EXERCISE 3

Troubleshooting the Cover Mapper application

Introduction

In this exercise, you will learn how to troubleshoot common issues encountered when running the Cover Mapper application.

Objectives

- Explore advanced options for troubleshooting

Prerequisites

- **You have completed Exercise 1 on setting up the application.**
- **You have completed Exercise 2 on reviewing and exporting the application results.**
- **You are using the Google Chrome web browser (preferably wide-screen)**
- **You have a strong internet connection (preferably wired)**

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Part 1: Troubleshooting

A. Overview

1. Unfortunately, sometimes this application produces errors. These errors can be due to one or more of the following: limitations in Google Earth Engine, network issues, user mistakes, programmer mistakes (sorry), or for other reasons. Some of these errors we can fix, and that is the objective of this exercise.

2. Your first response when you receive an error should be to read the message (if there is one), and double-check that you have followed the instructions. If that fails, then read on.

B. Inputs Errors

1. There are several errors that can come from the inputs. Even though you have correctly typed in your Fusion Table ID, you may receive an error such as "Fusion Table ID: 'myFusionTableID' is either invalid or has not been shared,' as shown below.
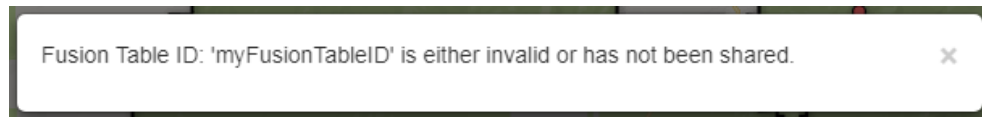
2. One possible reason for this error is that you have not shared your Fusion Table. For the application to access your data, the data must be shared. Navigate to the webpage for your Fusion Table: https://fusiontables.google.com/DataSource?docid=myFusionTableID (replace myFusionTableID with the ID of the Fusion Table you're trying to use). In the top-right corner of the page is a **Share** button. Change the sharing settings from "Private – Only you can access" to "On – Anyone with the link", and be sure to save your changes. If you do not have access to the Fusion Table, contact the owner and request that they share it.
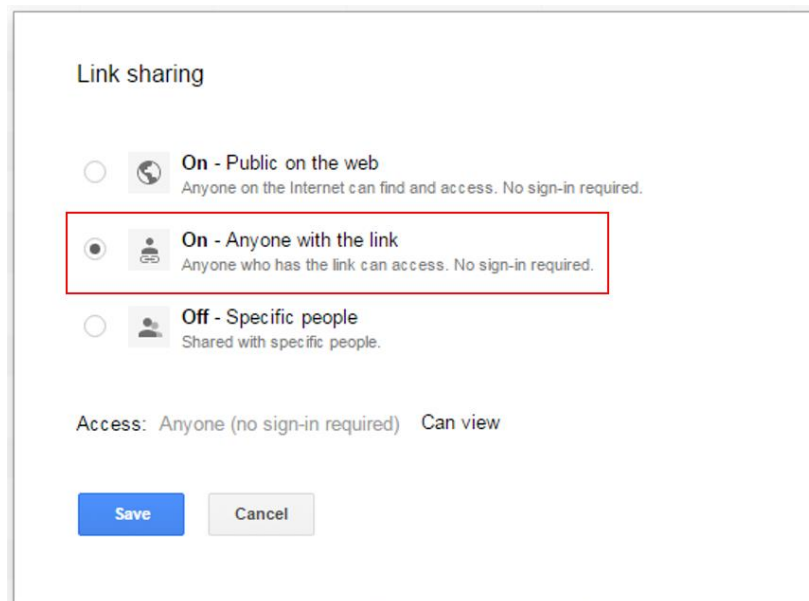
3. Another common error is "The percent field contains entries with non-numeric values. Please select a field that contains percentages between 0 and 100," as shown below.
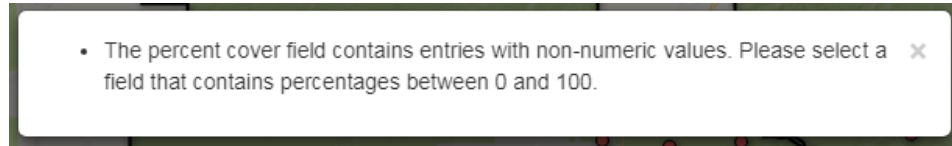

4. This means that for the Cover Class input field, you have chosen a column that does not contain percentages.

5. If you feel that you have correctly chosen the field name, it may be a data type issue. Go to the webpage for your Fusion Table. Hover over the field name for the Cover Class field and click the arrow, and then click **Change…**. If the Type field does not say **Number**, change it to be Number. Make sure to save your changes.
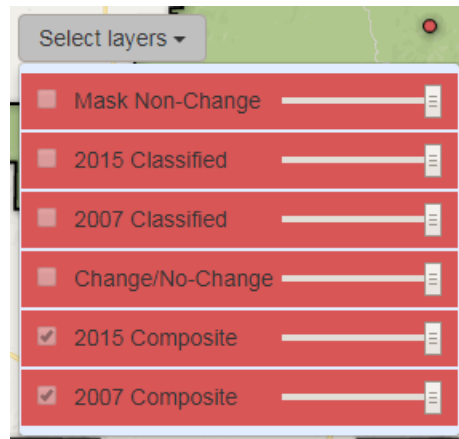

C. Runtime Errors

1. The next category of errors are those where the application fails to finish running. These issues mainly have to do with Google Earth Engine providing limitations on the amount of time and memory that we can use to run our program. Some examples of runtime error messages are shown below.
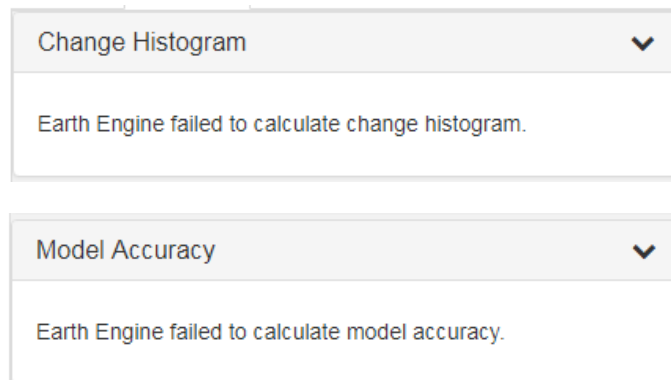
2. First, wait until there are no more spinners running. Then, without making any changes to the inputs, just click "Run" once again. Why might this work? Well, Earth Engine actually caches the results from previous attempts. It might have nearly finished the calculations before it timed out. So, by running again, you may get further along.

3. If the program continues to fail after the second or third attempt, it's time to change some Composites and Advanced subpanel inputs to make the program run faster. Here are some recommended changes to make:

   - Years of Imagery: lower to 1
   - Random Forest Trees: lower to 50 or even 20
   - Reducer Scale: increase to 90 or higher in multiples of 30.
   - Tile Scale: increase to 2 or even 4

4. The purpose of all of these changes it to reduce the size of the calculations: including the amount of imagery to gather (Years of Imagery), the number of models to run (Random Forest Trees), and the size of the data sampling (Reducer & Tile Scale).

5. If the program still fails with these changes, it may be that the size of your study area and/or the amount of training data is just too large. Consider re-running the application with a smaller study area and/or a subset of your training data.

> *Note: The exports work separately from the map and output information. This means that even if your map layers fail to load, or the histogram or accuracy information cannot be calculated, you can still run the exports! You won't be able to preview them in the map, but they can still be downloaded. It may take a longer time than usual (15 min-2 hr), but Earth Engine provides more memory and time resources to exported tasks.*
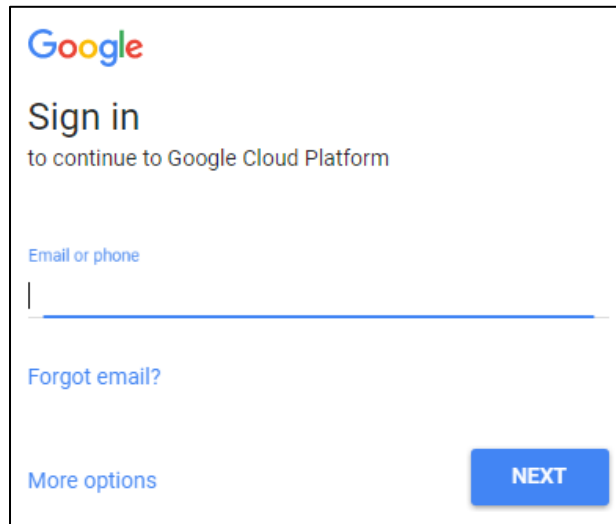
D. Export Errors

1. There are two kinds of export errors: failed task and broken download links. Both are quite rare. An example of a failed task is shown below.

An example of the kind of page that may appear upon clicking a broken download link is shown below.

2. A failed task suggests that something fundamental to your study area and/or training data is improperly setup. A broken download link is more likely an indication that your study area was so large that the image was split into multiple files. In either case you will need to reduce the size and/or increase the resolution of the exported layers. To do this, either draw or upload a smaller study area, or increase Reducer Scale (under Advanced subpanel) to 90 or higher.

> **Congratulations!** You've completed this exercise on using the Cover Mapper application. You now have all the information you need to troubleshoot common issues encountered when running the application.