log window information from the run in CRHM\_output\_3.log. *Comment: I am not sure how useful this Debug\_Screen for Log option is, and this is pretty much same as that crhmRun.txt showing the Log information from gcc crhm.* 

Furthermore, Summary option can be selected with Debug\_Screen and All options being selected, see the screen shot below:



Then, the selected variables can be added as a observation function (i.e. Total) to a right small window under Observations. Viewing the prj in Text Editor:

Display\_Observation: ###### Netroute\_M\_D basinflow 1 \_Tot Netroute\_M\_D basingw 1 \_Tot SoilDetention gw 1 2 3 4 5 Tot Netroute\_M\_D gwoutflow 1 2 3 4 5 \_Tot obs hru rain 1 2 3 4 5 Tot frozenAyers meltrunoff 1 2 3 4 5 \_Tot SoilDetention redirected\_residual 1 2 3 4 5 \_Tot frozenAyers runoff 1 2 3 4 5 \_Tot Netroute M D runoutflow 1 2 3 4 5 Tot SnobalCRHM snowmelt int 1 2 3 4 5 Tot SoilDetention soil moist 1 2 3 4 5 Tot Netroute\_M\_D ssroutflow 1 2 3 4 5 \_Tot SnobalCRHM SWE 1 2 3 4 5 Tot ###### Auto\_Run ###### Auto Exit ###### Log\_All ###### Log\_Screen ###### Summary Screen

With above Log option, the prj will automatically run and close and save the selected variables for all simulation time period in CRHM\_output\_3.txt, and will save Log window information from the run in CRHM\_output\_3.log, and also will save summary (i.e. water year total value) of those selected in CRHM\_output\_3.sum.

### Comment: Summary option for Log is useful, but it is not a must-have as I mentioned in GitHub Issue channel before. Users now can often do their own summary calculation outside Borland CRHM.

In Borland CRHM, clicking "SaveChartTemplate" button the first time, a check mark will be shown, and viewing it in Text Editor, something like this will be shown:

###### Auto\_Run ####### SaveChartTemplate ###### Auto\_Exit

#### ###### Log\_All

When this SaveChartTemplate option is chosen for MarmotCreek\_UpperMiddle\_05-20test\_modified\_26Feb21\_basinaggregationscheme3autoa.prj, Borland CRHM will save the graph of GUI as MarmotCreek\_UpperMiddle\_05-

20test\_modified\_26Feb21\_basinaggregationscheme3autoa.TEE file. However, this is not often used and is not really that useful. Often Borland CRHM crashes at the end when this SaveChartTemplate option is chosen.

In Borland CRHM, there are options for "Plot refresh rate": daily, bi\_weekly, weekly, monthly, yearly, and at end. The default option is bi\_weekly; this means when prj is running, the graph information of those selected variables will be updated bi\_weekly. See screen below:



However, I do not think this is working in Borland CRHM. Instead, users have to click left mouse once in the graph area after pressing Run button, then a Plot update Rate window appears. Users then can choose "update at end of run only" from default "bi-weekly update". "update at end of run only" option can speed up run without showing graph update during run. See the screen shot below:



After this project finishes, if users want to re-run it and also want no graph update during run, then they will have to choose "continue" from last selected option "update at end of run only".



In Borland CRHM, clicking "Freq\_Default" button will pop up, see screen below:

Comment: This is not useful. I have never used it before.

### Comment: for CRHM\_GUI, in 'Project' menu,

When clicking "AutoRun" button, a Print Setup window appears. It should have a check mark when clicking it the first time, and then clicking it again, the check mark disappears.

and the second	Project Observations Bu	uild DLL Parameters State Run Exp	ort Analysis Log AKA FlowDiagrams Help	
	Variables Selects Qtion # hadron badings(1) Qtion Var badings(1) Qtion Var scroutflow Qnan # scroutflow Qnan /var scroutflow Qtion /var scroutflow Qtion /var scroutflow Qtion /var scroutflow	d Editing Chart TeeChart Print Preview 1 A 2 A 3 A 4 A 5 A 6 A 6 A 6 A 7 A 7 A 7 A 7 A 7 A 7 A 7 A 7	Page 1 of 1 The Citil Regions Hydrological Model Pathonic Spherober 2015 TexChart	
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When clicking "AutoExit" button, the CRHM\_GUI closes itself. It should have a check mark when clicking it the first time, and then clicking it again, the check mark disappears.

When clicking "Log" button, there is no option for Log in CRHM\_GUI. At least "All" option should be implemented; as discussed in Borland CRHM cases above, other options like Last and Summary are either not often used or can be easily done outside CRHM, gcc crhm already has the log file that is equivalent to option like Debug\_Screen.

"SaveChartTemplate", "Plot refresh rate", and "Freq\_Default" buttons are not implemented at the moment in CRHM\_GUI. Frankly, they are not that useful and rarely used in Borland CRHM. However, the method of changing Plot update Rate by clicking graph area after pressing Run button from previous two pages probably should be considered for CRHM\_GUI.

# Comment: for CRHM\_GUI, in 'Observations' menu,

Both "Open" and "CloseAll" are implemented; I tested them, and function the same way as Borland CRHM.

However, when I used left mouse key to click one of them variables in "Observations" window see the circle area from screen shot below, CRHM\_GUI crashed and closed itself. The "Add", "AddArray", and "Function" buttons should be implemented in CRHM\_GUI. See the demonstration from Borland CRHM for these buttons.



For the "Observations" window in Borland CRHM, I can first left click mouse to highlight a variable, and then right click mouse. A menu will pop up like screen shot below:



In this pop up menu, click "Add" will add a variable. Generally speaking, if there is only one Qsi defined in the obs file, then "Add" will only add one Qsi (ie. Qsi(1)).

In "MarmotCreek\_UpperMiddle\_05-

20test\_modified\_26Feb21\_basinaggregationscheme3autoa.prj" that uses

"Marmot\_Hourly\_ArrayMetData\_withT\_g\_1Oct05-30Sept20\_update\_22Jan2021.obs"; there are

seven arrays of variables defined for those listed in the "Observations" window. The default information on the lower left corner is OBS 1, so when clicking "Add", Qsi(1) will be added:



If I click left mouse key to highlight the Qsi(1) in Selected window and then click right mouse key, menu will be appear: "Delete" and "Negate". Click "Delete" will delete the Qsi(1) from Selected window.



Click "Negate" once will show Qsi(1) as negative value (ie. multiply -1 to its original value) on the vertical axis:



Then, Click "Negate" again, Qsi(1) will restore its the default value on the vertical axis.

In addition, if I delete Qsi(1) from the Selected window and then I click the arrow on the lower left corner to change OBS 1 to any OBS number, say OBS 7, and then I click "Add", Qsi(7) will be added, see below,



After that, if I changed to OBS 3 from OBS 7 on the left corner, then Qsi(3) will be added when clicking "Add"; both Qsi(3) and Qsi(7) will be shown in the Selected window:



Moreover, in pop up menu, click "AddArray" button will add all arrays of a variable. In "MarmotCreek UpperMiddle 05-

20test modified 26Feb21 basinaggregationscheme3autoa.prj" that uses

"Marmot\_Hourly\_ArrayMetData\_withT\_g\_1Oct05-30Sept20\_update\_22Jan2021.obs"; there are seven arrays of each variables, clicking "AddArray" for Qsi will add all seven Qsi in the Selected window:





In addition, all variables can be highlighted by left clicking mouse key in Observations window:



The, right clicking mouse key to pop up menu for "Add", "AddArray"; if clicking "AddArray", then all seven arrays of these variables will be added to the Selected widow:



#### Futhermore, in pop up menu, click "Function" button,



A window will be popped up to show: "Select Function", "Select Display Mode", and "Close" buttons:



There 14 functions: Observation, VP\_saturated, to Delta that can be selected for observation variables. For instance, if Average function is selected and then click Add Qsi, Qsi(1)\_Avg will be added to Selected window, this is daily average Qsi(1) from the hourly observation variable Qsi in first array:



In addition, these functions can also be applied to selected variables. For instance, right mouse click basinflow(1), a window pops up, and select "AddObsFunct", basinflow(1) Avg will be

added the lower Selected window beside the "Observations" window. Next time when the prj finishes run, basinflow(1)\_Avg will be displayed in the graph area.



In addition, "Select Display Mode" shown in circle below is not implemented in Borland CRHM and is not really used. This is probably not that useful and CRHM\_GUI does not have to implement this.



In addition, "Close" shown in circle below, click this button will close the pop up window.



Lastly, from the "Observations" menu, the name of obs file used by the prj is shown, see below. This is not currently shown in CRHM\_GUI, which indicates that CRHM\_GUI might not read or load the obs file correctly.



# Comment: for CRHM\_GUI, in 'Build' menu,

Clicking "Build – Construct" button pops up the following window in CRHM\_GUI:



Clicking the same "Build – Construct" button pops up the following window in Borland CRHM:

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1	ru 👎 Select Modules for	Model										-	
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	ри intop hn Grow_Crop	calcsun Slope_Qali	n		-			hu lat					
	he NO_pbom	albedo_Hic walmsity_#	wind					hru_elev					
	hn sbsm an Annardala	netall metall						hru_GSL					
	an ebam an lond/t	CanopyCle	u aringGap#3 N					hru_ASL					
	sn Slope_Qsi sn albedo	SnobalCRH	im≡1					hru_names					
	SV netall SV evap	SolDetenti K. Estimate	on #1					basin_name					
	SV evapD SV evap_Resist	Netroute_M	(D										
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As shown the screen shots above from CRHM\_GUI and Boraland CRHM, CRHM\_GUI does not currently show information on the upper right panel window for a highlighted module: Observations, Modules, Inputs, Outputs, Parameters, New Observations, it does not show short description of the highlighted module on the lower right panel window. These are shown in Borland CRHM.

In addition, CRHM\_GUI does not show correct information for the opened prj: on the lower left corner, **MAXHRU = 3** is shown in CRHM\_GUI; while the correct information **MAXHRU = 5** is shown in Borland CRHM. This indicates that CRHM\_GUI might not read this information from the prj file correctly.

Moreover, in Borland CRHM, there different variations for the same module. For instance, right click CanopyClearingGap#3 in Borland CRHM, there is pop up menu: Delete, Next variation, Last variation. Delete will remove module from Module Selected window; Next variation will move next variation of the module: if clicking Next variation on CanopyClearingGap#3, then CanopyClearingGap#4 will appear. Last variation will move back one variation: if clicking Last variation on CanopyClearingGap#3, then CanopyClearingGap#3, then CanopyClearingGap#3, then CanopyClearingGap#3, then CanopyClearingGap#3, then CanopyClearingGap#2 will appear. CRHM\_GUI does not currently implement the variation for modules; this is evident in the above screen shot: there is Slope\_Qsi#1, CanopyClearingGap#3, SnobalCRHM#1, K\_Estimate#1 shown in CRHM\_GUI. This indicates CRHM\_GUI does not read the module information correctly from the prj file.

Other thing is not implemented in CRHM\_GUI is the maximize and minimize on the upper right corner of the "Build – Construct" window.

On the other hand, CRHM\_GUI has more intuitive ways to add or remove modules from "Module Selected" window by using >> and << buttons. I think this is better than right click module to add or remove in Borland CRHM.

In CRHM\_GUI, it appears there are two drop down bars in the circle area shown in the screen shot below; the left bar is active, but the right shorter bar is not active.



Clicking "Build – Clear Modules" button, nothing happens in CRHM\_GUI; clicking "Build – Clear Modules" button, all the selected modules will be removed from the "Construct" window and all Variables by Module and selected variables are removed in Borland CRHM, see screen shots below:





Clicking "Build – Macro" button, Dialog window pops up in CRHM\_GUI:

When any changes are made to the Marco code, clicking "Save Changes" button is working in CRHM\_GUI. However, clicking "Cancel Changes" button will remove all the selected modules will be removed from the "Construct" window and all Variables by Module and selected variables are removed in CRHM\_GUI. Also, if clicking the "Close" button on the upper right corner of Dialog window, all the selected modules will be removed from the "Construct" window and all Variables are removed in CRHM\_GUI are removed. There appears something not implemented corrected for "Cancel Changes" button and "Close" button.

In Dialog window, clicking "File" button, I checked "Open", "SaveAs", "CreateGroup" buttons are working. However, "Clear" and "Exit" button do not work at the moment. In Borland CRHM, clicking "Clear" button will clear all Macro code from the code panel; clicking "Exit" button will close the Macro window.

Also, there are no Maximize and Minimize buttons implemented in the Dialog window for CRHM\_GUI.

Clicking "Build – Macro" button, Macro Edit window pops up in Borland CRHM; clicking "Save Changes" will save any changes made to Macro code, and clicking "Cancel Changes" button will revert any changes made to Macro code.



#### Comment: for CRHM\_GUI, in 'DLL' menu,

It is not implemented in CRHM\_GUI at the moment, which is same as that in Borland CRHM. Just a note, the DLL version Borland CRHM was used more than 15 years ago and was used to implement code from students written in the file as .DLL extension.

### Comment: for CRHM\_GUI, in 'Parameters' menu,

Clicking "Parameters" button, nothing happens in CRHM\_GUI. Doing same in Borland CRHM, a parameter window pops up and contains parameters for the modules in the prj:

Modules	Basic parameters	1						
Shared albedo Richard	HRU	1	2	3	4	5	Minimum	Maximum
basin CanopyClearingGap								
evap_Resist	basin_area	1.178					1E-6	1E9
global	Dts_organic_runoff_K	0	0	0	0	D	0	D
longVt	Dts_snove_runoff_K	0	0	0	0	D	0	D
Netroute_M_D obs	gw_K	0	0	0	0	0	0	0
ptomSnobal SnobalCRHM	hru_area	0.44	0.52	0.17	0.04	0.008	1E-6	1E9
SolDetention walmsley wind	hu_ASL	75	147	141	45	102	0	360
	hru_elev	2468	2458	2278	2233	2242	0	100000
	hru_GSL	30	26	18	18	10	0	90
	hru_lat	50.95	50.95	50.95	50.95	50.95	-90	90
	Ht	0.14	0.14	3	3	15	0.001	100
	inhibit_evap	0	0	0	0	0	0	1
	lower_ssr_K	0	0	0	0	D	0	D
	rechr. ssr. K	0	0	0	0	D	0	0
	Sdmax	0	0	0	0	0	0	1000
	Sd ow K	0	0	0	0	D	0	0
	Sd ee K	-	0	0	0	0	0	0
	rol on K	ů	0	0	0	0	0	0
	and maint may	250	250	550	550	1000	0	5000
	sol ask as	75	26	350	250	260	0	260
	Zuied	20	26	12	12	12	0.01	100
	29900	2.6	2.6	12	12	12	0.01	100
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Help								
Links								

#### Comment: for CRHM\_GUI, in 'State' menu,

#### Clicking "State" button, a menu:



However, click "OpenInitState", "SaveState", and "SaveStateAs" buttons, nothing happens in CRHM\_GUI.

In Borland CRHM, click "OpenInitState" button, a window pops up and users can choose an Initial Sate Files in .int extension from a file directory, see plot below:



In Borland CRHM, click "SaveState" or "SaveStateAs" button, a window pops up and users can save the Final State as .int extension to a file directory; eg. Init2006.int is saved the file directory after the prj finishes run, see plot below:



Comments: Saving the final state file from a project and using that as initial state for other project are very useful features from Borland CRHM, as I demonstrated in GitHub issue. These should be implemented in CRHM\_GUI.

#### Comment: for CRHM\_GUI, in 'Run' menu,

For "MarmotCreek\_UpperMiddle\_05-

20test\_modified\_26Feb21\_basinaggregationscheme3autoa.prj", this prj has Auto\_Run, Auto\_Exit and Log\_All setup. When this prj is opened in Borland CRHM, it will automatically run without graph update, then automatically save all variables in CRHM\_Output\_3.txt, and it would close itself when calling this prj and run it from command line.

At the moment, when this prj is opened in CRHM\_GUI, it does not automatically run and save variables. I notice there is Log file crhmRun.txt up to crhmRun5.txt generated each time when opening this prj in CRHM\_GUI. To run this prj, I have to manually click "Run" button once even though "Run Model" button already has check mark. When this prj is running, it has graph update rate as bi-weekly (default graph update rate), and when I click the graph area once, it stops graph update and finishes the run faster, and there is CRHM\_Output\_3.txt saved in the end. When I do this in Borland CRHM, there will be a pop up window to choose graph update rate, see comments on Page 7. I notice that after the first run in CRHM\_GUI, CRHM\_GUI will automatically save the "MarmotCreek\_UpperMiddle\_05-

20test\_modified\_26Feb21\_basinaggregationscheme3autoa.prj", and five ssroutflow variables are removed from the saved prj file.

I also compare the output file: CRHM\_Output\_3.txt from Borland CRHM and CRHM\_GUI. The comparisons are shown in UM\_basinflow\_vcc vs Borland CRHM\_comp.pdf and UM\_SWE\_vcc vs Borland CRHM comp.pdf files. The results are comparable between vcc CRHM\_GUI and Borland CRHM, and vcc CRHM\_GUI produces the same results from gcc crhm. Anyway, the following is screen shot for Run from CRHM\_GUI:



# Comment: for CRHM\_GUI, in 'Export' menu,

When I click "Export" button after I finish running the above prj, there is no pop up window. It indicates that "Export" button is probably not implemented correctly in CRHM\_GUI.

When I do the same in Borland CRHM, there is a pop up window called "File Output" opened, and I can select variables to save and choose the format of output file. I have the screen shot of this pop up window from Borland CRHM:



# Comment: for CRHM\_GUI, in 'Analysis' menu,

When I click "Analysis" button after I finish running the above prj, there is no pop up window. It indicates that "Analysis" button is probably not implemented correctly in CRHM\_GUI.

When I do the same in Borland CRHM, there is a pop up window called "Analysis Form" opened, and I can select variables to do some simple analysis using the Curve Type provided. I have the screen shot of this pop up window from Borland CRHM:



# Comment: for CRHM\_GUI, in 'Log' menu,

When I click "Log" button after I finish running the above prj, there is no pop up window. It indicates that "Log" button is probably not implemented correctly in CRHM\_GUI. CRHM\_GUI produces up to five Log files externally containing the information: crhmRun.txt up to crhmRun5.txt files.

When I do the same in Borland CRHM, there is a pop up window called "Log" opened, and this shows the information of values for the list of module variables during the simulation period. I have the screen shot of this pop up window from Borland CRHM:

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Project Observations	File Clear Parameters (integer) Coefficients (ending '.K') Parameters (float)			
Variables by Module	Warnings and Errors			K < P M
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obs Pa	Debug Output			₩ — runoutflow(2)
Pa No. Banan No. Jeneration No. Jenera	Project In C. Vienzech/MidMadorbin/SJuck2CI Boland MamuCanel, UpgeMidde, (9: 32mL, molinel, 387 etc.)	A obs		$ \begin{array}{c} \hline \\ p \\ p$
Conservation V HRIU 1 COSS 1 C	IPU 5 400 mm/sch 2007 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 5 500 mm/sch 2007 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 5 500 mm/sch 2007 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 500 mm/sch 2007 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 500 mm/sch 2007 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 500 mm/sch 2007 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 500 mm/sch 2007 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 500 mm/sch 200 gr.ml         Implementation for the stand 300 00 1000 480           IPU 5 500 mm/sch 200 gr.ml         Implementation for the stand 300 00 100 1000 480           IPU 5 500 mm/sch 200 gr.ml         IPU 5 500 mm/sch 200 gr.ml         IPU 5 500 mm/sch 200 00 100 480           IPU 5 500 mm/sch 200 gr.ml         IPU 5 500 mm/sch 200 gr.ml         IPU 5 500 mm/sch 200 00 100 480           IPU 5 500 mm/sch 200 gr.ml         IPU 5 500 mm/sch 200 gr.ml         IPU 5 500 mm/sch 200 00 100 480           IPU 5 500 mm/sch 200 gr.ml           IPU 6 00 mm/sch 200 gr.ml         IPU 6 200 gr.ml         IPU 6 200 gr.ml         IPU 6 200 gr.ml         IPU 6 200 gr.ml           IPU 6 200 gr.ml	12/2/015		$ \begin{array}{llllllllllllllllllllllllllllllllllll$
	Observation help: Variable help:			HRU Flip-Tics

# Comment: for CRHM\_GUI, in 'AKA' menu,

When I click "AKA" button after I finish running the above prj, there is no pop up window. It indicates that "AKA" button is probably not implemented correctly in CRHM\_GUI.

When I do the same in Borland CRHM, there is a pop up window called "Module customization" opened. More than 10 years ago, this is only way to have user ability to customize the input observation or input variable for a module by forcing output observation or output variable from another module. Now, there are variations of modules in Borland CRHM (eg. CanopyClearingGap, CanopyClearingGap#1 to #4), which does that without using AKA.

AKA feature might still be useful, so it could be implemented in CRHM\_GUI.

# Comment: for CRHM\_GUI, in 'FlowDiagrams' menu,

When I click "FlowDiagrams – Show Diagram" button after I finish running the above prj, there is a pop up window that shows the following screen shot:



When I click "FlowDiagrams" in Borland CRHM, a pop up window shows the flow chart of the prj:



Comments: this indicates that CRHM\_GUI does not implement flow chart correctly at the moment.

### Comment: for CRHM\_GUI, in 'Help' menu,

When I click "Help – CRHM help" button, there is no pop up window.

When I do the same in Borland CRHM, a pop window "CRHM Platform" opens. See below, this provides general information for the CRHM platform, and it is linked to the "Crhm.chm" file from the Borland CRHM installation package.



When I click "Help – Modules\_New" button, there is no pop up window.

When I do the same in Borland CRHM, a pop window "Basic CRHM Modules" opens. See below, this provides information for CRHM modules and it is linked to the "Modules\_new.chm" file from the Borland CRHM installation package.

Basic CRHM Modules	- 0	×
Hide Back Home Option		
Contents Index Search	The Cold Regions Hydrological Model Platform	^
Module Library     Introduction     Using demonstration     Using module variatic	Enhanced Modules	
Win Physical Processes     General     Snow Transport	Centre for Hydrology, University of Saskatchewan,	
Radiation	National Water Research Institute,	
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Skin/Surface temp     Skin/Surface temp	Help Version - 04/19/16	
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In addition, when the "MarmotCreek\_UpperMiddle\_05-

20test\_modified\_26Feb21\_basinaggregationscheme3autoa.prj" is opened in Borland CRHM, as this prj uses Macro, I can click "Help – Macro" button. The following window pops up and shows the information for Macro, and this is linked to the "Macro.chm" file from the Borland CRHM installation package.

Saman I	N	_									
ontents   Index   Search	Marro.										
Groups and Structures	This capability of the CRHM program allows users to create simple modules suitable for testing algorithms and for diagnosing CRHM model output.										
macro_struct	Local Variables.										
	Local variables are defined using the the keyword "var". For example "var $\vec{i}$ , "var i var $\vec{j}$ or "var $\vec{i}$ , $\vec{j}$ .										
	CRHM variables.										
	CRHM variables as those defined in the "declaradobs", "declaratora", "declaration and "declorations. Note that the latter three types are defined in the current macro module and the first two types are derived from other CRHM modules in the module. The macro commands are enclosed in a for looy which executed NHRU times. A local variable "la" is defined so that values for every heration may be saved in the CRHM macro module variable august. Note that local variables are not accessible outside macro module variables.	the									
	Arithmetical Operators.										
	1. +, - addition/inferaction										
	2. •./ multiplication/division										
	3.   exponentiation										
	4. % modulus										
	5. () brackets enclosing an aritmetical expression.										
	6. [n] array element index. Order for 2-D is [hh][D], i.e. Irru first. Elements are referenced 1, 2, 3, 4 Cannot be an expression. Use var i, i = J+k; array[i], not array[j+k].										
	Logical Operators.										
	1.    OR.										
	2. && AND.										
	3. 1= Not equal										
	4. == Equal										
	5. <= Less Than or Equal										
	6. < Less Than.										
	7. >= Greater Than or Equal.										
	8. > Greater Than.										
	9. ! Logical Not. (Finite)										
	Control Statements.										

When I click "Help – About" button in CRHM\_GUI, there is pop up window showing the version of CRHM\_GUI:



When I click "Help – About" button in Borland CRHM\_GUI, there is pop up window showing the version of Borland CRHM:

