Threshold classification ArcGIS model

Tags

classification, threshold value, excel, raster iteration, RGB images

Summary

Model facilitates classification of raster files by given threshold value. Results of classification are saved as percentage values in internal program table as well as in Excel file. It was basically designated to speed up the snow-cover classification process of many orthorectified pictures from time-lapse camera (see article Kępski et al. 2017). In toolbox provided are 3 models: one to iterate over many raster files gathered in geodatabase, second to classify separate files (cannot be run in batch mode!), and third model in case of problem with default path to files.

Description

Point your geodatabase with orthorectified camera pictures, set suitable for your application threshold value and optionally indicate a polygon mask for cutting your results. Detailed description below:

Primarily model was built to automatically calculate day by day changes in snow coverage on territory seen by time-lapse camera installed on mountain summit, after the orthorectification of oblique images and designation of area with the fewest distortions. Calculated snow cover extent from every photo is saved as percentage value in.xls file that could be merged automatically into one spreadsheet (google: "Merge multiple excel files").

By default, photos are classified by threshold value in blue raster (150 by default – value appropriate only for 8 bit images!) into two surfaces. Such settings should successfully distinguish snow surface from the uploaded pictures in uncomplicated terrain. Classification of multiple images at once should be preceded by their normalization. Threshold value could be set by editing the "Old Values" field in Reclassify tool. Model calculates and save the calculated percentage surface area directly into Excel file. By default all results should be stored in Output folder provided together with the model.

Model works properly only when location for output files is correctly pointed. Although it is possible to set as input FOLDER containing raster dataset, it is recommended to use raster layers stored in GEODATABASE (that remove problems with e.g. too long filenames or with “no spatial reference error”). On the other hand, results and intermediate files should be stored in FOLDER as model builder has a problem with work on shape files located in geodatabase. Edit tools within the model to set appropriate output location for your files.

Build and tested in ArcGIS 10.4.1 and 10.5 version.

Tips

Remember to click "validate the model" before the run on your computer. Change location of output files to those valid on your machine in case of problems with default location.

If pixel size of your input photos varies, model should be run with environment settings that define one cell value (values will be recalculated) to facilitate subsequent analysis.

Common Problems

If during editing the model in ArcModel Builder you encounter white boxes without outlines instead the proper rectangles (which makes impossible editing the tools), try the following combination:

In the main bar enter model --> ‘diagram properties’ and try to change symbology to style 2. Apply changes. It often solves this common software problem.

If model will accidentally crash, the relative names (within ‘%’ symbols) can change to the last name that was used before crash. If this happens replace manually the corrupted name in edit mode or download again the clean tool.

In case of encountering error: ‘000601’ try to run the model from the edit mode.

Try also cleaning the output folders (scrath.gdb and Results.gdb) and try to check in ArcGIS geoprocessing options “Overwrite the outputs of geoprocessing operations” box.

If model is not able to run on your machine, open it in ArcModel Builder and check if all tools inside have the same options as those from your ArcToolbox. For example "Alter Field" tool has changed between ArcGIS version 10.2 and 10.4, which made impossible running the model on newer versions of ArcGIS (“Alter Field” tool was deleted from the model in final version that you have). You should replace tools that were changed between versions into newer ones.

In case of problems, feel free to ask questions:

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