

# CraterStats GUI

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Northern Arizona University Senior Computer Science Capstone project.  
This project is to create a Graphical User Interface for the current [Craterstats3](#) command line program.

## Installation

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Due to the application still being in the alpha stage, the initialization for execution has environment requirements for running the application.

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We recommend installing a conda software package manager (anaconda or miniconda) to handle the python version and packages required for GUI usage.

### Windows/Mac/Linux

You can download Anaconda [here](#)

After installation open the anaconda prompt and run the following commands:

Command for creating a new environment with python version 3.8

```
conda create -n <env name> python=3.8
```

Command for activating the newly created environment

```
conda activate <env name>
```

### Pip Install

You can download everything related to the project by running the command

```
pip install craterstats-gui
```

and run the application by running the command

```
craterstats-gui
```

### Alternative Installation If Above Doesn't Work

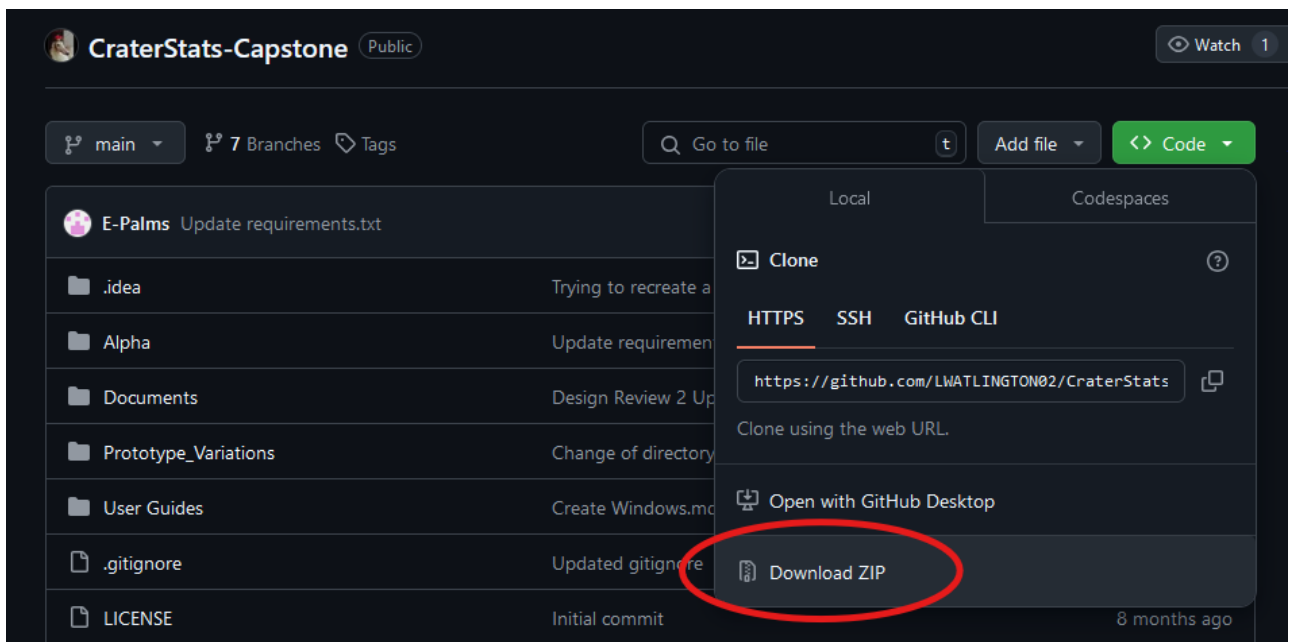
Install the required dependencies:

```
pip install flet
```

```
pip install craterstats
```

As of now, there are two methods for acquiring CraterstatsGUI on your local system

- Download the repository



- If you have git installed you can `git clone` to your local machine.

```
git clone https://github.com/LWATLINGTON02/CraterStats-Capstone.git
```

After installing python, required dependencies, and downloading the application from github, navigate to the repository's directory within your system Windows example:

```
cd CraterStats-Capstone
```

To run the application execute the following command

```
flet Alpha
```

With that the GUI should be running and ready to generate plots

## Error Handling in Linux

If receiving this error

```
error while loading shared libraries: libmpv.so.1: cannot open shared object file: No such file or directory
```

when trying to run

```
flet Alpha
```

Double check you have libmpv.so install by running

```
ldconfig -p | grep libmpv
```

If you have libmpv.so.2 and not libmpv.so.1 run this command with the path to libmpv.so.2 to create a symbolic link

For example:

```
sudo ln -s /usr/lib/x86_64-linux-gnu/libmpv.so.2 /usr/lib/x86_64-linux-gnu/libmpv.so.1
```

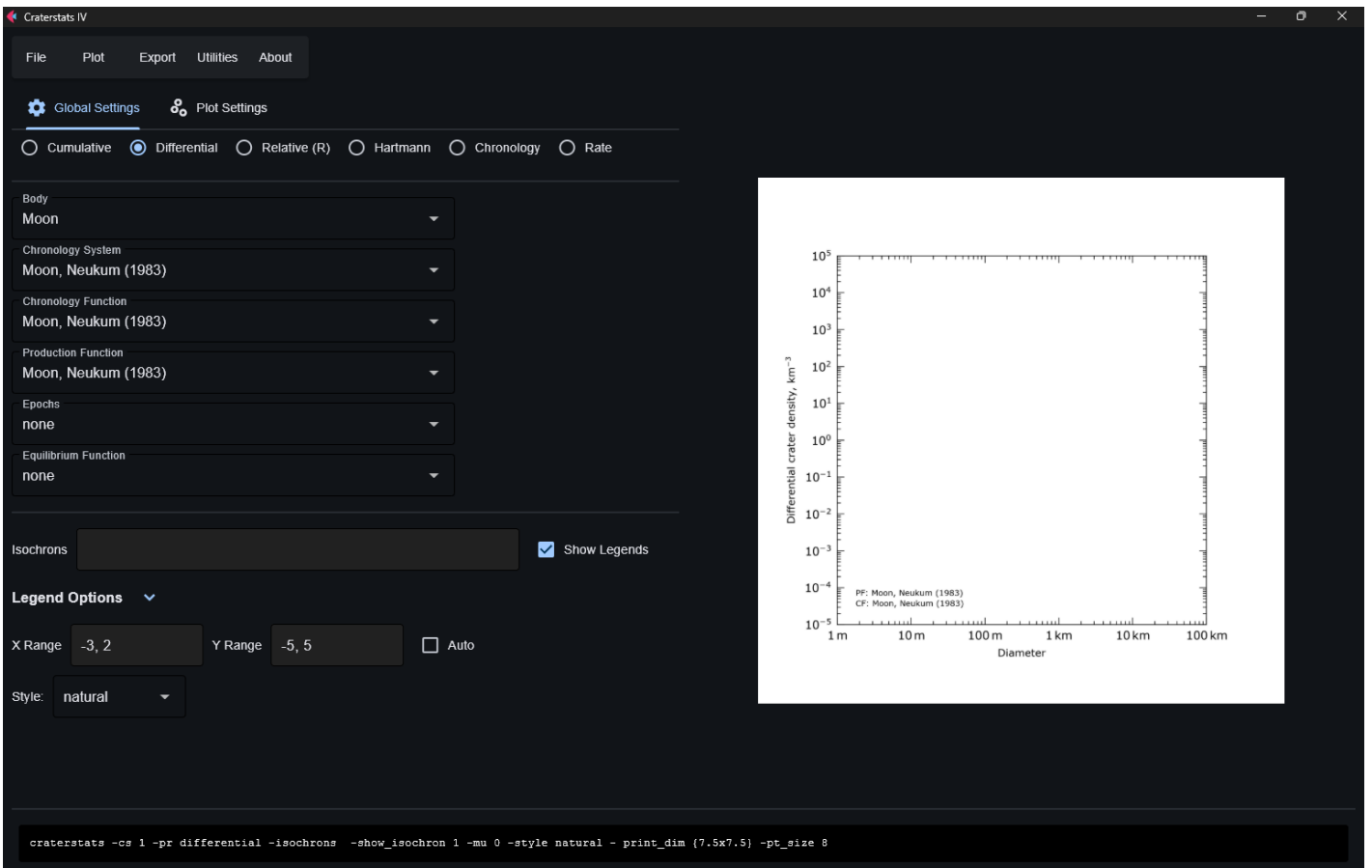
After running this command, run the application with

```
flet Alpha
```

and with that the GUI should be running and ready to generate plots

## Getting Started

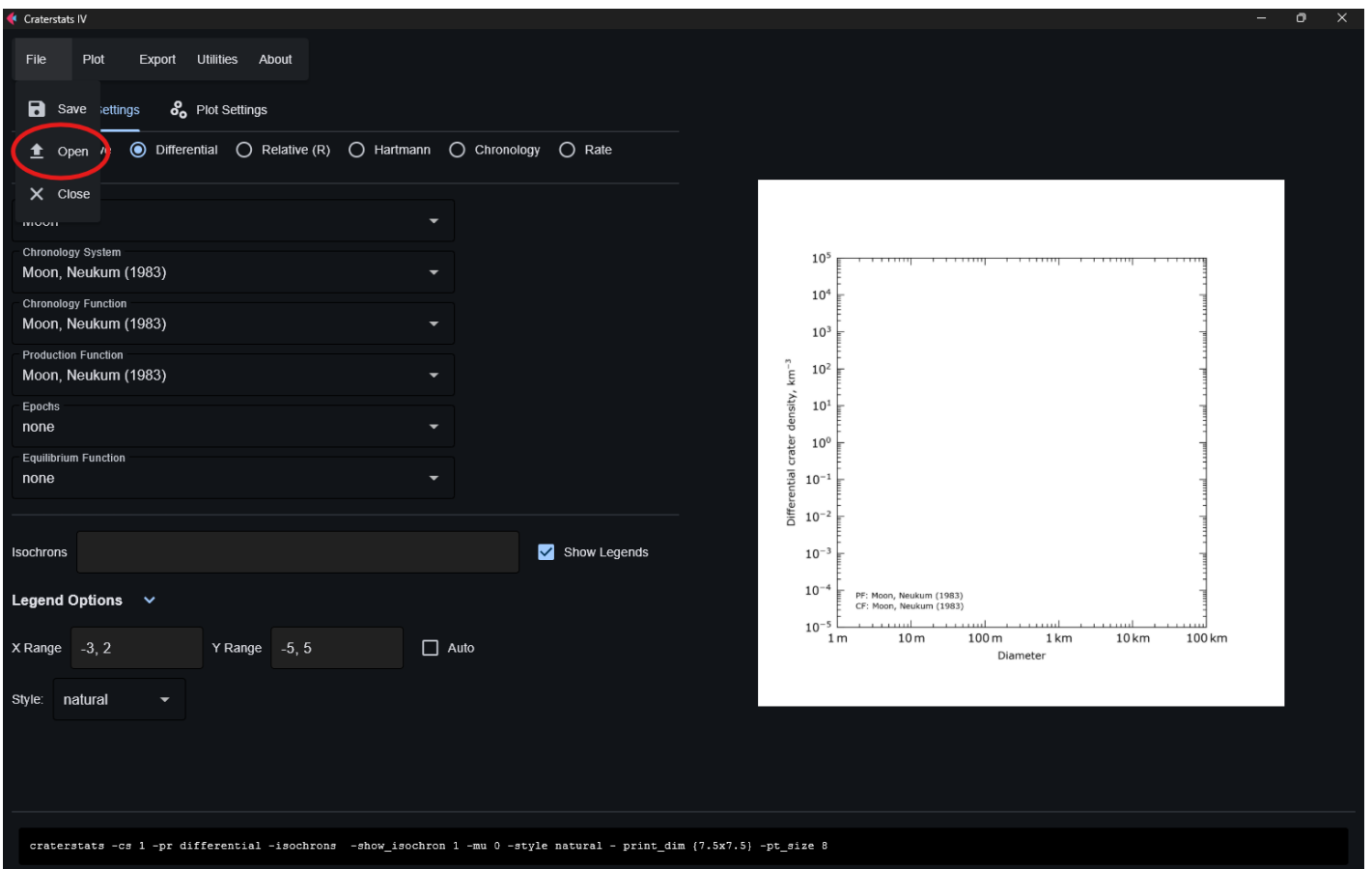
Upon running the application you should be greeted with the home screen.



In the toolbar, you can select the "Open" button from the "File" dropdown list.

If you do not have your own plot configuration and data files, you can download samples here: [Configuration File Data File](#)

**Disclaimer:** CraterstatsGUI can only process .scc and .diam files at this stage in development.



Select a plot configuration file.

Craterstats IV

Open

Alpha > craterstats\_config\_files

Name	Date modified	Type	Size
checker	11/4/2024 9:56 PM	PLT File	1
default	10/29/2024 2:04 PM	PLT File	1
demo_commands	10/18/2024 12:52 PM	Text Document	6
functions	10/18/2024 12:52 PM	Text Document	22

File name:  All Files (\*.\*)

Open Cancel

Isochrons   Show Legends

Legend Options

X Range: -3, 2 Y Range: -5, 5  Auto

Style: natural

```
craterstats -cs 1 -pr differential -isochrons -show_isochron 1 -mu 0 -style natural -print_dim {7.5x7.5} -pt_size 8
```

8:43 AM 11/5/2024

After uploading a configuration file select the Plot Settings tab

Craterstats IV

File Plot Export Utilities About

Global Settings **Plot Settings**

Cumulative  Differential  Relative (R)  Hartmann  Chronology  Rate

Body: Mars

Chronology System: Mars, Neukum-Ivanov (2001)

Chronology Function: Mars, Hartmann & Neukum (2001)

Production Function: Mars, Ivanov (2001)

Epochs: none

Equilibrium Function: Hartmann (1984)

Isochrons: .000000001s,.00000001s,.0000001s,.000001s,.00001s,.0001s,  Show Legends

Legend Options

X Range: 0.01, 100 Y Range: 0.01, 1000  Auto

Style: natural

```
craterstats -cs 5 -ef 2 -pr Hartmann -isochrons .000000001s,.00000001s,.0000001s,.000001s,.00001s,.0001s,.001s,.01s,.1s,1s,3s,3.5s,4s -show_isochron 1 -mu 0 -style natural - print_dim {7.5x7.5}
```

Upon opening the Plot Settings page, upload a source file by selecting "Browse"

Craterstats IV

File Plot Export Utilities About

Global Settings Plot Settings

Title  Print scale, cm/decade (or plot width x height, cm): 7.5x7.5

Subtitle  Text size, pt. 12

Default

New Up Duplicate Down Delete

Default data  Hide plot

Source file:  **Browse...**

Diameter range: 0.01, 100 Binning pseudo-log

Colour Black Symbol Square

Error bars  Display age  Align age left  Show isochron  Plot fit

Resurf  Resurf all Offset age: 0, 0

```
craterstats -cs 5 -ef 2 -pr Hartmann -isochrons .000000001s,.00000001s,.0000001s,.000001s,.00001s,.0001s,.001s,.01s,.1s,1s,3s,3.5sa,4s -show_isochron 1 -mu 0 -style natural -print_dim [7.5x7.5]
```

### Select your source file

Craterstats IV

Open

CraterStats-Capstone > Alpha > sample

Name	Date modified	Type	Size
ECHUS_CHAP_AR1_A.stat	10/18/2024 12:52 PM	STAT File	
Pickering.scc	10/18/2024 12:52 PM	SCC File	
README	10/18/2024 12:52 PM	Markdown Source...	
sample.binned	10/18/2024 12:52 PM	BINNED File	
sample.diam	10/18/2024 12:52 PM	DIAM File	
sample	10/18/2024 12:52 PM	R Source File	
<b>sample.scc</b>	10/18/2024 12:52 PM	SCC File	
sample.stat	10/18/2024 12:52 PM	STAT File	
sample2.diam	10/18/2024 12:52 PM	DIAM File	

File name:  All Files (\*.\*)

Open Cancel

Default data  Hide plot

Source file:

Diameter range: 0.01, 100 Binning pseudo-log

Colour Black Symbol Square

Error bars  Display age  Align age left  Show isochron  Plot fit

Resurf  Resurf all Offset age: 0, 0

```
craterstats -cs 5 -ef 2 -pr Hartmann -isochrons .000000001s,.00000001s,.0000001s,.000001s,.00001s,.0001s,.001s,.01s,.1s,1s,3s,3.5sa,4s -show_isochron 1 -mu 0 -style natural -print_dim [7.5x7.5]
```

After upload, the application should be displaying your plot configuration

Craterstats IV

File Plot Export Utilities About

Global Settings Plot Settings

Title Print scale, cm/decade (or plot width x height, cm): 7.5x7.5

Subtitle Text size, pt: 12

Default

New Duplicate Delete Up Down

Default data  Hide plot

Source file: \Users\evanj\OneDrive\Documents\GitHub\CraterStats-Capstor Browse...

Diameter range: 0.01, 100 Binning pseudo-log

Colour Black Symbol Square

Error bars  Display age  Align age left  Show isochron  Plot fit

Resurf  Resurf all Offset age: 0, 0

```
craterstats -cs 5 -ef 2 -pr Hartmann -isochrons .000000001s,.00000001s,.0000001s,.000001s,.00001s,.0001s,.001s,.01s,.1s,1s,3s,3.5sa,4s -show_isochron 1 -mu 0 -style natural -print_dim [7.5x7.
```

Craters per  $\sqrt{2}$ -bin (equivalent),  $\text{km}^{-2}$

Diameter

EF: Hartmann (1984)  
PF: Mars, Ivanov (2001)  
CF: Mars, Hartmann & Neukum (2001)

Default,  $2.25 \times 10^5 \text{ km}^2$

Happy Plotting!

## Troubleshooting

- If you are getting dependency issues relating to scipy and craterstats libraries, please check your python version and verify version number 3.8
- If you are experiencing errors while uploading a plot configuration file, please verify that the file type is .cs and all relevant plot information is filled in it's correct format. You can check the example files in the GitHub repository for correct formatting.

## References

[Github](#) of craterstats CLI program created and developed by Greg Michaels.