

Introduction

This manual will introduce and guide you through the several options you have for getting MESMER installed and running on your computer. For maximum flexibility, there are three installation choices:

I – Single executable

This option is offered only as a convenience and is unsupported. MESMER is packaged as a single clickable application that most Mac OS™ and Windows™ users will be familiar with. In this form, MESMER comes bundled with all the necessary libraries. No utilities or scripts will be available for use at the command-line.

II - Installation from source

This is the recommended installation type for most users. Only the source code that comprises MESMER will be installed, and as such it will require that Python and certain libraries be available. All of the command-line utilities will be readily available, and MESMER library components can be easily imported into your own custom scripts.

III – Running locally

The MESMER scripts and libraries can be run locally by modifying the users's PATH environment. This is the best option for users interested in modifying MESMER or developing their own plugins.

Requirements

MESMER has been tested on a variety of operating systems, and should run well on any reasonably modern computer. For the downloadable executables, at least Windows™ 7 or MacOS™ 10.7 are required. For the source install, the following Python interpreter and libraries (or better) should be present before installing MESMER.

- Python ≥ 2.6
- matplotlib ≥ 0.99.1
- Numpy ≥ 1.4.0
- Scipy ≥ 0.7.2
- Biopython ≥ 1.5.0

Note: Some plugins may have additional library requirements!

Option I – Single executable installation

Note: Although this is the most convenient of installation options for the end-user, the necessary packaging all of the necessary components for MESMER to work properly on a number of systems can lead to a variety of hard-to-diagnose complications. For this reason, support for this installation option is limited.

I.A – Obtain a MESMER distribution

Packaged versions of the MESMER GUI can be downloaded from <http://steelsnowflake.com/downloads/>. After downloading is complete, double-click the *.dmg* disk image (Mac OS™) or the *.exe* (Windows™) installer.

I.B – Installation

Mac OS™ users can simply drag the MESMER application to their Applications folder, or anywhere they typically store their applications. Windows™ users should follow the on-screen installer prompts.

I.C – Verification

Verify that the MESMER GUI runs properly by double-clicking the application icon (Mac OS™) or the MESMER shortcut on the desktop or in the Start menu (Windows™). If you encounter issues, see **Troubleshooting** below, or contact support@steelsnowflake.com.

Option II – Setuptools installation

This is the recommended installation method, as it provides flexibility and makes troubleshooting considerably easier. It also provides the end-user the ability to easily create analysis workflows by calling MESMER utilities from shell scripts. Under most circumstances, even novice users should find using this option relatively straightforward.

II.A – Obtain a bundled installer for Python and required libraries.

Note: this step may be skipped if you already have the System Requirements met.

We recommend the free “Anaconda” package provided by Continuum Analytics (continuum.io/downloads). The Enthought Canopy package will also likely work (www.enthought.com/products/canopy/). These simple, GUI-based installer will not only install Python, but most of the necessary python libraries for MESMER to function.

Download the installer for Anaconda, and double click the `.exe` (Windows™) or the `.pkg` (Mac OS™) file to start installation. Because Anaconda can be installed into your personal profile, admin permissions are not required.

II.B – Obtain the latest MESMER version

Stable, non-bleeding edge releases can also be downloaded directly from <http://steelsnowflake.com/downloads/>. The most recent MESMER releases, which may have some bugs can be downloaded from MESMER's github repository at <https://github.com/steelsnowflake/mesmer>.

II.C – Run the MESMER setup script

Once you have downloaded the MESMER source, uncompress or unzip the archive. After extraction, open a command line terminal (/Applications/Utilities/Terminal.app for MacOS™, or “Command Prompt” from your Windows™ Start menu) and cd into the extracted directory, where X.X.X is the MESMER version:

```
$ cd MESMER-X.X.X
```

Once in the directory, installation is as simple as issuing the “install” command to the setuptools script, which automatically builds and installs MESMER :

```
$ python setup.py install
```

Note: If installing MESMER for all users on your computer, or if you run afoul of permission errors, you may want to try using `sudo python` instead of just `python`.

II.D – Check installation

If installation proceeds without errors, close the command line terminal and open a new one. Then issue a few commands to see if the MESMER utilities are available:

```
$ mesmer
$ mesmer -gui
```

If you encounter errors, please check the “troubleshooting” portion of this manual, or send an email describing your setup and the error to support@steelsnowflake.com. Bug reports or feature requests can also be submitted directly to MESMER's bug tracker at <https://github.com/steelsnowflake/mesmer/issues>

Option III – Local installation

Users that need to modify MESMER code directly, or develop and test plugins should likely use this option. This permits changes to be immediately evident in MESMER fitting runs and tests. This option assumes you have already obtained the necessary Python version, libraries, and MESMER source code.

III.A – Modifying your PATH variable

To make running the core MESMER applications and utilities convenient from the command line, add the path to the directories containing “*mesmer.py*”, “*mesmer_gui.py*”, and the MESMER “*utilities*” folder to your command shell’s *\$PATH* variable. This can be achieved by adding these lines to the appropriate shell config file in your home directory:

bash (.bashrc or .bash_profile)

```
export PATH=$PATH:/path/to/mesmer
export PATH=$PATH:/path/to/mesmer/utilities
```

csh, tcsh (.cshrc)

```
set path="$PATH":/path/to/mesmer
set path="$PATH":/path/to/mesmer/utilities
```

Windows

1. Go to “My Computer” and click “Properties”
2. Click “Advanced System Settings”
3. In the “System Properties” window click the “Environment Variables” button
4. Add the paths of the *mesmer* and the *mesmer utilities* directories to the “*PATH*” system variable

III.B – Verifying installation

Close your terminal and reopen. At the command-line prompt, the following commands should successfully launch the respective MESMER components:

```
$ mesmer.py
$ mesmer_gui.py
$ make_components.py
```

Note: In Unix, Linux or Mac OS™, you can create aliases to these commands if you tire of typing the “.py” extension, or by adding “.py” to your *PATHEXT* environment variable in Windows™.

Troubleshooting

MESMER is a fairly complex piece of software, with many “moving parts” and dependencies. Despite our best efforts, it is possible that problems will arise, often from incompatibilities or inconsistencies in expectations of the users's system configuration.

- **Missing modules / packages**
MESMER requires several Python libraries (see System Requirements). You can either try and install the missing or outdated module(s) individually, or use a combined package installer, such as Anaconda.
- **The GUI cannot open result folders**
The result / output folder may have been created by a different versions of MESMER, or from a different installation. This commonly occurs when attempting to open a MESMER output folder from a Unix system on a Windows computer (or vice versa).
- **GUI preference errors**
This problem is related to the GUI not being able to open output folders from different computers (in a shared network drive environment, for example), or perhaps multiple installations of MESMER on the same computer. Try removing the .mesmer_prefs.db file from your user folder.
- **Plugin warnings**
The default plugins provided with MESMER should already have the necessary libraries installed. However, 3rd-party or modified plugins may have additional requirements. See “Missing modules / packages”