HEC-FDA
Version 1.4.3, November 2020
DOS Programs

Introduction

HEC-FDA has several console (command prompt or "DOS") programs associated with it. These programs don't have a graphical user interface (GUI) and must be executed in a command prompt window. They are described below. These programs also have "scripts" (.bat files) associated with them that simplify the task of running the programs in a "batch" mode. The console programs along with the scripts are installed in the normal program files location (e.g. "C:\Program Files (x86)\HEC\HEC-FDA\1.4.3"). For the scripts to work properly, the environmental parameter "path" must be modified to include this subdirectory. If the HEC-FDA install program doesn't do this for you, you will need an administrator to modify the path command to include reference to the program files subdirectory. This document describes those scripts below. It is desirable to create your own scripts in your HEC-FDA data subdirectories that will call the standard FDA scripts. This will minimize the amount of your keyboard entry and automate actions. You can get a list of console commands within a command prompt window by entering "help". For individual commands, you can get information about the command by typing HELP command-name (e.g. HELP rem).

The console utility programs include the following:

Program	Script	Description / Purpose
CreateNewStudy.exe	HecFda_v143_CreateStudy.bat	Creates a new study. HEC-FDA version 1.4.3 calls this program to create a new study to enable Windows 10 compatibility.
ConvertDb.exe	HecFda_v143_ConvertStudy.bat	Converts a previous HEC-FDA study database (versions 1.2.5 through 1.4.2) into a version 1.4.3 database. HEC-FDA version 1.4.3 calls this program to convert a study to enable Windows 10 compatibility.
ImportEcon.exe	HecFda_v143_exportEcon.bat HecFda_v143_importEcon.bat	Imports into or exports from a HEC-FDA database ASCII tab delimited text files. The FDA GUI contains the same functionality.
CompSD.exe	HecFda_v143_compSd.bat	Computes stage-aggregated damage for a selected plan / year. The FDA GUI contains the same functionality.
CompEAD.exe	HecFda_v143_compEAD.bat	Computes expected annual damage for a selected plan / year. The FDA GUI contains the same functionality.
compEquivAnnualDamage.exe	HecFda_v143_compEquivEAD.bat	Computes equivalent annual damage for a selected plan. The FDA GUI contains the same functionality.
ResultsDump.exe	HecFda_v143_resultsDump.bat	Writes HEC-FDA computed results out to tab delimited text files that are easily brought into Excel for editing and inclusion in reports.
WspRetrieve.exe	HecFda_v143_wspRetrieve.bat	Automatically retrieves graphical probability and stage-discharge functions

		from the water surface profiles for a selected plan / year.
NA	HecFda_v143_CompOnePlan.bat	Computes stage-aggregated damage, expected annual damage, equivalent annual damage, and tabulates results for one plan / year.

The most useful programs are "ResultsDump.exe" and "WspRetrieve.exe" because their functionality is not available in HEC-FDA. The compute programs are the next most useful as they allow the user to chain various computations in an order that wouldn't be possible from the HEC-FDA GUI. An example chain of execution might be to compute stage-damage for the without plan, compute expected annual damage for the without plan, compute stage-damage for "Plan 01", and compute expected annual damage for "Plan 01". The section on scripts shows an example in which a new study is created, data is exported from an existing study which in turn is imported into the new study, functions are retrieved from the water surface profiles, all computations are performed, and the results are written to tab delimited text files.

Create a New Study

The program "CreateNewStudy.exe" creates a new study. HEC-FDA calls this program to create a study. If running this program from a command prompt window, use the script "HecFda_v143_CreateStudy.bat" to run the program. It has one argument which is the study name. For example, to create the FDA study "BearNew", do the following:

1. Open a command prompt window and move to an existing subdirectory such as c:\data\fda which will be the parent subdirectory to the FDA database file subdirectory.
2. Type the script command: 'HecFda_v143_CreateStudy "BearNew" ' to create a new study with the name "BearNew".

Alternatively, you could open the command window in a different subdirectory than the parent to the new study. For example, if you opened the command prompt window in the subdirectory 'c:\tempCall', you would have to type the command: 'HecFda_v143_CreateStudy "c:\data\fda\ BearNew" ' to create the study under the "c:\data\fda" subdirectory.

Alternatively, you could enter the program's executable name directly rather than using the script but it would involve more typing. For example, in the command prompt dialog box, you could enter the command:

' "C:\Program Files (x86)\HEC\HEC-FDA\1.4.3\CreateNewStudy" "c:\temp\BobNew" '

For the rest of this document, we will assume that you are using the associated scripts. The script 'HecFda_v143_CreateStudy.bat' is shown below. The characters '%1' represent the first (and only argument) to the script.

Use

HecFda_v143_CreateStudy "*study name*"

Arguments

1. The study name (e.g. BearCrk). Enclose it in double quotes if the study name has a space in it. It could be a fully qualified study name such as "d:\data\fda\Bear Creek".

Example

```
HecFda_v143_CreateStudy "Bear Creek"
```

Script

```
echo on
rem Create a new Study
rem Arguments
rem     1) Study Name (subdirectory name)

"CreateNewStudy.exe" %1
```

Convert an Existing Study That is for an Older Database

You can convert a version 1.2.5, 1.4.0, 1.4.1 or 1.4.2 database into a version 1.4.3 database by using the convert program. HEC-FDA calls this program to convert a study. If running it from a command prompt window, it has one argument which is the study name. For example, to convert the FDA study "BearOld" from a version 1.4.2 database into one with a version 1.4.3 database, do the following:

1. Open a command prompt window and move to an existing subdirectory such as c:\data\fda.
2. Type the script command: 'HecFda_v143_ConvertDb "BearOld"'

Use

HecFda_v143_ConvertDb "*study name*"

Arguments

1. The study name (e.g. BearCrk). Enclose it in double quotes if the study name has a space in it. It could be a fully qualified study name such as "d:\data\fda\Bear Creek".

Example

```
HecFda_v143_CreateStudy "Bear Creek"
```

Script

The 'HecFda_v143_ConvertStudy.bat' script is shown below:

```
echo on
rem Convert a version 1.2.5, 1.4.0, 1.4.1 or 1.4.2 study to a version 1.4.3 study database
rem Arguments
rem     1) Study name (subdirectory name)

"ConvertDb.exe" %1
```

Import Tab Delimited Text Data into a Study

The program "ImportEcon.exe" facilitates both importing and exporting tab delimited data into and out of a study. To import data, use the script file 'HecFda_v143_importEcon.bat'. Typically, importing data is done directly from HEC-FDA.

Use

HecFda_v143_importEcon "*study name*" "*text input file*" "*diagnostic output file*"

Arguments

1. The study name (e.g. BearCrk). Enclose it in double quotes if the study name has a space in it. It could be a fully qualified study name such as "d:\data\fda\Bear Creek".
2. The input text file name. This file contains the data that will be imported. It must be in the HEC-FDA specific format.
3. The diagnostic output file name. This is optional.
4.

Example

```
HecFda_v143_importEcon "Bear Creek" "FdaText_Structures.txt"
```

Script

```
echo on

rem Import to study
rem Need to create study first
rem Need to put import text file in new studies dbf subdirectory

rem Arguments to importEcon.exe
rem     1) Study Name (Subdirectory Name) That has already been created
rem     2) Tab delimited Text file containing FDA data to import
rem     3) Optional text diagnostic output file

"ImportEcon.exe" %1 1 %2 %3
```

Export Tab Delimited Text Data out of a Study

The program “ImportEcon.exe” facilitates both importing and exporting tab delimited data into and out of a study. To export data, use the script file ‘HecFda_v143_exportEcon.bat’. Before using this script, you must first use the HEC-FDA GUI to set the export flags that indicate the data that will be exported. In the HEC-FDA GUI, go to “Economics->Export”, set the flags, press the export button, then press the cancel button. Typically, exporting data is done directly from HEC-FDA.

Use

HecFda_v143_exportEcon “*study name*” “*text output file*” “*diagnostic output file*”

Arguments

1. The study name (e.g. BearCrk). Enclose it in double quotes if the study name has a space in it (it could be a fully qualified study name such as “d:\data\fda\Bear Creek”)
2. The output text file name. This file contains the data that will be exported.
3. The diagnostic output file name. This is optional.

Example

```
HecFda_v143_exportEcon “Bear Creek” “FdaText_OutputStructures.txt”
```

Script

```
echo on

rem Export data; Must use fda.exe to set export flags
rem ImportEcon "BearCrk_RAS" 1 "Fda_Ascii_ExportAll.txt" "Fda_Export.out"

rem Arguments to ImportEcon.exe
rem     1) Study Name (Subdirectory Name) That has already been created
rem     2) Tab delimited Text file containing exported FDA data
rem     3) Optional text diagnostic output file

"ImportEcon.exe" %1 0 %2 %3
```

Automatically Retrieve Probability and Rating Functions from the Water Surface Profiles.

The program 'WspRetrieve.exe' retrieves probability (both discharge and stage) functions and stage-discharge rating curves from the water surface profiles. To retrieve functions, use the script file 'HecFda_v143_wspRetrieve.bat'. Each execution of the program retrieves functions for one plan/year combination. The water surface profiles must first be imported into the study before retrieving the functions from the profiles.

'WspRetrieve' must automatically generate unique names for each function and it relies on the user to define "code names" for each of the plans, years, and reaches. The sum of the characters in the code names must be less than 33, the maximum size of a name in FDA. The cross-reference between the plan/year/reach names and the code name used as part of the probability / rating curve function name is defined in the text file "nameCodes.txt" which is located in the same directory as the study's .sty file. Typically, this is generated in Excel and it must be saved as a tab-delimited text file. The first column indicates the parameter (PLAN, YEAR, REACH), the second column contains the name used in the FDA study (e.g. WITHOUT), and the third column contains the short code name used as part of the probability or rating curve name (e.g. P00). 'WspRetrieve' retrieves the functions for each reach and cannot assign the same function to multiple plan / years / reaches (e.g. global copy assignment). If the user wants to assign a function to multiple plan/year/reaches, they will have to go into the FDA interface and do that after running 'WspRetrieve'.

An example file for "nameCodes.txt" is shown below:

Plan	Without	P00_
Plan	Plan 01	P01_
Plan	Plan 02	P02_
Plan	Plan 03	P03_
Plan	Plan 04	P04_
Plan	Plan 05	P05_
Plan	Plan 06	P06_
Plan	Plan 07	P07_
Plan	Plan 08	P08_
Plan	Plan 09	P09_
Plan	Plan 10	P10_
Plan	Plan 11	P11_
Plan	Plan 12	P12_
Plan	Plan 13	P13_
Plan	Plan 14	P14_
Year	2021	2021_
Year	2035	2035_
Reach	BB-01	BB01
Reach	BB-02	BB02
Reach	BB-03	BB03
Reach	BB-04A	BB04A
Reach	BB-04B	BB04B
Reach	BB-05	BB05
Reach	BB-06	BB06
Reach	SF-01	SF01
Reach	SF-02	SF02
Reach	SF-03	SF03
Reach	SF-04A	SF04A
Reach	SF-04B	SF04B
Reach	SF-04C	SF04C

Reach	SF-05	SF05
Reach	SF-06	SF06
Reach	SF-07	SF07
Reach	SF-08	SF08
Reach	SF-09	SF09
Reach	SF-10	SF10
Reach	SF-11	SF11
Reach	SF-12	SF12
Reach	SF-13	SF13
Reach	SF-14	SF14
Reach	SF-15	SF15

For this data, HEC-FDA will generate the following function name for "Plan 08", year 2035, and reach "SF-04A": "P08_2035_SF04A". Note that if plan, year, or reach names change, the function will still retain its original name.

Use

HecFda_v143_wspRetrieve "*study name*" "*plan name*" *year EquivYears Profile StageError >TextOutput*

Arguments

1. The study name (it could be a fully qualified study name such as "d:\data\fda\Bear Creek")
2. The plan name
3. The analysis year
4. The equivalent length of record for the probability functions (e.g. "50" for 50 years). For a given plan / year, the equivalent length of record is the same for all reaches.
5. The profile number for which the global stage error is entered for computation of the standard deviation of error about the rating curve (e.g. "6" for profile six). The same standard deviation of error is used for all reaches.
6. The standard deviation of error for the above profile (e.g. "0.3" for the standard deviation of error). It will only calculate for the normal distribution.
7. Redirect the output from 'WspRetrieve' to this text file name. This is optional.
8.

Example

```
HecFda_v143_wspRetrieve "Bear Creek" "Plan 1" 2021 50 6 0.3
```

Script

```
echo on

rem Retrieve data from the Water Surface Profiles; Retrieves graphical discharge-
probability
rem and stage-discharge functions. It may retrieve stage-probability.

rem Arguments
rem     1) Study Name
rem     2) Plan name
rem     3) Study Year
rem     4) Number of years in equivalent length of record
rem     5) Profile number at which Standard Deviation of Error in Stage-Discharge become
constant (1-8)
rem     6) Standard Deviation of error in stage in stage-discharge rating curve

"WspRetrieve.exe" %1 %2 %3 %4 %5 %6
```

Compute Stage-Aggregated Damage

The program “compSD.exe” computes stage-aggregated damage for the selected plan and year. It allows the stacking of executions in a script (.bat) file. To compute stage-damage, use the script file ‘HecFda_v143_compSd.bat’. HEC-FDA computes stage-aggregated damage from the GUI, this is only an alternative method.

Use

HecFda_v143_compSd “*study name*” “*plan name*” “*year*” *UseRisk UseSidReaches*

Arguments

1. The study name (it could be a fully qualified study name such as “d:\data\fda\Bear Creek”).
2. The plan name
3. The Analysis year
4. Flag controlling risk calculations: =0 don’t use risk analysis, >0 use risk analysis. Default is 1, use risk analysis.
5. Flag controlling the use of SID reaches: =0 don’t use SID reaches, >0 use SID reaches. Default is 0, don’t use SID reaches.

Example

```
HecFda_v143_compSd.bat “Bear Creek” “Plan 01” 2021 1 0
```

Script

```
echo on

rem Compute Stage-Aggregated Damage for Selected Plan / Year

rem Arguments
rem     1) Study name (subdirectory name)
rem     2) Study Plan name
rem     3) Study Analysis Year
rem     4) Use Risk (default 1, use risk)
rem     5) Use SID reaches (default 0, don't use them)

"compSd.exe" %1 %2 %3 %4 %5
```

Compute Expected Annual Damage

The program “compEAD.exe” computes expected annual damage for the selected plan and year. It allows the stacking of executions in a script (.bat) file. Compute expected annual damage using the script file ‘HecFda_v143_compEAD.bat’. HEC-FDA computes expected annual damage from the GUI, this is only an alternative method.

Use

HecFda_v143_compEAD “*study name*” “*plan name*” “*year*” *UseRisk ProbTaretg PctTarget*

Arguments

1. The study name (it could be a fully qualified study name such as “d:\data\fda\Bear Creek”).
2. The plan name
3. The Analysis year
4. Flag controlling risk calculations: =0 don’t use risk analysis, >0 use risk analysis. Default is 1, use risk analysis.
5. Target stage criteria, the event probability used to compute the target stage. Default is 0.01.
6. Target stage criteria, the percent damage used to compute the target stage. Default is 5%.

Example

```
HecFda_v143_compEAD “Bear Creek” “Plan 01” 2021 1 0.01 5
```

Script

```
echo on

rem Compute Expected Annual Damage for Selected Plan / Year

rem Arguments
rem     1) Study name (subdirectory name)
rem     2) Study Plan name
rem     3) Study Analysis Year
rem     4) Use risk (default = 1, use risk)
rem     5) Target Stage, probability of event (default = 0.01)
rem     6) Target Stage, percent damage (default = 5)

"compEAD.exe" %1 %2 %3 %4 %5 %6
```

Compute Equivalent Annual Damage

The program “compEquivAnnualDamage.exe” computes equivalent annual damage for the selected plan. It allows the stacking of executions in a script (.bat) file. Compute equivalent annual damage using the script file ‘HecFda_v143_compEquivEAD.bat’. HEC-FDA computes equivalent annual damage from the GUI, this is only an alternative method.

Use

HecFda_v143_compEquivEAD “*study name*” “*plan name*”

Arguments

1. The study name (could be fully qualified study name such as “d:\data\fda\Bear Creek”).
2. The plan name

Example

```
HecFda_v143_compEquivEAD “Bear Creek” “Plan 01”
```

Script

```
echo on

rem Compute Equivalent Annual Damage for Selected Plan

rem Arguments
rem     1) Study name (subdirectory name)
rem     2) Study Plan name

"compEquivAnnualDamage.exe" %1 %2
```

Write Computed Results to Tab Delimited Text Files

The program 'ResultsDump.exe' writes computed results out to multiple tab delimited text files which can be opened with Excel and formatted for reports. The files are stored in the same study directory as the .dbf files. The filenames all start with "Fda_Results_" and have the extension .txt. Write the results using the script file HecFda_v143_resultsDump.bat. It can be run in two modes:

1. Write all results to multiple files. To do this, enter only the study name.
2. Write results for a given plan and year (global results will also be written). To do this, enter the study name, plane name, and year.

Both modes write the same tables. If you write them by plan and year, it will tabulate global tables (e.g. EAD by plans and years) as well as tables specific to a given plan / year (e.g. reach summary probability curves). If you write them all, then all tables are written but some tables specific to a plan and/or year are written in the same file rather than separate files. An example is EAD by categories and plans. The "all" mode writes two tables in the same file – one for the base year and one for the future year whereas if you specify the plan/year output, it will write them to separate files for the base year and the future year.

Use

HecFda_v143_resultsDump "*study name*"
HecFda_v143_resultsDump "*study name*" "*plan name*" *year*

Arguments

In the first mode, only the study name is entered and all data is written to the text files:
HecFda_v143_resultsDump "*study name"*

1. The study name. It could be a fully qualified name such as "c:\data\fda\Bear Creek".

In the second mode, the plan and year is entered and it writes out both the global results as well as tables specific the selected plan / year:
HecFda_v143_resultsDump "*study name" "plan name" "year"*

1. The study name. It could be a fully qualified name such as "c:\data\fda\Bear Creek".
2. The plan name
3. The year

Examples

```
HecFda_v143_resultsDump "Bear Creek"
HecFda_v143_resultsDump "Bear Creek" "Plan 03" 2021
```

Script

```
echo on

rem Dump Computed Results out to Text Files

rem Two ways to dump results:
rem     1) resultsDump "BearCrk_RAS" dumps all results out
rem     2) resultsDump "BearCrk_RAS" "Without" 2021 dumps results out for selected plan &
year (plus global results)

rem Arguments
rem     1) Study Name (subdirectory name)
rem     2) Optional Study Plan Name (if supplied, must include argument 3).
rem     3) Optional Study Year (if argument 2 supplied, must enter this argument).

"resultsDump.exe" %1 %2 %3
```

Example Output Filenames Generated by the Program

```
Fda_Results_EadByCats&Plans_All.txt
Fda_Results_EadByCats&Reaches_All.txt
Fda_Results_EadByPlansAndYears.txt
```

Fda_Results_EadReducedByPlans_All.txt
Fda_Results_EadReducedByReaches_All.txt
Fda_Results_ProjectPerformance_All.txt
Fda_Results_ReachSummaryProbFunc_Plan 1_2021.txt

Generic Scripts Distributed with HEC-FDA and Installed in the program files subdirectory (C:\Program Files (x86)\HEC\HEC-FDA\1.4.3)

There are nine generic scripts that are distributed with HEC-FDA and they are referenced above. Each script executes one program. The following describes and displays those scripts.

Script 'HecFda_v143_CreateStudy.bat'

```
echo on
rem Create a new Study
rem Arguments
rem     1) Study Name (subdirectory name)

"CreateNewStudy.exe" %1
```

Script 'HecFda_v143_ConvertStudy.bat'

```
echo on
rem Convert a version 1.2.5, 1.4.0, 1.4.1 or 1.4.2 study to a version 1.4.3 study database
rem Arguments
rem     1) Study name (subdirectory name)

"ConvertDb.exe" %1
```

Script 'HecFda_v143_importEcon.bat'

```
echo on

rem Import to study
rem Need to create study first
rem Need to put import text file in new studies dbf subdirectory

rem Arguments to importEcon.exe
rem     1) Study Name (Subdirectory Name) That has already been created
rem     2) Tab delimited Text file containing FDA data to import
rem     3) Optional text diagnostic output file

"ImportEcon.exe" %1 1 %2 %3
```

Script 'HecFda_v143_exportEcon.bat'

```
echo on

rem Export data; Must use fda.exe to set export flags
rem ImportEcon "BearCrk_RAS" 1 "Fda_Ascii_ExportAll.txt" "Fda_Export.out"

rem Arguments to ImportEcon.exe
rem     1) Study Name (Subdirectory Name) That has already been created
rem     2) Tab delimited Text file containing exported FDA data
rem     3) Optional text diagnostic output file

"ImportEcon.exe" %1 0 %2 %3
```

Script 'HecFda_v143_compSd.bat'

```
echo on

rem Compute Stage-Aggregated Damage for Selected Plan / Year

rem Arguments
rem     1) Study name (subdirectory name)
rem     2) Study Plan name
rem     3) Study Analysis Year
rem     4) Use Risk (default 1, use risk)
rem     5) Use SID reaches (default 0, don't use them)

"compSd.exe" %1 %2 %3 %4 %5
```

Script 'HecFda_v143_compEAD.bat'

```
echo on

rem Compute Expected Annual Damage for Selected Plan / Year

rem Arguments
rem     1) Study name (subdirectory name)
rem     2) Study Plan name
rem     3) Study Analysis Year
rem     4) Use risk (default = 1, use risk)
rem     5) Target Stage, probability of event (default = 0.01)
rem     6) Target Stage, percent damage (default = 5)

"compEAD.exe" %1 %2 %3 %4 %5 %6
```

Script 'HecFda_v143_compEquivEAD.bat'

```
echo on

rem Compute Equivalent Annual Damage for Selected Plan

rem Arguments
rem     1) Study name (subdirectory name)
rem     2) Study Plan name

"compEquivAnnualDamage.exe" %1 %2
```

Script 'HecFda_v143_resultsDump.bat'

```
echo on

rem Dump Computed Results out to Text Files

rem Two ways to dump results:
rem     1) resultsDump "BearCrk_RAS" dumps all results out
rem     2) resultsDump "BearCrk_RAS" "Without" 2021 dumps results out for selected plan &
year (plus global results)

rem Arguments
rem     1) Study Name (subdirectory name)
rem     2) Optional Study Plan Name (if supplied, must include argument 3).
rem     3) Optional Study Year (if argument 2 supplied, must enter this argument).

"resultsDump.exe" %1 %2 %3
```

Script 'HecFda_v143_wspRetrieve.bat'

```
echo on

rem Retrieve data from the Water Surface Profiles; Retrieves graphical discharge-
probability
rem and stage-discharge functions. It may retrieve stage-probability.

rem Arguments
rem     1) Study Name
rem     2) Plan name
rem     3) Study Year
rem     4) Number of years in equivalent length of record
rem     5) Profile number at which Standard Deviation of Error in Stage-Discharge become
constant (1-8)
rem     6) Standard Deviation of error in stage in stage-discharge rating curve

"WspRetrieve.exe" %1 %2 %3 %4 %5 %6
```

Script 'HecFda_v143_CompOnePlan.bat'

```
echo on
rem     goCompOnePlan.bat
rem     ================================================================================
rem     For one plan, all years, compute stage-aggregated damage,
rem             expected annual damage, equivalent annual damage, and
rem             write results to a tab delimited file.
rem     Arguments
rem             1) Study Name
rem             2) Plan Name
rem             3) Base Year
rem             4) Future Year
rem             5) Use risk for Stage-Damage and EAD (>0)
rem             6) Use SID reaches (>0)
rem     Assumptions
rem             Use Risk Analysis
rem             Use SID Reaches
rem             Use default criteria for computing target stage
rem     ================================================================================

rem     ================================================================================
rem     Compute Stage-Aggregated Damage
rem     ================================================================================
call HecFda_v143_compSd %1 %2 %3 %5 %6
call HecFda_v143_compSd %1 %2 %4 %5 %6

rem     ================================================================================
rem     Compute Expected Annual Damage
rem     ================================================================================
call HecFda_v143_compEAD %1 %2 %3 %5
call HecFda_v143_compEAD %1 %2 %4 %5

rem     ================================================================================
rem     Compute Equivalent Annual Damage
rem     ================================================================================
call HecFda_v143_compEquivEAD %1 %2

rem     ================================================================================
rem     Write Results to Tab Delimited Files
rem     ================================================================================
call HecFda_v143_resultsDump %1 %2 %3
call HecFda_v143_resultsDump %1 %2 %4

pause
```

Example Script Data Included in HEC-FDA Example Data Distribution

Included in the distribution of the HEC-FDA program are two studies that have script (.bat) files that call other script files that call the distribution script files. It is an example of how scripts can be written to do multiple operations with minimal user interaction. These are example scripts that users might want to write for their own studies. This, of course, assumes ACEIT will allow you to execute scripts from directories other than the "official" directory of "C:\Software". For both studies, the script files do the following:

1. Export all data from an existing study (e.g. "BearCrk_RAS").
2. Create the new study (e.g. "BearCrk RAS New").
3. Copy the exported tab delimited text data from "BearCrk_RAS" into the new study "BearCrk RAS New".
4. Import the tab delimited text data into the new study "BearCrk RAS New".
5. For the "Without" plan, retrieve functions from the water surface profiles.
6. Compute stage-aggregated damage for all plans and years.
7. Compute expected annual damage for all plans and years.
8. Compute equivalent annual damage for all plans.
9. Write results out to tab delimited files.

The main Script "goAll.bat" for study BearCrk_RAS contains just one line that includes the name of the new study ("BearCrk RAS New").

```
call goAllScriptCalls "BearCrk RAS New"
```

The second script performs all the required operations by calling a third level of scripts. The '%1' is replaced by the first argument to the script. In this case, '%1' is replaced with "BearCrk RAS New". The script "goAllScriptCalls" is as follows:

```
call goExport
call goCreateStudy %1
call goImport %1
call goWspRet %1
call goCompSd %1
call goCompEad %1
call goCompEquiv %1
call goDumpResults %1
```

The third level scripts do all the work by calling the console programs.

Script "goExport.bat" exports data from the study "BearCrk_RAS" into the file "FDA_ExportASCII_All.out". Note, you must first run HEC-FDA to set the export flags under "Economics->Export".

```
echo on
rem Export any data using DOS program. Items must first be selected from the GUI
rem Requires the existing study "BearCrk_RAS". This is the first script to run and all
rem     others are dependent on it.

call HecFda_v143_exportEcon "BearCrk_RAS" "Fda_Ascii_ExportAll.txt"
"FDA_ExportASCII_All.out"
pause
```

Script "goCreateStudy.bat" creates a new study "BearCrk RAS New" and copies the file containing the exported data from study "BearCrk_RAS" into the new study "BearCrk RAS New".

```
echo on
rem Create the new study %1 and then copies the exported text file from
rem     study "BearCrk_RAS" into the new study.
rem You must first run the script "goExport.bat"

rem Create New Study into which all data will be imported and then calculations will be
rem     performed
rem ============================================================================================
pause
call HecFda_v143_createStudy %1


rem ============================================================================================
```

```
rem Copy the file "Fda_Ascii_ExportAll.txt" from the study "BearCrk_RAS" into the dbf
rem     subdirectory of the new study %1.
rem ============================================================================================
pause
copy "BearCrk_RAS\Fda_Ascii_ExportAll.txt" %1
pause
```

Script “goImport.bat” reads the tab delimited file that was exported from the study “BearCrk_RAS” and imports it into the new study “BearCrk RAS New”.

```
echo on
rem Import data using DOS program. You must previously run the script goCreateStudy.


rem ============================================================================================
rem Import to new study
rem ============================================================================================
pause
call HecFda_v143_importEcon %1 "Fda_Ascii_ExportAll.txt" "Fda_Import.out"

pause
```

Script “goWspRet.bat” retrieves probability and rating curves from the water surface profiles for the without plan. This script could be expanded to retrieve data for all plan/years.

```
echo on
rem Test WspRetrieve DOS Program. Must first run goImport.bat.


rem ============================================================================================
rem Retrieve the functions for the Without, 2021 plan / year
rem Make sure to create file nameCodes.txt for cross-reference for plan/year/reach
rem     It is currently defined but otherwise you would have to create and edit it.
rem ============================================================================================
pause
call HecFda_v143_wspRetrieve %1 "Without" "2021" 51 6 .51
call HecFda_v143_wspRetrieve %1 "Without" "2030" 52 6 .52

pause
```

Script “goCompSd.bat” computes stage-aggregated damage for all plan/years. It will compute with risk and use SID reaches.

```
rem Compute stage-aggregated damage using DOS programs. You must first run goWspRet.bat

echo on

rem ============================================================================================
rem Compute Stage Damage for 2021 & 2030
rem ============================================================================================
pause
call HecFda_v143_compSd %1 "Without" 2021 1 1
call HecFda_v143_compSd %1 "Without" 2030 1 1
call HecFda_v143_compSd %1 "Plan 1" 2021 1 1
call HecFda_v143_compSd %1 "Plan 1" 2030 1 1
call HecFda_v143_compSd %1 "Plan 2" 2021 1 1
call HecFda_v143_compSd %1 "Plan 2" 2030 1 1
call HecFda_v143_compSd %1 "Plan 3" 2021 1 1
call HecFda_v143_compSd %1 "Plan 3" 2030 1 1
pause
```

Script “goCompEAD.bat” computes expected annual damage for all plan/years. It will compute with risk and use the 0.01 probability event and 5% damage for the without plan to determine the target stage.

```
echo on
rem Compute EAD damage using DOS programs. You must first run goCompSd.bat


rem ============================================================================================
rem Compute EAD for 2021 & 2030
rem ============================================================================================
```

```
pause
call HecFda_v143_compEAD %1 "Without" 2021 1 0.01 5
call HecFda_v143_compEAD %1 "Without" 2030 1 0.01 5
call HecFda_v143_compEAD %1 "Plan 1" 2021 1 0.01 5
call HecFda_v143_compEAD %1 "Plan 1" 2030 1 0.01 5
call HecFda_v143_compEAD %1 "Plan 2" 2021 1 0.01 5
call HecFda_v143_compEAD %1 "Plan 2" 2030 1 0.01 5
call HecFda_v143_compEAD %1 "Plan 3" 2021 1 0.01 5
call HecFda_v143_compEAD %1 "Plan 3" 2030 1 0.01 5
```

Script “goCompEquiv.bat” computes equivalent annual damage for all plans.

```
echo on
rem Compute Equivalent Annual Damage using DOS programs. You must first run goCompEad.bat


rem ============================================================================================
rem Compute Equivalent Annual Damage
rem ============================================================================================
pause
call HecFda_v143_compEquivEAD %1 "Without"
call HecFda_v143_compEquivEAD %1 "Plan 1"
call HecFda_v143_compEquivEAD %1 "Plan 2"
call HecFda_v143_compEquivEAD %1 "Plan 3"

pause
```

Script “goDumpResults.bat” writes all the output results to tab delimited text files.

```
echo on
rem Dump results using DOS program. You must first run goCompEquiv.bat

rem ============================================================================================
rem Dump the results out to text files.
rem ============================================================================================

rem This dumps all results out
rem ============================================================================================
pause
call HecFda_v143_resultsDump %1

rem ============================================================================================
rem This dumps results out for selected plan & year
rem ============================================================================================
pause
call HecFda_v143_resultsDump %1 "Without" "2021"
call HecFda_v143_resultsDump %1 "Without" "2030"
pause
```

Alternative Scripts

You could write alternative scripts such as one that processes data for only one plan and both years. In the example below, it computes stage-aggregated damage, expected annual damage, equivalent annual damage and writes results to tab delimited files. By not including the “pause” command, it will proceed through all operations without stopping.

The first script “goOnePlan.bat” is specific to a study and calls “goCompOnePlan.bat” to do the work. The script “HecFda_v143_CompOnePlan.bat” is generic and can be used for any study.

Script ‘goOnePlan.bat’

```
echo on
rem goOnePlan.bat
rem ============================================================================================
rem This calls HecFda_v143_CompOnePlan.bat
rem ============================================================================================

call HecFda_v143_CompOnePlan "BearCrk RAS New" "Without" 2021 2030 1 1
```