



BATTLESPACE SIMULATIONS INC.

---



# MACE-ARMOR

## Quick Start Guide

Copyright (c) 2024 Battlespace Simulations, Inc. All rights reserved.

Battlespace Simulations, MACE and the MACE & BSI logos are registered trademarks of Battlespace Simulations, Inc.

If you have questions or comments, please contact us at [support@bssim.com](mailto:support@bssim.com).



## Contents

Contents.....	2
Recommended System Specifications .....	2
Downloading MACE .....	3
Obtaining a MACE License (for Evaluation Copies).....	4
Obtaining a MACE License (for Purchased Copies) .....	4
Getting Started with MACE .....	5
Downloading Elevation Data for MACE .....	6
Downloading ARMOR and ARMOR Terrain.....	7
Configuring MACE for ARMOR.....	8
Setting MACE CIGI Settings.....	9
ARMOR Connection Settings.....	9
Launch ARMOR .....	11

## Recommended System Specifications

We recommend the following system specifications when running both MACE and ARMOR:

- 64GB of RAM
- 8-core/16-thread (or better) running at 4.5+GHz boost speed
- nVidia 4070 or better (4080 or 4090 if using an AR/VR headset) with 12GB+ of VRAM
- Windows 11
- Solid state storage: The ARMOR terrain system relies on the random seek time benefits of an SSD and will not operate effectively from a spinning hard drive (non-SSD).



## Downloading MACE

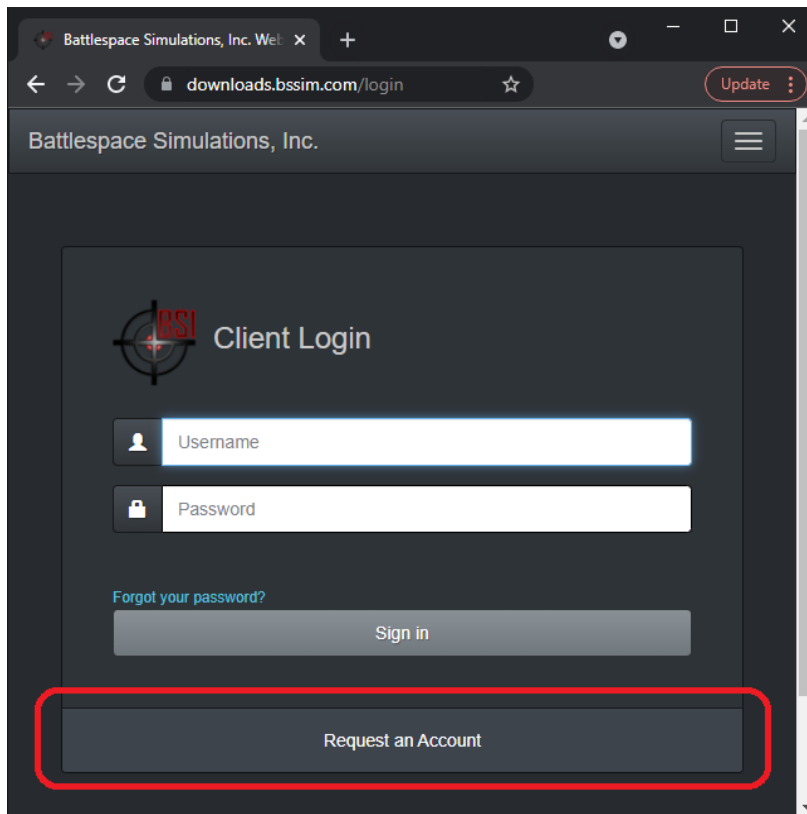
There are two versions of MACE available for download at any given time: the latest Production release (fully tested and documented) and the daily build (which can range from early Alpha to late Beta/Release Candidate depending on where we are in our development cycle).

The daily builds are NOT for use in production training environments; they are posted for the purposes of evaluation and collaboration with our customers.

The BSI download site is accessible at:

<https://downloads.bssim.com/>

You will need an individual account to login to the BSI downloads site. Click the “Request an Account” button and enter your information to have an account generated. Please check your Spam folder for confirmation e-mail.



You can download the latest **production release** from here:

<https://downloads.bssim.com/file/d/MACE/>

And you can download the **daily build** from here:

[https://downloads.bssim.com/file/d/MACE Pre-Production Daily Builds \(Alpha\)/](https://downloads.bssim.com/file/d/MACE%20Pre-Production%20Daily%20Builds%20(Alpha)/)



## Obtaining a MACE License (for Evaluation Copies)

When you launch MACE for the first time, you will be presented with a license dialog; send us the machine code as shown in the figure below. We will send you back a software license key. Enter it and click 'Submit'. If the license is valid, MACE will launch.

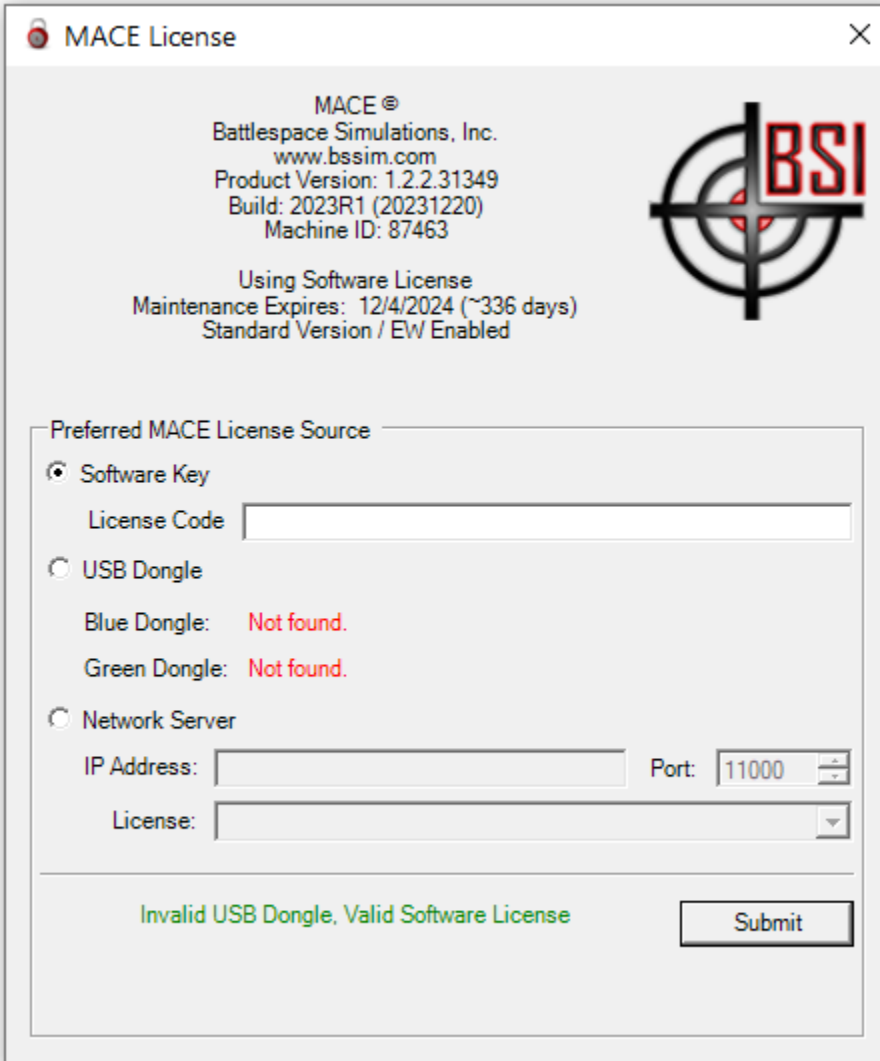


Figure 1: MACE License Dialog

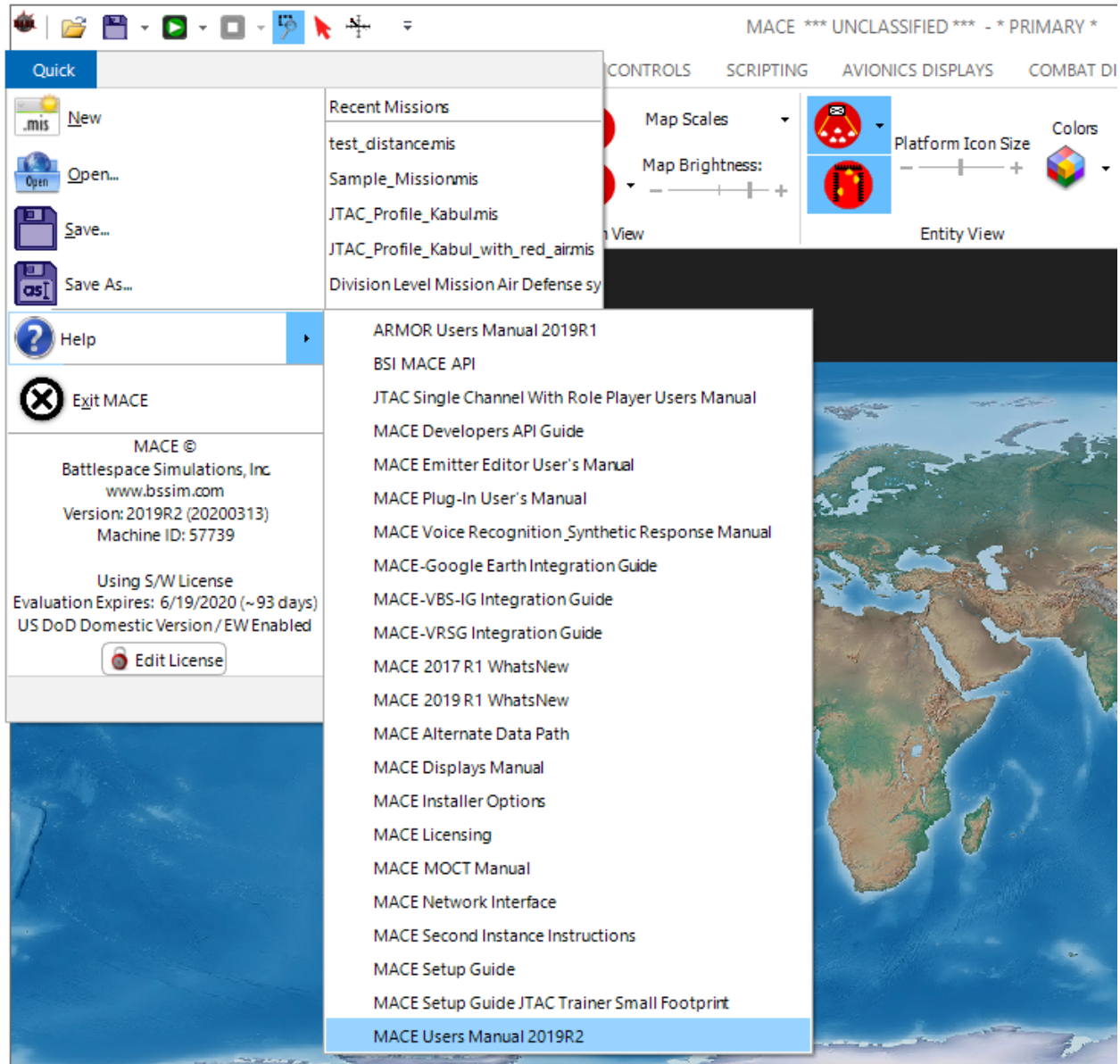
## Obtaining a MACE License (for Purchased Copies)

If you have purchased MACE, you should have received a blue (Keylok) dongle from BSI. These come pre-programmed and all you need to do is plug the dongle into a USB port in your MACE computer.



## Getting Started with MACE

All of MACE's User's Manuals are accessible from the MACE User Interface. On the Quick Menu, you can hover over the 'Help' item and you will see a list of all the manuals available to you:



**Figure 2: MACE Documentation**

The main resource for you when getting started is the MACE User's Manual. There is a tutorial section that we highly recommend for new MACE users.

In addition, there are a series of tutorial videos available from our website, here:

<https://www.bssim.com/videos/>



And there are several additional training videos available on our YouTube page:

Building an IADS in MACE: <https://www.youtube.com/watch?v=S2Y1e1dw4AU>

Radar creation in MACE: <https://www.youtube.com/watch?v=a1fvRGnV84s>

SHAPE tools in MACE: <https://www.youtube.com/watch?v=3h2pqNDzoCs>

General link to our YouTube channel: <https://www.youtube.com/user/BattlespaceSims/videos>

## Downloading Elevation Data for MACE

MACE supports a variety of elevation data sources including DTED, SRTM, and CDB/GeoTiff.

A DTED0 installer is available via the direct link:

[https://downloads.bssim.com/file/d/Data-Unrestricted/Elevation/MACE-DTED\\_Installer\\_14May2021.exe](https://downloads.bssim.com/file/d/Data-Unrestricted/Elevation/MACE-DTED_Installer_14May2021.exe)

Just download and run the DTED0 installer (after you install MACE), and it will place worldwide DTED0 in a folder where your MACE will be able to find and use it out-of-the-box.

Additionally, ALOS\_30m (terrain) and ASTER\_30m (water) are posted to:

<https://downloads.bssim.com/file/d/Data-Unrestricted/Elevation/>

The ALOS\_30m archive can be unzipped using 7Zip: <https://www.7-zip.org/>

After downloading and unzipping this elevation, you will need to configure your MACE's Elevation Data Paths to point to the folders where you placed this elevation. If you download both DTED0 and ALOS/ASTER, they should be placed in separate folders or sub-folders. Note that if you only use the DTED0 installer, there's no need to download the zipped archive or configure your data paths; the installer will take care of that for you.

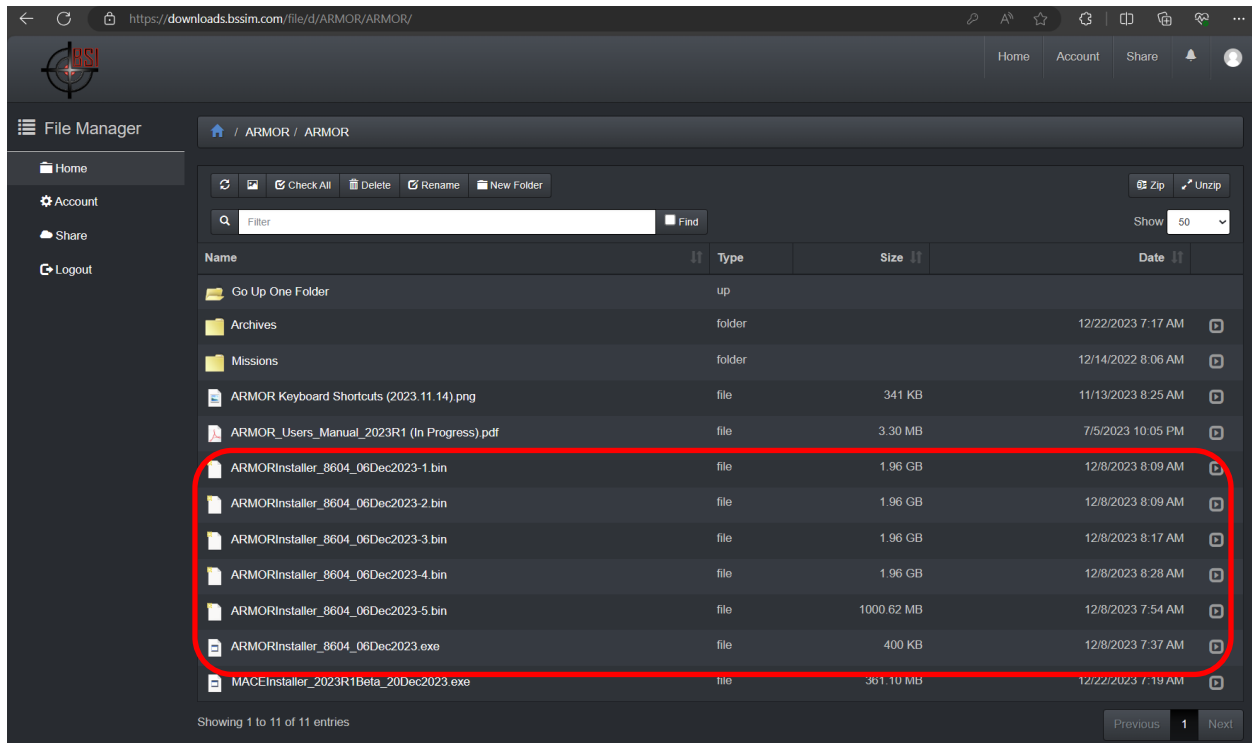
For instructions on how to configure your data paths, please refer to the '**Installing Map/Chart/Imagery Data and Elevation Data**' section of your MACE User's Manual.



## Downloading ARMOR and ARMOR Terrain

ARMOR (Augmented Reality Mission Observation and Rehearsal) is a free Unity-based 3D viewer for MACE. You can download ARMOR directly from <https://downloads.bssim.com/file/d/ARMOR/>.

Note that when downloading the ARMOR installer, you will need to download the .exe and all associated .bin file (highlighted below). Once all the files have been downloaded, you can launch (double-click) the .exe file to start the installation of ARMOR.



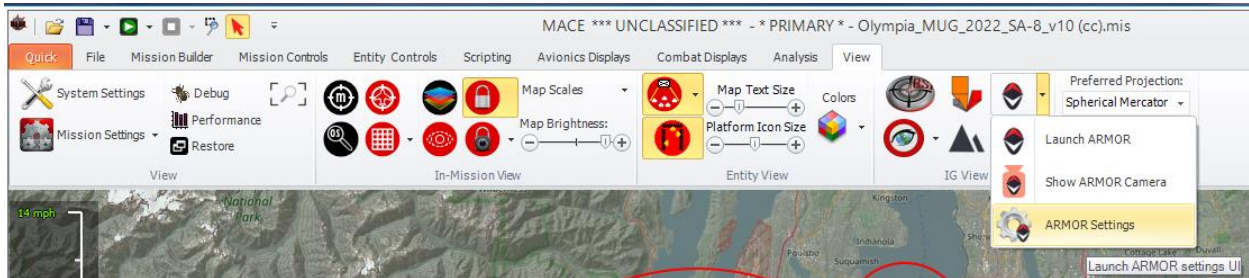
Also found in that directory will be a compatible MACE installer that would be most likely a beta build of MACE. The latest production version of MACE will also be compatible with this version of ARMOR. Note that it is possible that the daily builds of MACE may not be compatible with the posted version of ARMOR. If you find this to be the case and need to test a daily build, please e-mail us at [support@bssim.com](mailto:support@bssim.com).

Various pre-generated ARMOR terrain can be downloaded from <https://downloads.bssim.com/file/d/Data-Unrestricted/ARMOR/Terrain/>. With the SSD provided with the purchase of a MACE license, you have access to global terrain data that will allow you to generate ARMOR terrain anywhere in the world using the ARMOR Terrain Generator plug-in that also ships with MACE. For instructions on generating ARMOR terrain with this plug-in, refer to the ARMOR User Guide.

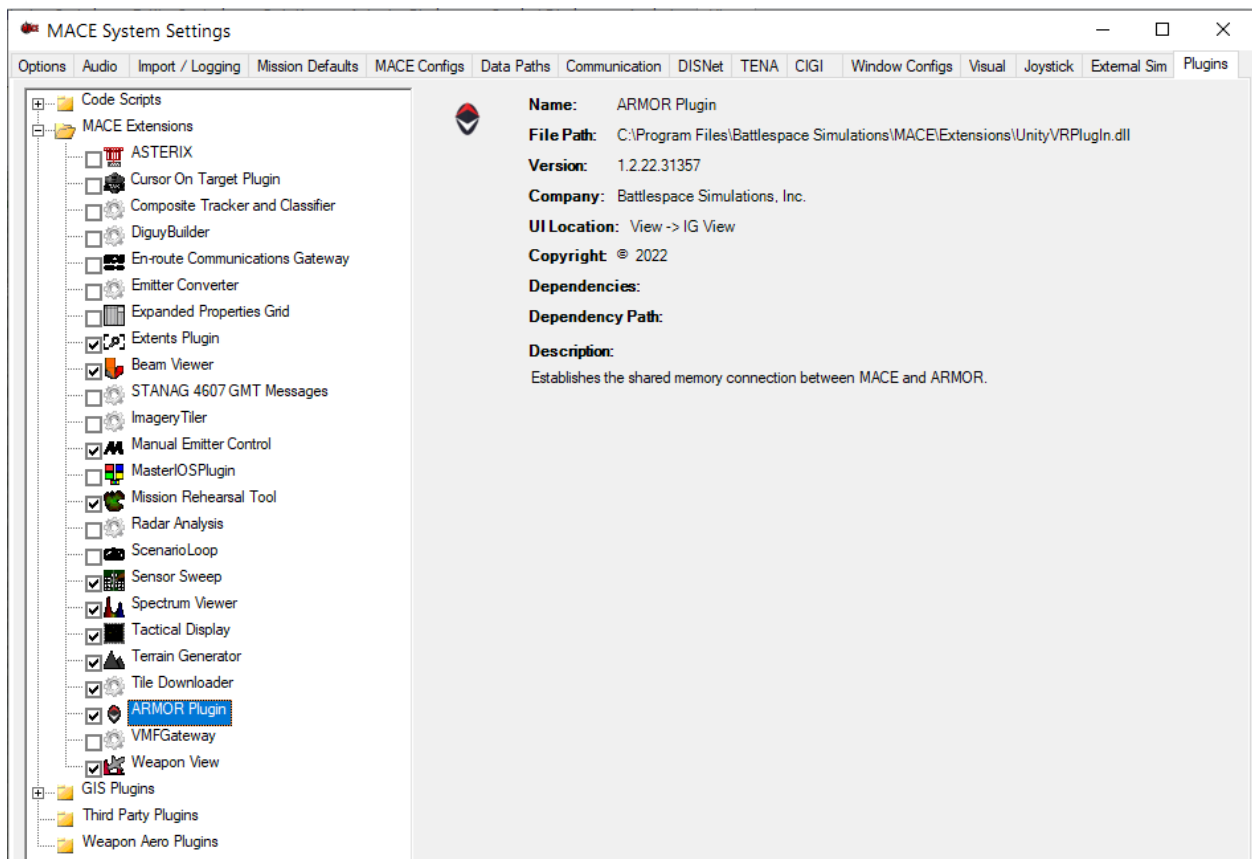


## Configuring MACE for ARMOR

To launch ARMOR from MACE we need to ensure MACE has been properly configured to communicate to a locally running instance of ARMOR. From the MACE View tab click the ARMOR drop down option (small downward arrow beside the ARMOR icon) and select the ARMOR Settings option.



If you do not see the ARMOR icon on the View tab, it is likely that the ARMOR plug-in is not installed or enabled. From the System Settings form, select the Plugins tab and ensure that the ARMOR Plugin is available and selected from the available MACE Extensions option on the left window.

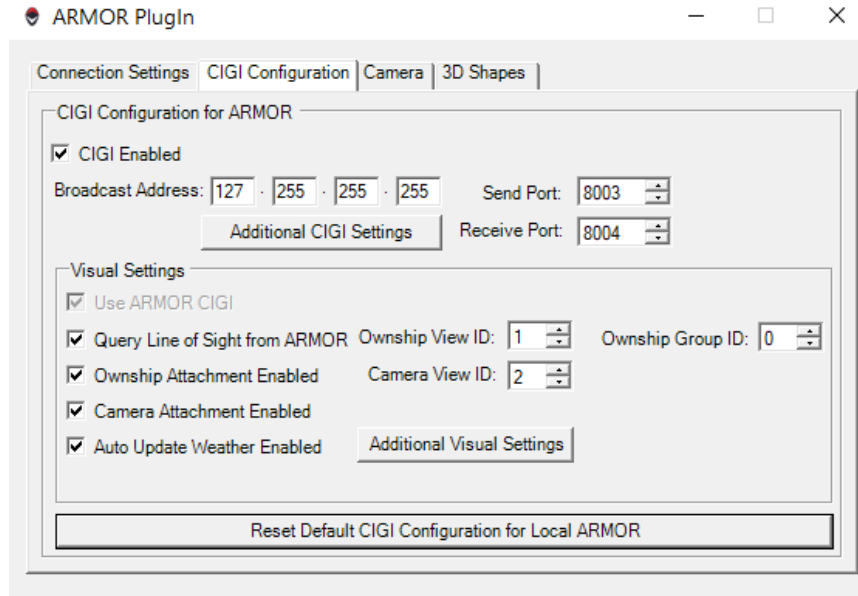






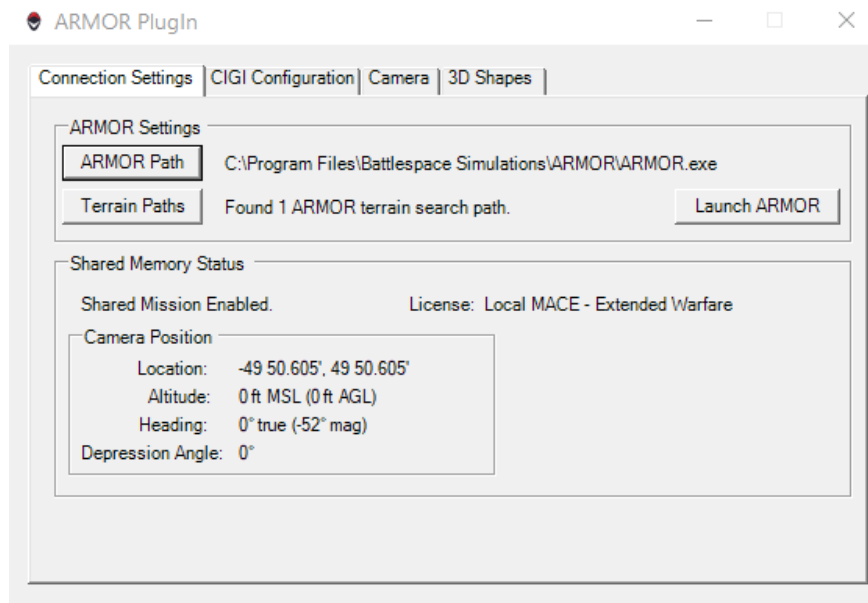
### Setting MACE CIGI Settings

After launching the ARMOR Settings, first select the CIGI Configuration tab (second tab) and press the bottom “Reset Default CIGI Configuration for Local ARMOR” button. This will configure MACE’s CIGI interface settings to appropriately communicate to a locally running ARMOR instance.



### ARMOR Connection Settings

Move to the Connection Settings tab and if the ARMOR Path is not indicated beside the ARMOR Path button, select the ARMOR Path button and use the open file dialog window to navigate to your installed ARMOR directory. ARMOR, by default will be installed in your “Program Files\Battlespace Simulations\ARMOR folder” typically on your C:\ drive. Select the ARMOR.exe file and hit the Open button. You should now see the ARMOR path indicated beside the ARMOR Path button.





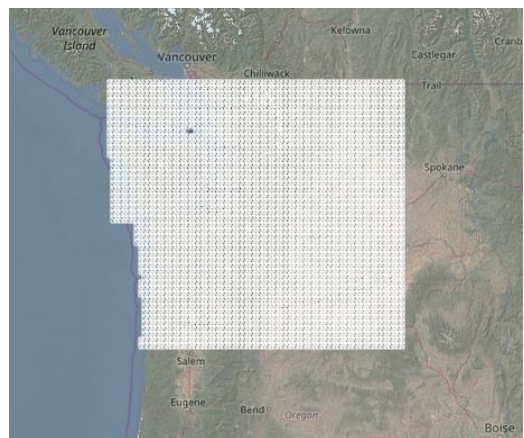
To specify ARMOR Terrain Paths, select the Terrain Paths button that will open the ARMOR Terrain Configuration window where you can add (& remove) ARMOR terrain paths. If you have downloaded pre-generated terrain from <https://downloads.bssim.com/file/d/Data-Unrestricted/ARMOR/Terrain/>, be sure to extract any of the data contained within the downloaded compressed files to a local directory and point to that local directory using this form. It is recommended that you add a new path for each terrain being used rather than pointing to a single directory containing all of your downloaded terrain data. Note that if the Tiles Found column indicates 0 tiles, no terrain will be loaded.

▲ ARMOR Terrain Configuration

Reads elevation data in the ARMOR Terrain Tile format. Each search path defined below will be recursively scanned for \*.hm10 or \*.ahm files, which will be indexed based on their location. Tiles will then be loaded into MACE based on the mission area. Terrain will be loaded into ARMOR based on the current location.

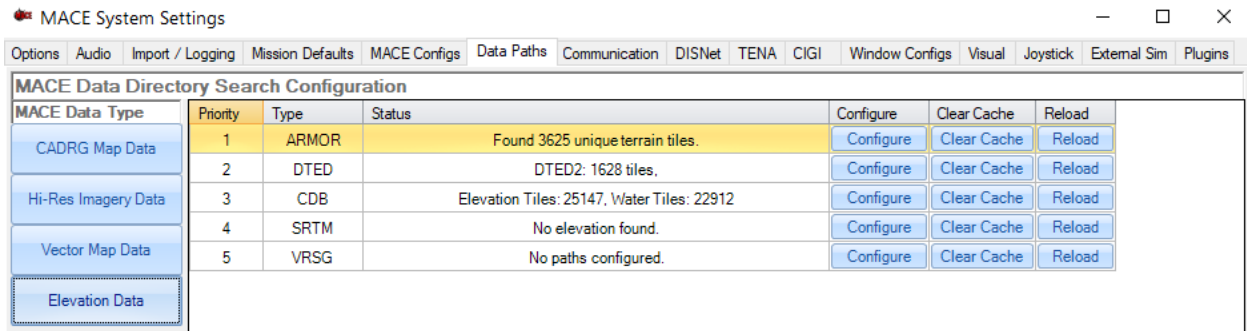
	Search Path	Select Folder	Tiles Found	Delete Folder
	D:\BSI\ARMOR\Terrain\Gen4\CONUS\Pacific_Northwest_2023_v2	Browse	3257	Delete
▶	D:\BSI\ARMOR\Terrain\Gen4\Canada\CFB Petawawa	Browse	368	Delete
*		Browse		Delete

Note that when the ARMOR Terrain Configuration window is open, any mapped terrain tiles will be highlighted on the MACE map. Each white cell represents a terrain tile that will be forwarded to ARMOR when ARMOR is launched. If the tiles are displayed as green, that is an indication that MACE has loaded that tile into memory from disk. After you have mapped one or more directories, the ARMOR Plug-in Configuration Settings tab will indicate the number of terrain paths in its search path. This information will be displayed to the right of the Terrain Paths button.



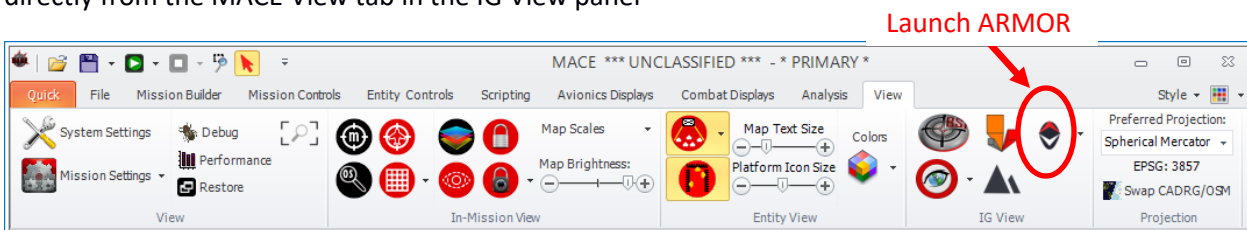


To ensure that MACE is now using the terrain elevation provided by the downloaded ARMOR terrain data, open the System Settings window in MACE, select the Data Paths tab and select the Elevation Data button on the right hand side of the window. If ARMOR elevation data is not the highest priority (top of the list), simply drag the ARMOR row up to be at the top of the list.



## Launch ARMOR

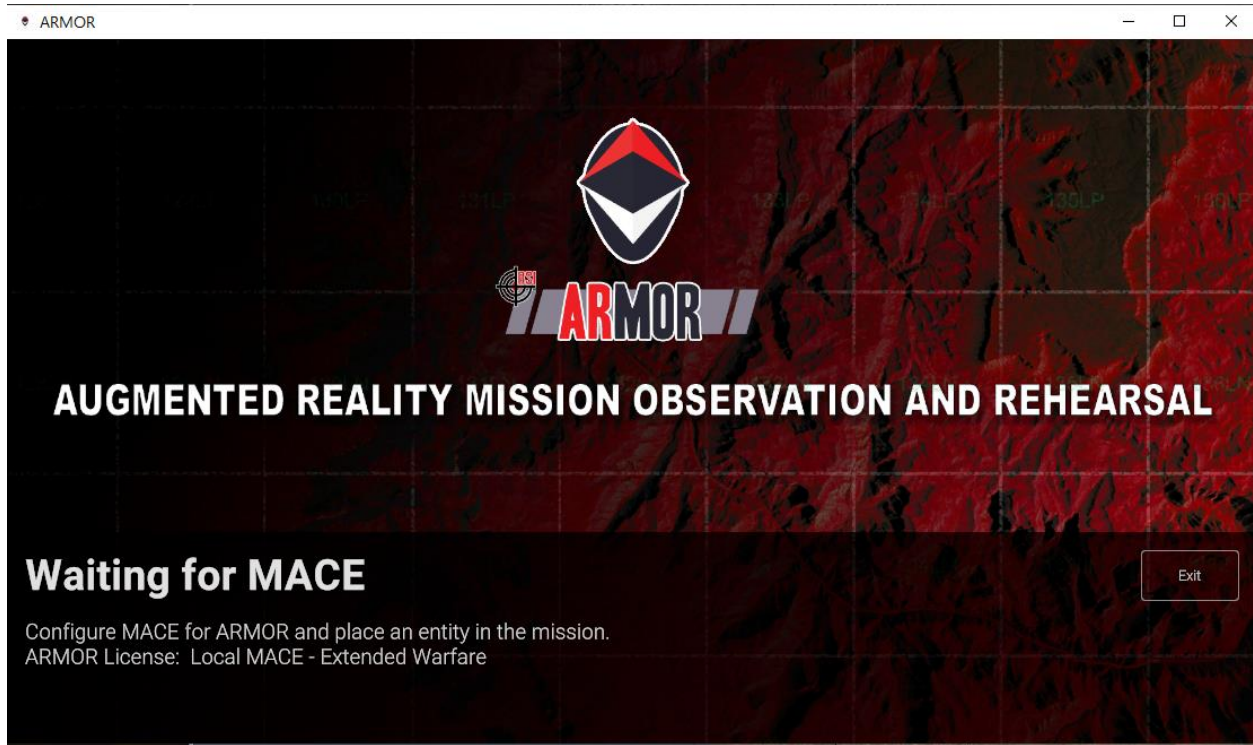
After verifying that you have MACE’s CIGI interface configured through the ARMOR plug-in, the ARMOR executable configured in the ARMOR plug-in, and finally ARMOR terrain mapped as outlined above, you are ready to launch ARMOR. If you have the ARMOR plug-in window open, on the Connection Settings tab, you can select the Launch ARMOR button. Alternatively, you can simply select the ARMOR button directly from the MACE View tab in the IG View panel



Note that if ARMOR hasn’t been properly configured selecting the launch ARMOR button will bring up the ARMOR plug-in configuration window instead. Once configured, selecting this button will launch ARMOR directly.



If you do not have a mission loaded, or an entity placed on the MACE map, ARMOR will launch indicating that it is “Waiting for MACE”. If you see this displayed in ARMOR you must first load a mission or place an entity onto the MACE map before ARMOR will load any terrain data. Note that if the entity or mission is in an area where you do not have ARMOR terrain data, you will see a flat terrain covered by low resolution satellite imagery.



If this is the first time loading a particular terrain, it is likely that ARMOR will begin a cache generation process that depending on the size of the terrain can take a few minutes to an hour or more. This is a one time process that is done to optimize the run-time performance of the terrain data in ARMOR. Note that when ARMOR is updated, it is possible that some cache data will need to be regenerated to take advantage of new features introduced in ARMOR.



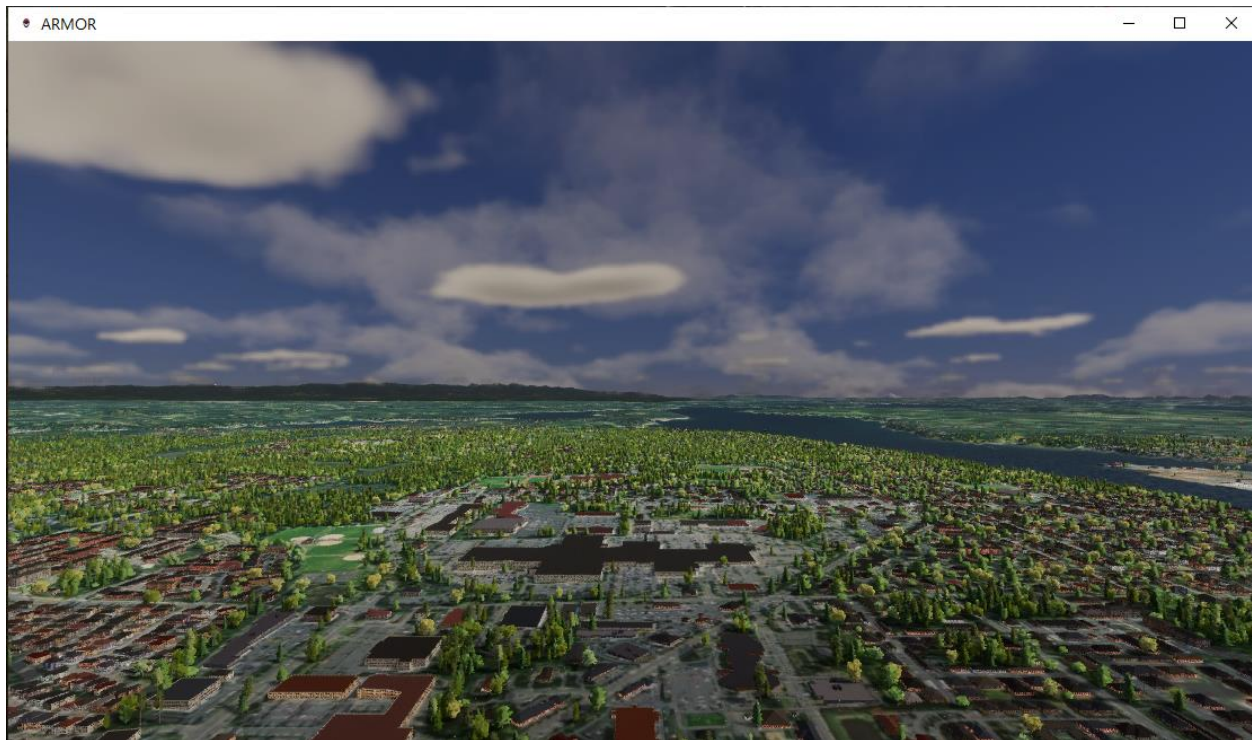




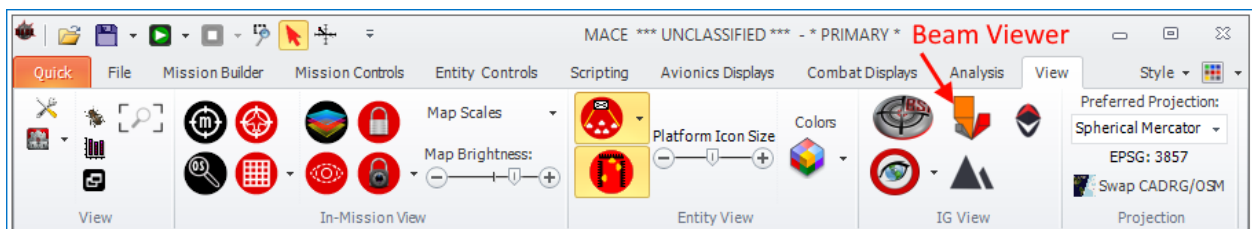
Once ARMOR terrain is being loaded into ARMOR you will briefly see a “Loading mission data” message in ARMOR before terrain is visible to the user.



Once ARMOR has successfully loaded terrain for a region the camera will be inserted into the terrain. With ARMOR selected press the <tab> key to see and enable available options in ARMOR, and press the <ESC> key to make configurations changes within ARMOR. You can use the mouse, WASDF or arrow keys to navigate the camera and <space bar> to attach to the selected or latched entity in MACE. If you have a 3D Connexion mouse, it is strongly recommended for navigating the camera within ARMOR. Consult the ARMOR User’s Guide for further information on working with ARMOR.



To visualize MACE radar activity in ARMOR (which requires the Extended Warfare version of MACE), click the beam viewer plug-in in MACE, as shown below:





**BATTLESPACE SIMULATIONS INC.**

---

Thank you and please don't hesitate to reach out to us ([support@bssim.com](mailto:support@bssim.com)) if you need help or would like to schedule a screen-sharing session for additional one-on-one training.

Best Regards,  
The BSI Team