USING WILDFIRE MODELS FROM ISU'S GIS TREC

This document describes the general process you can use to successfully develop a wildfire susceptibility, wildfire hazard, and/or wildfire risk model for your area of interest (AOI). First, understand that each of these types of models (susceptibility, hazard, risk, and finally, conflagration risk) build upon one another with the base or core model being the wildfire susceptibility model. You must create a susceptibility model to create a hazard model, and the resulting hazard model is then used to create a risk model, etc.

Second, understand the difference between each model and use the correct terminology[1] to communicate the results of each model.

Before jumping into the development of wildfire models for *your* AOI, spend some time getting to know the models we have developed. Each model contains an ArcGIS Pro Toolbox file (*.atbx) and two folders. One is a `ConflagrationRiskModelInputs` folder and the other a `ConflagrationRiskModelOutput` folder. The model inputs folder contains the data layers necessary to re-create the wildfire models for Bannock County, Idaho. You will need similar layers to create wildfire models for your AOI.

Let's take some time to get acquainted with these models:

1. For simplicity, I suggest creating a new ArcGIS Pro project for your wildfire modeling efforts. Alternatively, you could integrate these models into an existing project.
    a. Copy the entire contents of our wildfire model into the project folder of your ArcGIS Pro project. This includes the model input folder and its data, the model output folder, along with the model's toolbox file (*.atbx)
    b. From ArcGIS Pro, use the Catalog pane to verify these files exist. Your project folder should look similar to the figure below.

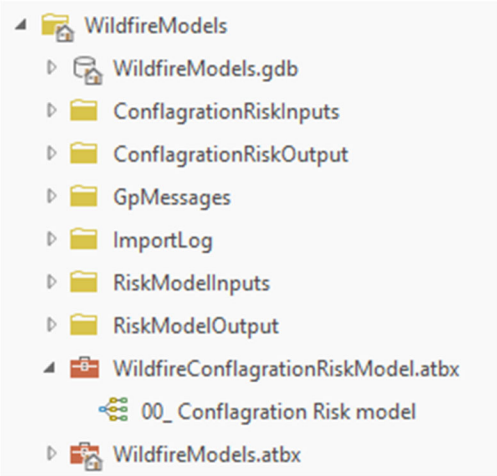


Figure 1. An ArcGIS Pro project was created and named WildfireModels. After copying the wildfire susceptibility model data into the project folder (WildfireModels), the project will contain two new sub-folders and a new toolbox.

2. Open the model inputs folder.

[1] Cf. https://giscenter.isu.edu/pdf/PDF_NASA_SPARC/WildFireTerminologyReview.pdf

3. Notice it contains raster layers and numerous feature classes (n = 5) within the geodatabase named `ConflagrationRisk`. To create a wildfire conflagration risk model for *your* AOI you will the same input layers as these. These layers do not need to be stored within a geodatabase but they do need to be topologically correct.

4. Add each of the layers to the current map in ArcGIS Pro. Explore these layers to familiarize yourself with these data, their spatial resolution, spatial reference system, range in numeric values, and attributes. This will help you create similar layers for your AOI.
5. Next, return to the Catalog pane and expand the model toolbox. It should look like the figure below.



6. Before running any the model, take a few minutes to become acquainted with it and its overall workflow. To do this, open the model by right-clicking it from the Catalog pane and selecting Edit from the fly-out menu.

   Do not make any changes to the model, just review it so you are familiar with how each model functions. When finished, close each model.

7. Once you completed your review and familiarization of the model, close the model builder window.
8. Next, double-click the model, complete the tool dialog and click run.

9. Once processing completes, add the new layer to the current map.

Explore each of the three models and prepare yourself to discuss these with local emergency managers and decision makers. Pre-fire mitigation plans can be informed using these data and for your specific AOI and local communities, one of the risk models may be deemed better than the others.

If you encounter errors while running any of the models, please let us know by emailing giscenter@isu.edu

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