Converting from ArcGIS Raster Format to Idrisi Grid Format
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The purpose of this guide is to assist the reader in conversion of their ArcGIS or ArcView rasters into the Idrisi grid format. BioMapper uses Idrisi formatted grids to run its processes, so if you use ESRI's ArcGIS, ArcMap, or ArcView you will need to convert your ESRI raster grids into Idrisi 16 or 32 formats. Converting into Idrisi 32 format allows for greater control and analyses in BioMapper.

Before Beginning…

Tanya Leverette wrote a brief summary of the steps for the BioMapper FAQ that mentions most of the items in this guide, but not in the step-by-step format and not to the length. I reproduce it here for the benefit of the reader:

> I will assume you have the Spatial Analyst extension for AV. First, you want to convert your shapefiles into grids (under Theme>convert to grid). Do this for both the EGVs and the species data. Once that is done, you can use the Av2Idrisi script that can be found in the script section of www.esri.com to convert to .rst format. It will appear in Theme>Convert to Idrisi. Remember to save those new files all together in a folder that you will be accessing from Biomapper. For Biomapper to work happily, all your newly made Idrisi files need to be in one folder.
>
> Then, things should move smoothly from there. In Biomapper, first go into Map Manager (under File) and convert your Idrisi species map (.rst) to Boolean (click on the Data Type Management tab). Then it is just a matter of adding the EGV maps and the species work map. The Modus Operandi can lead you from here.

While Ms. Lavertte has put together roughly all of the steps needed to convert useable grids from ArcView to Idrisi, they are incomplete. This guide will expand upon her concise tutorial and includes steps and images for conversion of grids from ArcGIS and ArcView into Idrisi 32 format and then from Idrisi 32 back into ArcGIS rasters.
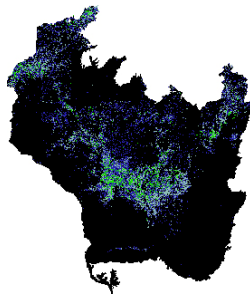
A Brief Word…

All of the techniques in this guide were utilized by the author in map and grid preparation for use in BioMapper 3.1.5 for the purposes of determining suitable habitat for the Karner Blue Butterfly in central Wisconsin. All maps and images included in this tutorial were created by the author or Theodore Sickley and are not licensed for reproduction unless specifically authorized by the author or authorized agent of the author.

Software…
In this guide, the author runs ArcGIS 9.1, ArcView 3.3, and BioMapper 3.1.5. to produce all of the maps. While the guide was written using these versions, it may or may not work similarly with your version. In theory, it **should** work with any version of ArcGIS after 9.1, but it is not for this author to say. Just be aware that you may need to adjust your extension needs to fit your software requirements.

Conversion…
There are a few options for converting grids from ArcGIS to Idrisi.

> ➢ There is a very complicated and convoluted route to conversion manually in the FAQ, but it is not recommended as the steps require strict attention to detail throughout every moment of conversion while the resources that follow are more of the "set-and-go" mindset, meaning that once you set your grid filenames and locations, you can convert without constantly checking on filenames, extensions, or locations.
> ➢ BioMapper has a **Grid Converter** Extension for ArcView 3.x that supposedly converts batches of files with ease. While this seems like a great thing, the author of this guide could not get it to reliably convert anything without profound errors and difficulty.
> ➢ The FAQ also points the beginning BioMapper user to this website: http://www.pierssen.com/idrisi/grid.htm, for MS-DOS prompt utilities that will do the job, but are not as user friendly as some others.
> ➢ There are a few extensions for grid conversion on the ESRI site that the author of this guide found that were utilized in conversion for these examples. To locate any of these extensions, search for **Idrisi** at http://arcscripts.esri.com/. Or you can click here.
>> o Drs. Schäuble & Marinoni made *grid2idrisi.zip*. This is the ArcGIS version of *av2idrisi.zip* (mentioned below) and worked only halfway reliably for the author. Though the file is mentioned here, it was only utilized for conversion from Idrisi to grid format.
>> o Written by Holger Schäuble, *av2idrisi.zip* is a file you will need to download for the purposes of this guide. It is written for ArcView3.x and worked well for the author.
>> o Dr. Bruno Canessa wrote *idrisi2grid.zip* for converting from Idrisi to ArcGIS grids. It works and you may find it will become the main tool used when converting from Idrisi to ArcGIS.

Download and install all of three of these extensions by following the directions that accompany the files either in their *.zip* package or on the download website ESRI provides.

Once these extensions have been properly installed to their directories, it is time to convert your raster files.

Converting to Idrisi Grid Format from ArcGIS Raster Format…

➢ Open ArcGIS and add Rasters either at the dialogue screen or by using the ⬇ button located at the top of the screen in ArcMap.

 o You should have a similar map in your ArcMap window:
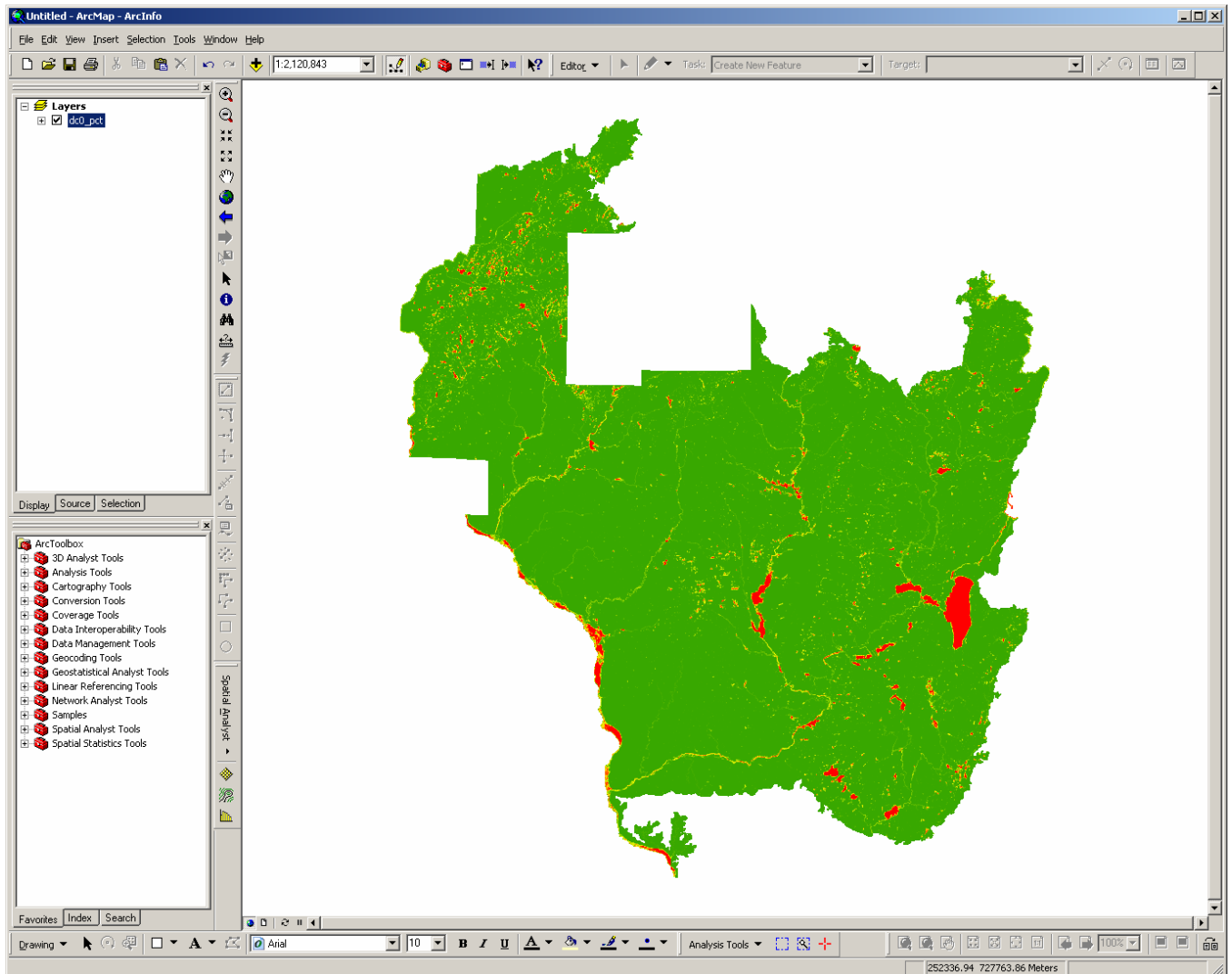
  o If you are going to use Holger Schäuble's script, skip down to the *Convert Rasters to IMAGINE (.img) format…* section.
  o If you are going to use Drs. Schäuble & Marinoni's *grid2idrisi* extension, read on from here...

Using grid2idrisi to convert…

➢ Select the **Grid to Idrisi** tool you added to the top menu in the installation instructions for the *grid2idrisi* tool.
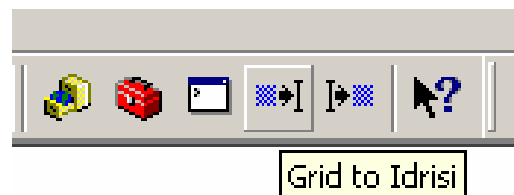
➢ Select the **raster to convert** and select **OK** to convert this raster to Idrisi32 format (default).


Esri-Grid to Idrisi-Grid
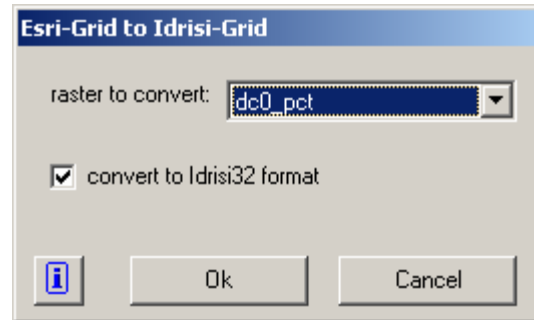
➢ Select the location and a meaningful filename for your new Idrisi formatted file. Once you select **Save**, the script should run and a **.rst** & a **.rdc** file will be created with the name you saved your file as.

➢ **NOTE:** The author could not get this technique to work after many exhaustive attempts and was forced to use the technique described below. While more time consuming in the number of steps and more complicated in the number of programs needed to complete these steps, it works well and was utilized primarily in the sample project.

Convert Rasters to IMAGINE (.img) format…
➢ Right-clicking on the layer name in the **Layers** window, selecting **Data**, and then **Export Data…**
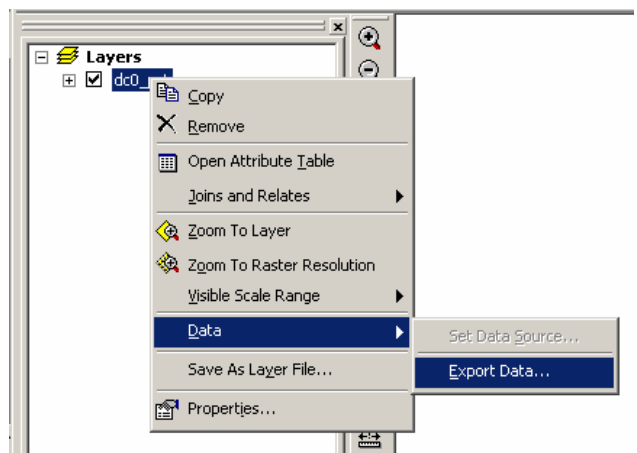
o A window similar to this will appear:

o Select the *Location*, file *Name*, and make sure to select *IMAGINE Image* for the *Format.*

o Make sure to note where you saved the file so you can locate it in the next step.

o Select **Save** to continue.

Export Raster Data - dc0_pct
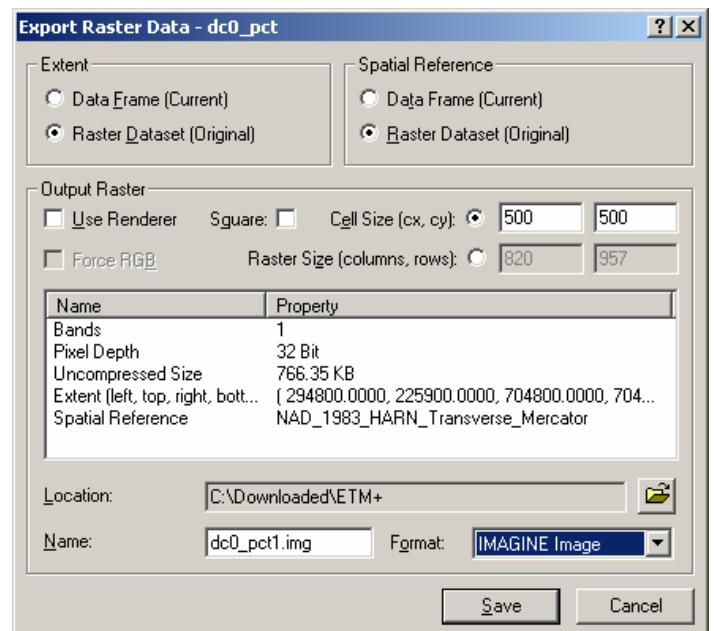
- o Select **Yes** to add the created image to the map. Verify that the two maps are similar in their appearance and values.
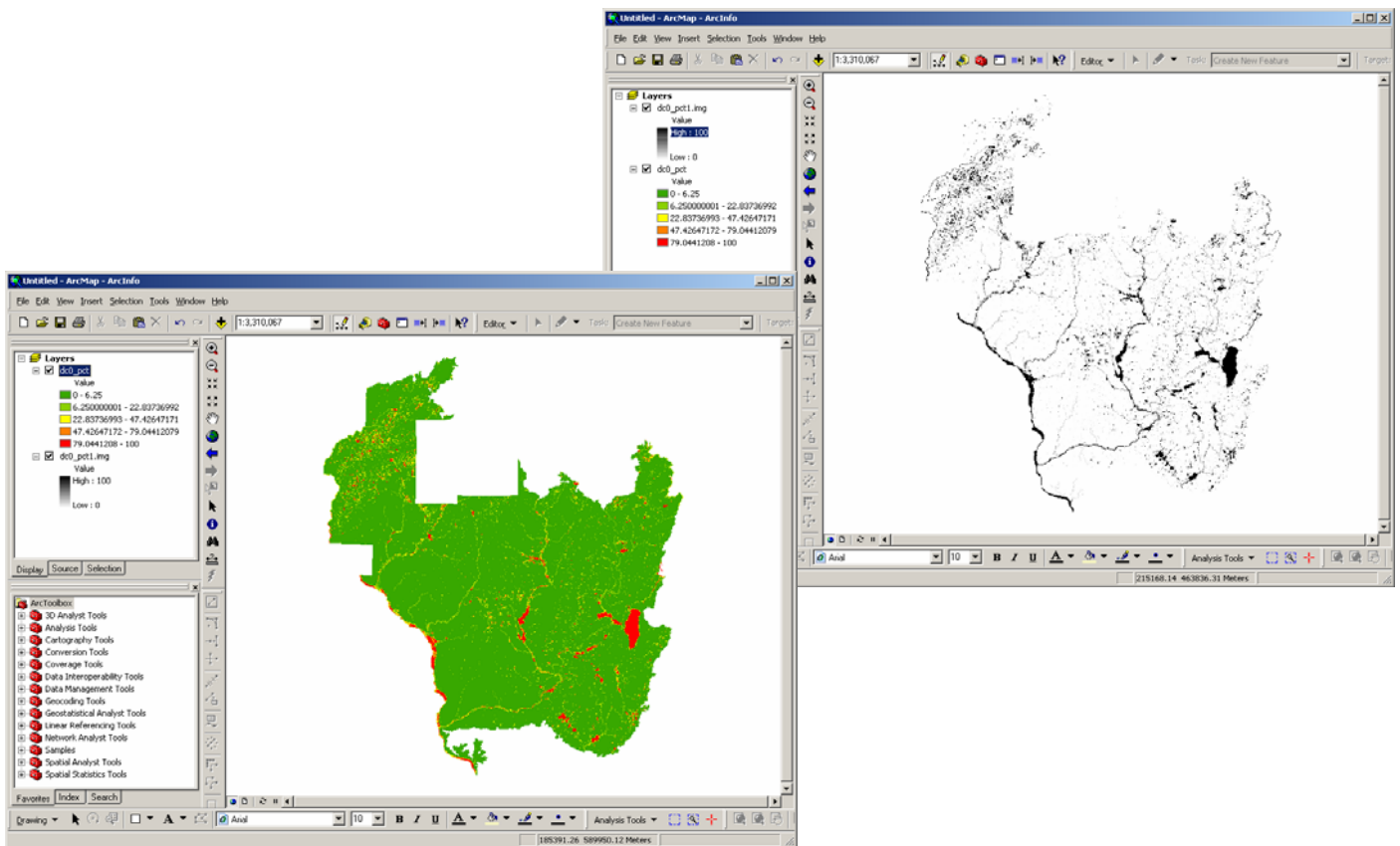

- o Now the images are ready to move into ArcView and on to Idrisi format.

### *Using av2idrisi for ArcView…*

- ➢ Open ArcView and open a new **View** if one does not automatically open for you.
  - o Add a **Theme** that consists of your converted raster into **.img** format. Make sure to choose **Image Data Source** in the *Data Types* dropdown menu. Select **OK** to continue.
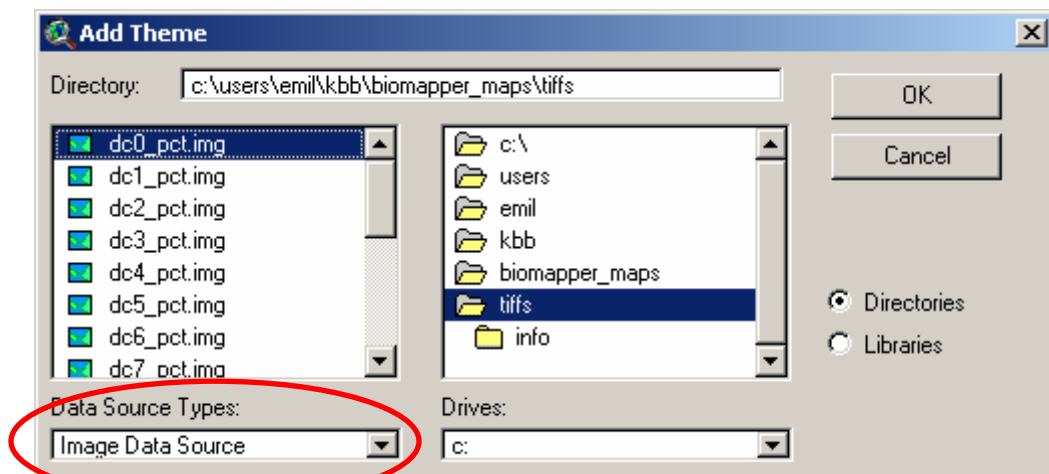
o Turn on your new theme to view it in the window.
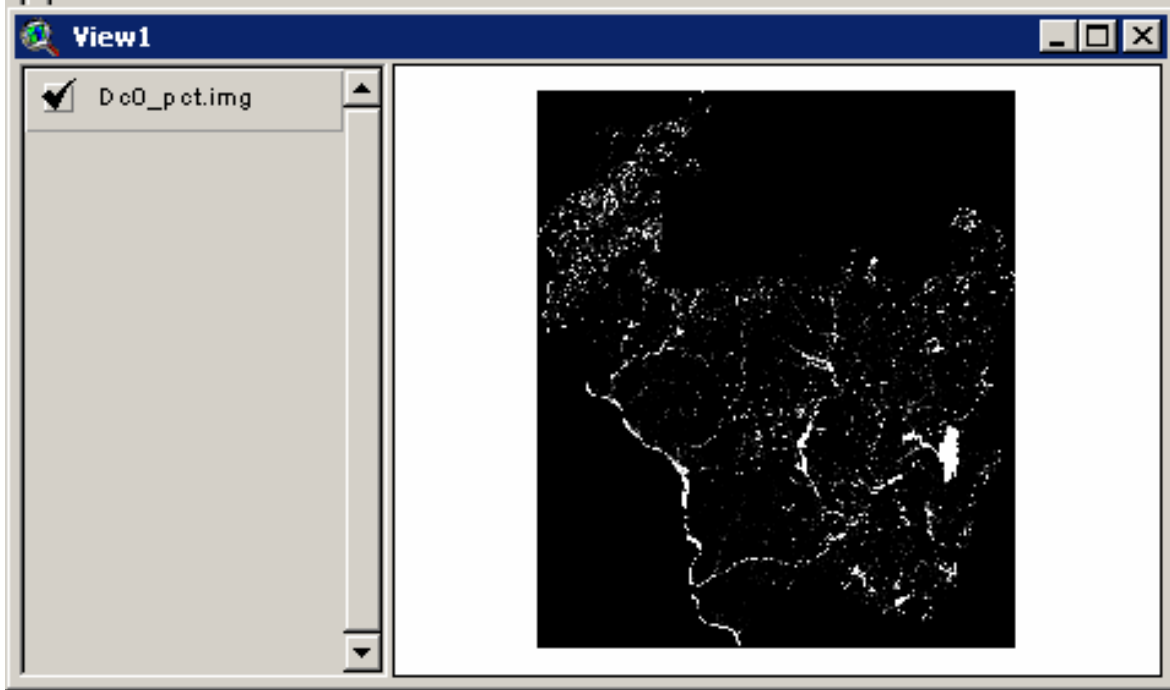
o Make sure your **Spatial Analyst**, **Imagine Image Support**, and **Av2Idrisi** extensions are turned on by selecting *File*, Extensions…

o The *Extensions* dialogue will appear. Simply checking the box next to the appropriate extension will turn it on. Select **OK** to turn on your extensions and continue.
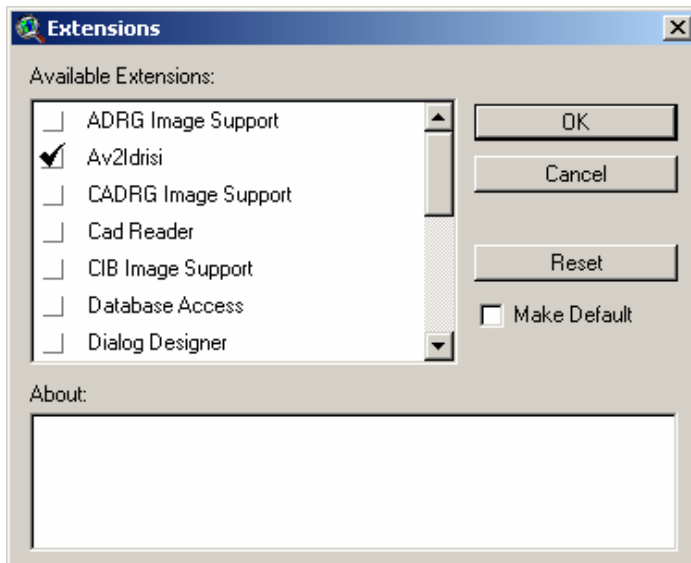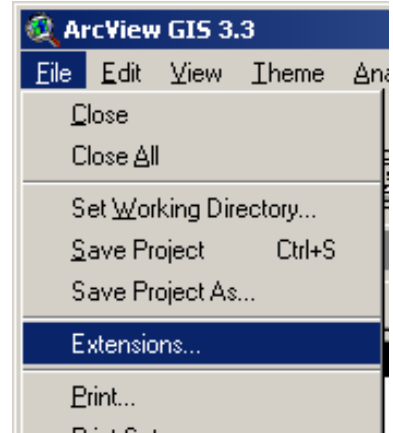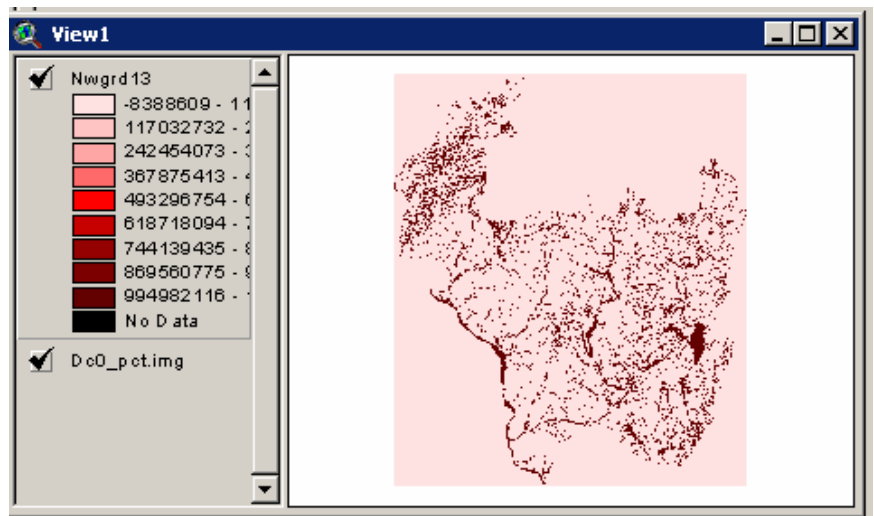
o From the *Theme* menu at the top of your ArcView window, select *Convert to Grid...*
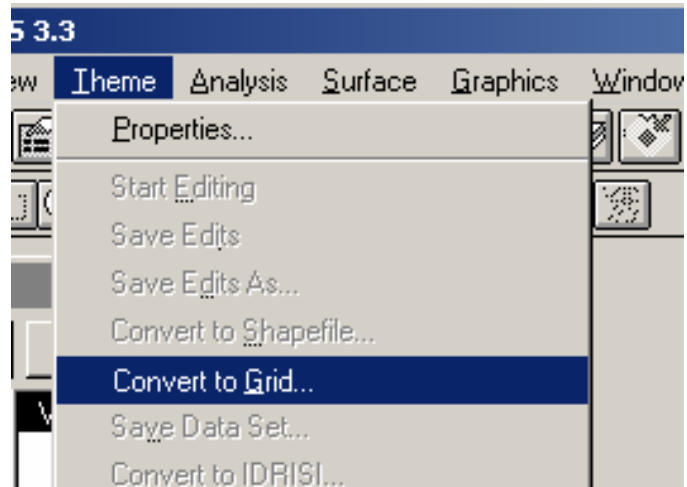
o Select the filename and location you would like to save your newly converted grid to and select **OK**. Select **Yes** to add the grid to your view.

o Left-click on your new theme to select it. Then, from the file menu at the top of your ArcView window, choose *Theme, Convert to Idrisi...*

o Select **Yes** to convert your new grid into Idrisi32 format, **No** to convert into Idirisi16. Then choose the name and location for your new file and hit **Save**. Your new Idrisi formatted file is created in the location you assigned it to.
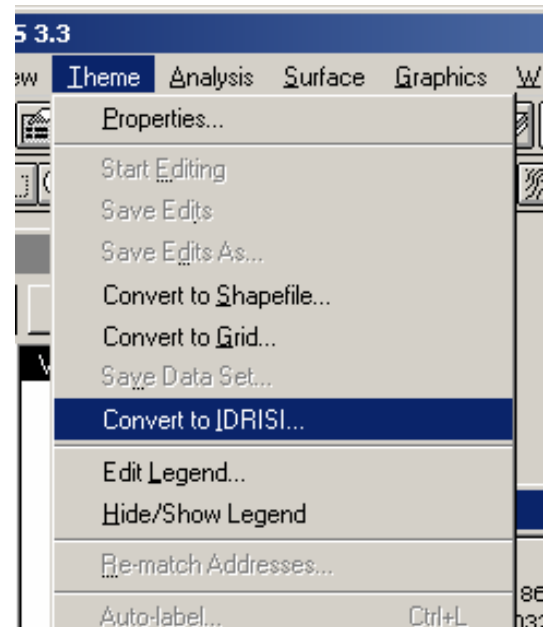
o **NOTE:** Idrisi formatting creates two files for each map created. One has an **.rst** extension and the other has an **.rdc** extension. If you move your maps from their current location to a different location, be sure to move both files for each map or they will not work properly.

➢ You can open your new Idrisi map in BioMapper by adding it to the *Ecogeographical maps* list, right-clicking the map you added and selecting *View…*
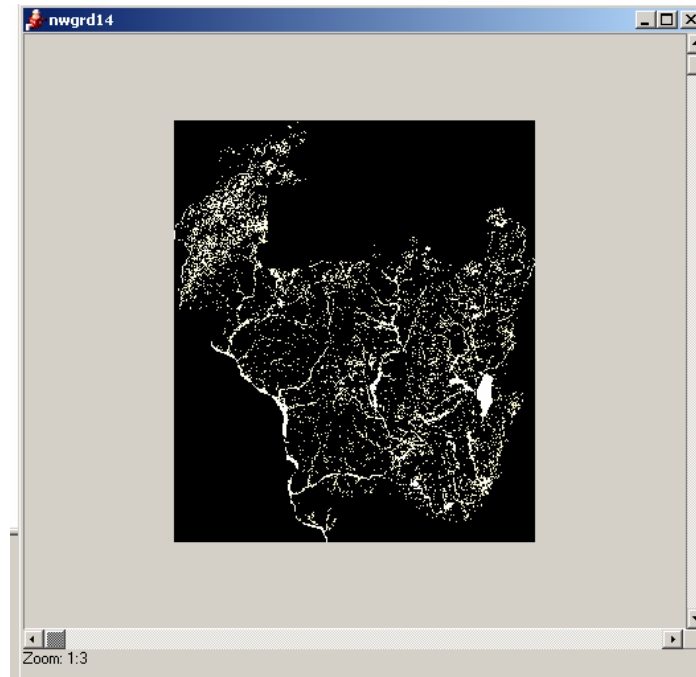

➢ It should look similar to your ArcMap raster version.
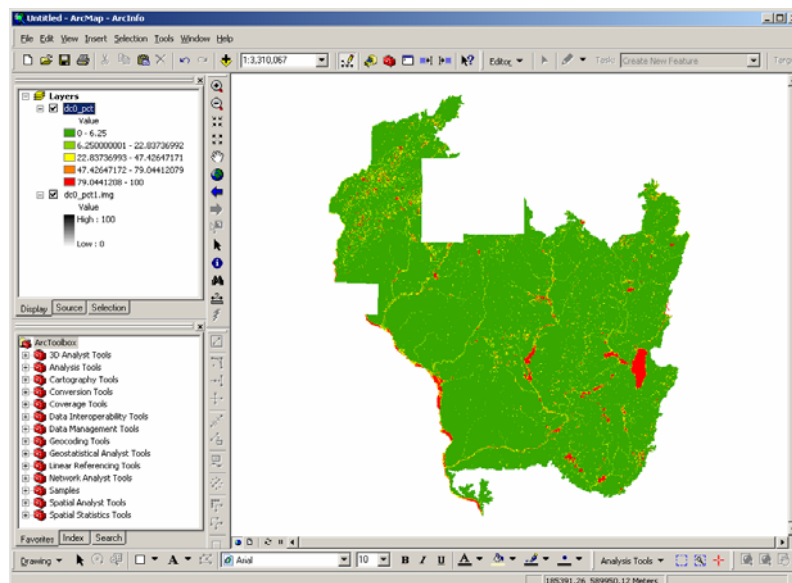
➢ Once you have converted all of your ArcMap rasters into Idrisi format, you can add them all to BioMapper and run your analyses. **NOTE:** BioMapper may require you to fix a bug caused by ArcView where the background value is '-9999'. BioMapper prefers a background value of '0' and is unhappy with the ArcView value. If this is the case, you can fix it in BioMapper using its **MapManager** module.
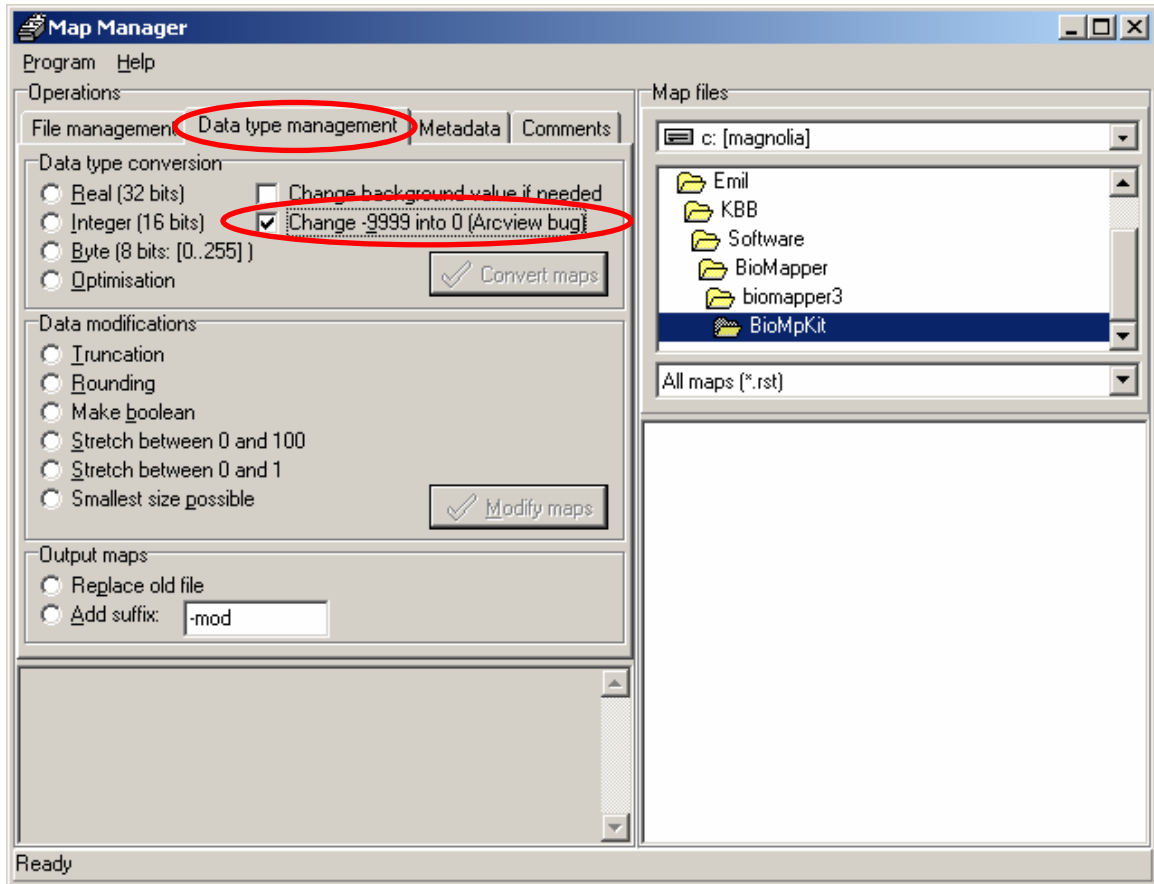
➢ Selecting the *Data Management* tab and checking the box next to *Change -9999 into 0 (Arcview Bug)* will correct this issue. You can also make other conversions using this module to help prepare your maps for the analyses you need to make.
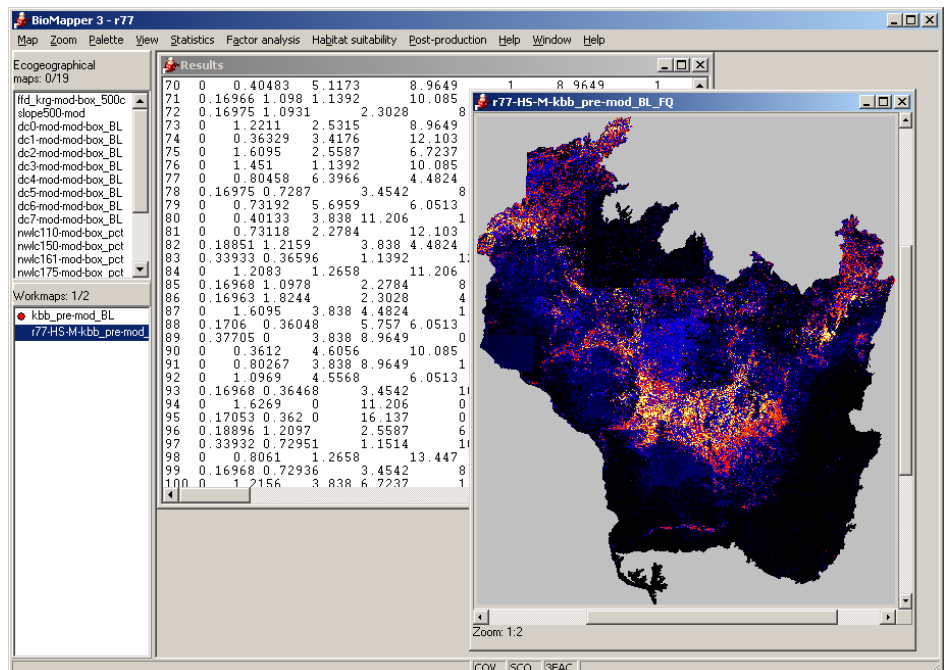
***Converting Back into ArcGIS Raster Format from Idrisi Grid Format…***
Once you have run your analyses, you are now ready to convert your finished maps back into ArcMap raster format. For the purposes of this guide, the author used ArcMap and the ***grid2idrisi*** tool by Drs. Schäuble & Marinoni.

> ***Using grid2idrisi to convert…***
> ➤ Select the **Idrisi to Grid** tool you added to the top menu in the installation instructions for the ***grid2idrisi*** tool.
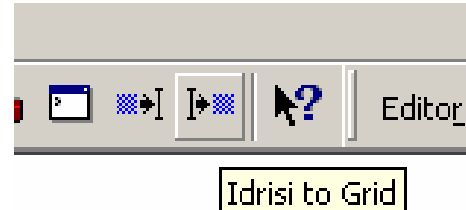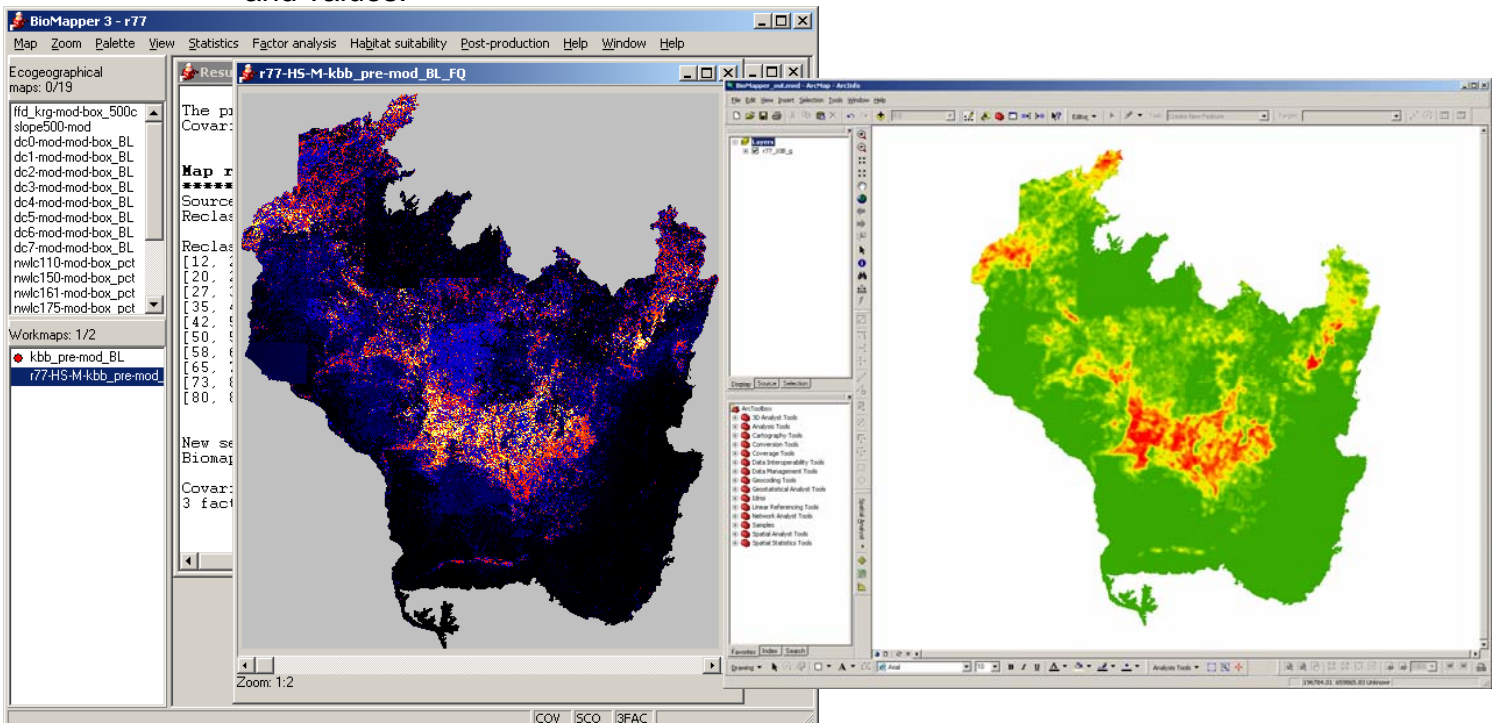

> o Using the [...] box, find your Idrisi file and the location and name of where you want top save it once it is converted back into ESRI Raster format using the **Idrisi-Grid to Esri-Grid** dialogue.
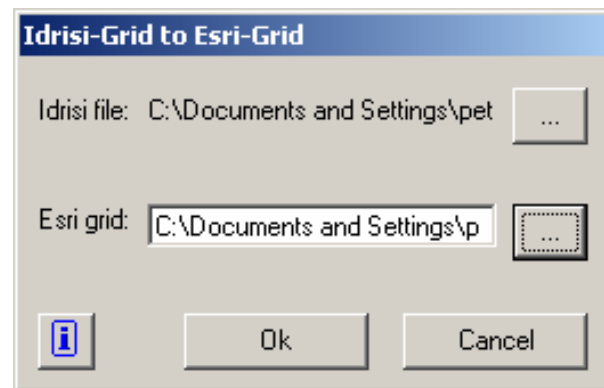
> o Select **OK** to continue.
>
> o Select **Yes** to add the newly created layer to the map.
>
> ➤ Your new map should look similar to your BioMapper map in coloration and values.

A Few Final Thoughts…
The author has tested these procedures and had them work for him and this project. These techniques were the primary conversion techniques used for raster-to-grid and back conversion. While the author may have gotten them to work with seemingly few flaws in steps, there will be issues with errors and bugs that are unforeseen with BioMapper and ArcMap formats and conversion between them. This guide was written not as a fool-proof method, but as an alternative and a bit more in-depth description of how the author proceeded along with some hints. Many of the steps were trial and error with referencing to the BioMapper and ESRI help sites. If you encounter any problems with your conversions, contact the authors of the scripts or BioMapper, not the author of this guide. Save often and do not become discouraged. Everything will, *eventually*, work out.

Further resources can be found on the BioMapper homepage located here:
http://www2.unil.ch/biomapper/
Or in the BioMapper FAQ on the internet at:
http://www2.unil.ch/biomapper/faq.html