

## Exercise 3a: REAs in Citrix

The purpose of this exercise is to understand how the data from the REA projects are organized, how to access data, and how to change parameters to re-run a model.

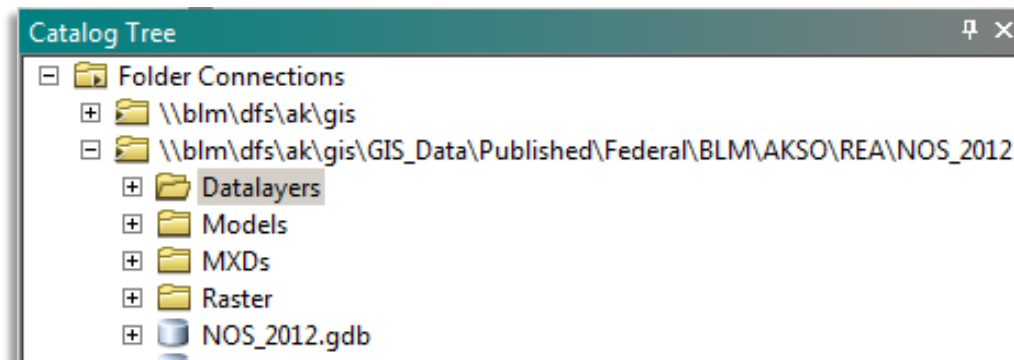
[Part A: Data Structure for REAS](#)

[Part B: Review the Range of Data Available For CAs](#)

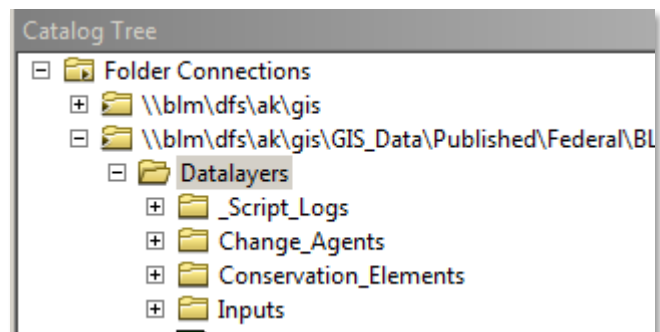
[Part C: REA Models](#)

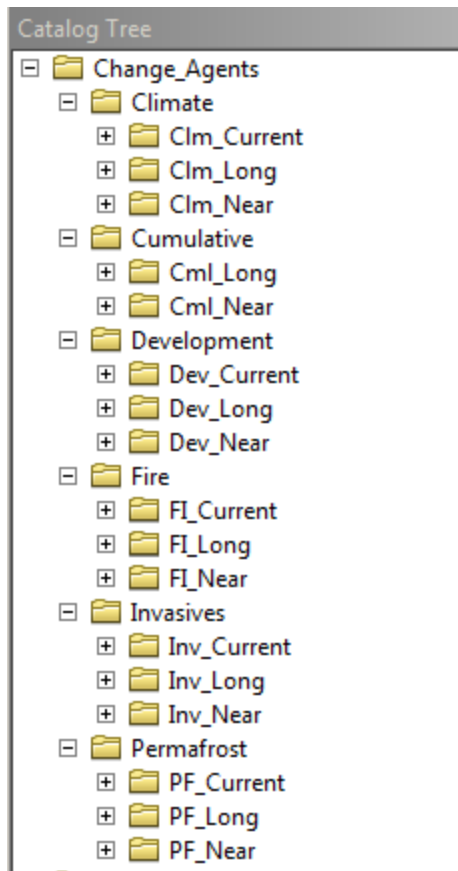
### Part A: Data Structure for REAs

NOS\_2012 contains folders to hold Datalayers, Models, Map Documents (MXDs), NOS\_2012.gdb, and Rasters.



If you are looking for data sets, the Datalayers folder is structured to help with three main folders that correspond to standard REA terminology: Change Agents, Conservation Elements, and Input Data. Datalayers (.lyr files) hold the same symbology as used in the report so it is easy to match map reports – or change them if you prefer. The data that the data layers point to is stored in the Raster folder and the NOS\_2012.gdb so there is usually no need to access those folders but they need to be maintained in the structure seen above.





Within the **Change Agents** folder are the usual REA change agents: Climate, Development, Fire, and Invasives. Cumulative and permafrost are additions.

Each change agent has subfolders with data that correspond to the time period: current, near-term future (2020), and long-term (2060) future.

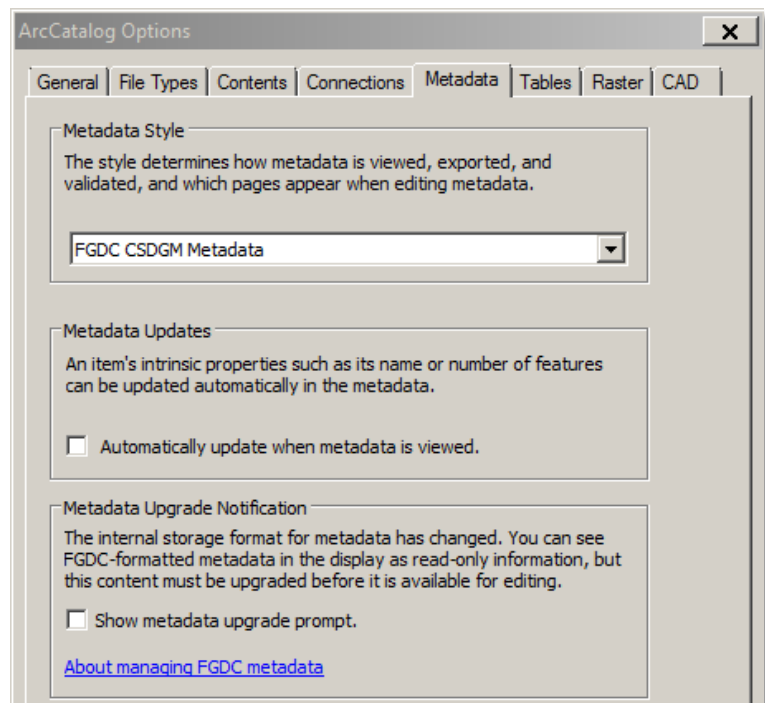
Each subfolder contains layer files (.lyr) and metadata files (.xml).

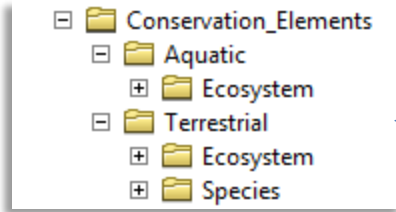
It will be helpful if you look at the metadata using FGDC CSDGM Metadata. To check that this is enabled:

- In ArcCatalog go to **Customize\ArcCatalog Options**
- Click the **Metadata** tab
- Check the **Metadata Style**.
- If the dropdown box does not say FGDC CSDGM

Metadata, make it so!

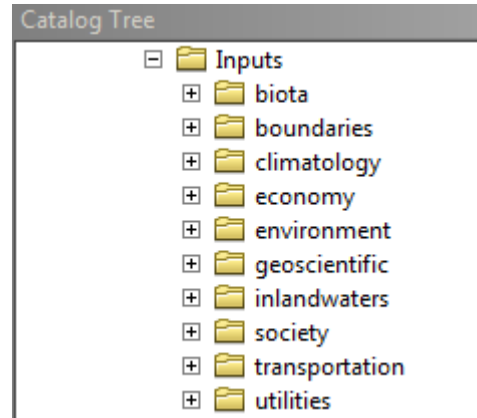
- The two boxes should not be checked.





Conservation elements are divided into Aquatic and Terrestrial elements. These are sub divided into Ecosystem and Species.

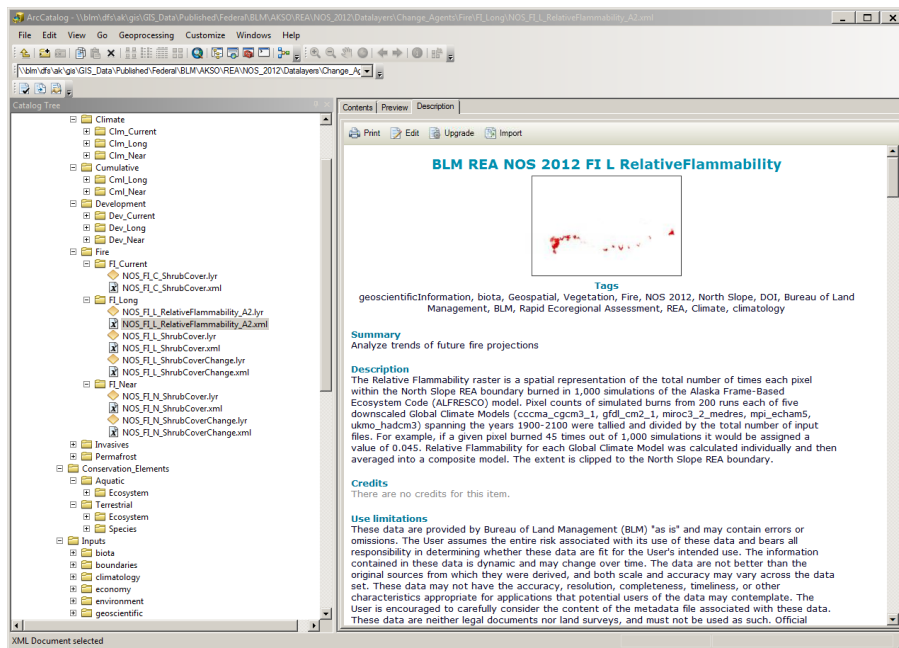
Input datasets are further subdivided by ISO category



Metadata files available for each dataset and are located in the **Datalayers** Folder:

Metadata can be viewed in ArcCatalog, ArcMap or in a web browser (IE):

- In **ArcCatalog**, select a .xml file of your choice in the Catalog Tree, and click on the Description tab. Scroll to the bottom and click **FGDC Metadata (read only)** for details.



- In ArcMap, when the datalayer is in the Table of Contents, right click\Data\Item Description for a view of the same file shown above. Scroll to the bottom and click **FGDC Metadata (read only)** for details.
- AK Internet Explorer recognizes the xml format and shows a tabbed version that you can use to explore the data and its characteristics: Spatial, Structure, Quality, Distribution, and Metadata. In each tab, click on a left aligned title to expand or contract the data.

BLM REA NOS 2012 FI L RelativeFlammability

FGDC Metadata  
Show Definitions

Description | Spatial | Data Structure | Data Quality | Data Source | Data Distribution | Metadata

**+ Resource Description**

**Citation**

**Title:** BLM REA NOS 2012 FI L RelativeFlammability  
**Originators:** Scenarios Network for Alaska and Arctic Planning  
**Publication date:** 20150728  
**Data location:** [https://landscape.blm.gov/NOS\\_2012\\_layerpackages/NOS\\_FI\\_L\\_RelativeFlammability\\_A2.lpk](https://landscape.blm.gov/NOS_2012_layerpackages/NOS_FI_L_RelativeFlammability_A2.lpk)

**Description**

**Point Of Contact**

**Data Type**

**Time Period of Data**

**Status**

**Key Words**

**Data Access Constraints**

**+ Spatial Reference Information**

**Horizontal Coordinate System**

**Spatial Domain**

**+ Data Structure and Attribute Information**

**Overview**

**Attributes of ALFRESCO Relativity Flammability A2 scenario**

**+ Data Quality and Accuracy Information**

**General**

**Attribute Accuracy**

**Positional Accuracy**

**Positional Accuracy**

**+ Data Source and Process Information**

**Data Sources**

**Process Steps**

**+ Data Distribution Information**

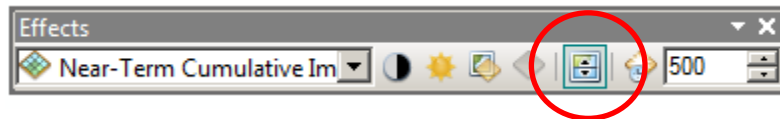
**General**

**Distribution Point of Contact**

**Standard Order Process**

## Part B: Review the Range of Data Available For CAs

1. Set up a simple basemap by selecting the Datalayers\Inputs\Boundaries folder and adding the NOS\_BLM\_Field\_Offices.lyr and NOS\_StudyArea.lyr.
2. Add in the Long-term Future Cumulative Impacts  
(\NOS\_2012\Datalayers\Change\_Agents\Cumulative\Cml\_Long\NOS\_CM\_L\_CumulativeImpacts.lyr)
3. Add in the Near-term Future Cumulative Impacts  
(\NOS\_2012\Datalayers\Change\_Agents\Cumulative\Cml\_Near\NOS\_CM\_N\_CumulativeImpacts.lyr)
4. Add in the Effects toolbar to use the image swipe tool.
  - a. Click on Customize\Toolbars\Effects



- b. In the drop down box, select the Near-term Cumulative Impacts - make sure that this is above the Long-term Cumulative Impacts in the Table of Contents
- c. Click on the swipe tool
- d. When the black arrow appears, click and drag to show/hide the Near-term layer such that it can be compared to the underlying Long-term Layer.
- e. Compare the differences – can you identify what is happening?
- f. Bring in the change agents to try to identify what CAs are affecting which locations.

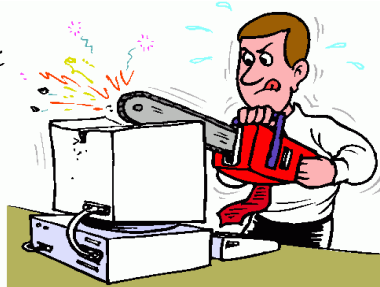
Remember:

- **Landscape Condition:** How do human activities impact the landscape?
- **Landscape Integrity:** What is the current and future fragmentation of the landscape?
- **Cumulative Impacts:** Where will the most change occur?

## Part C: REA Models

There are two kinds of people in the world: those who enjoy spatial models and those who don't.

Which kind are you?



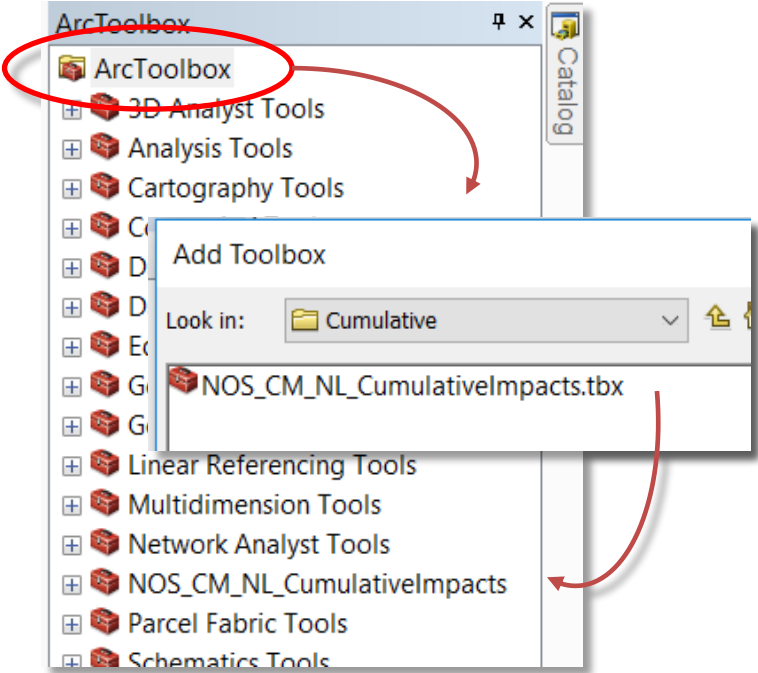
- Geospatial analysis and models are at the core of all REAs
- All models are wrong; some models are useful
- REA Models are generally designed using ModelBuilder and reside in ArcToolboxes (.tbx files). Python and R scripts with some external modeling were used where Arc functionality was lacking.
- Several models were not delivered with the REA because they were run externally. For example in NOS:
  - Climate models were run by ISER (Institute for Social and Economic Research) using SNAAP (Scenarios Network for Alaska and Arctic Planning) products
  - Fire models are based on the North American Land Change Monitoring System (NALCMS) and simulate the effects of future fire dynamics on vegetation
  - Permafrost models were run at UAK-GIPL to estimate the mean annual ground temperature at 1 meter depth and the active layer thickness.
- Each REA has a Model Overview Diagram that displays each model built for CEs and CAS (...NOS\_2012\Models\Models\_Overview\). Each model diagram shows the basic process, inputs, and outputs. For more details, open a model in ModelBuilder.
- Detailed Modeling Guides were written for most models to help GIS users understand and re-run or modify the models.

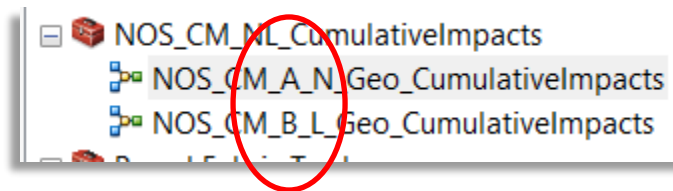
### If you need to modify and re-run a model

**Note: I don't recommend that you re-run a model in class but please be aware of this process!**

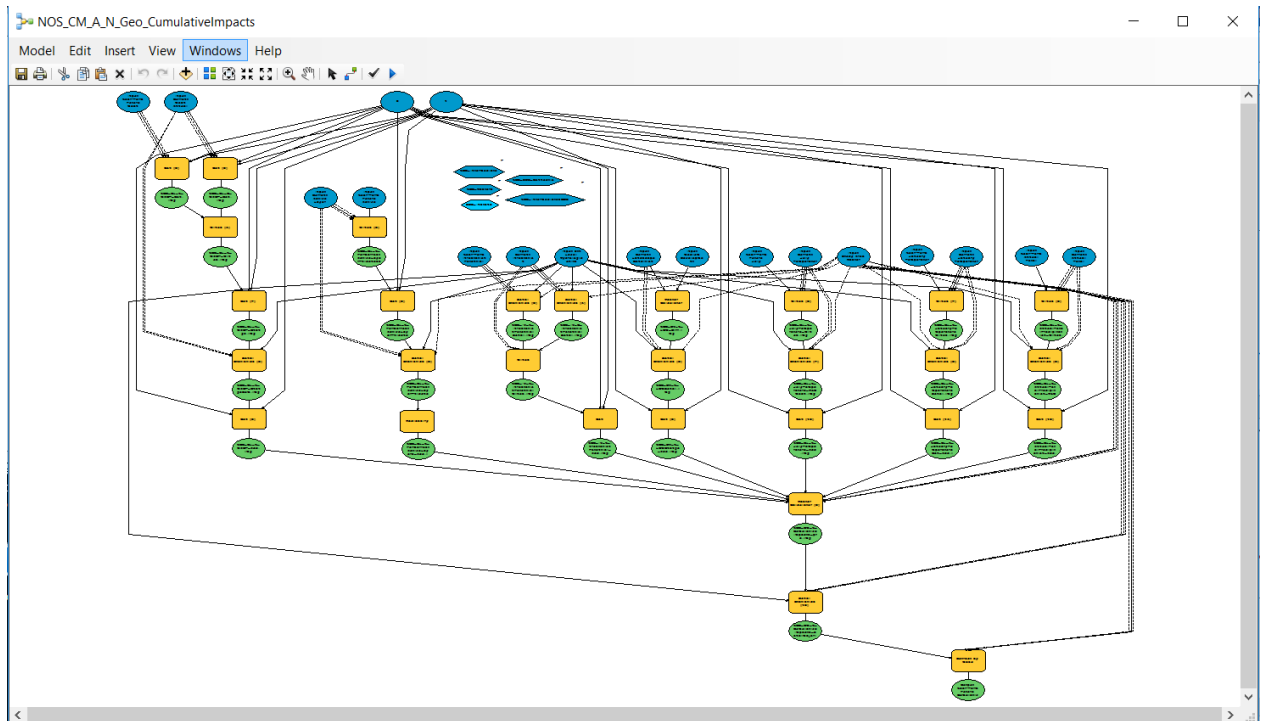
1. Make sure that there is an ArcToolbox (.tbx) for the model you need:
  - a. E.g., ...\\NOS\_2012\Models\\Change\_Agents\\Cumulative\\NOS\_CM\_NL\_CumulativeImpacts.tbx
2. Check out the Model Overview document for NOS and the Detailed Model Guide for your model of choice to increase your understanding of how it works:

- a. ... \NOS\_2012 \Models \Models\_Overview
  - b. ... \NOS\_2012 \Models \Change\_Agents \Cumulative \NOS\_CM\_NL\_CumulativeImpacts\_DeatailedModelingGuide.pdf
    - i. (Note that someone spelt “Deatailed” wrong!)
3. You will need to download the model zip file to make any changes since all REA folders are “Read-Only”.
  - a. If you just want to take a look at the model you can open it using ArcMap:
    - i. ... \NOS\_2012 \Models \Change\_Agents \Cumulative \NOS\_CM\_NL\_CumulativeImpacts.tbx

- b. In ArcMap, got to ArcToolbox and right click on ArcToolbox \Add Toolbox.
    - c. Navigate to the correct folder and click on the .tbx file
    - d. It will be added to the list of available Toolboxes.
- 
4. In the Cumulative Impacts toolbox, there are 2 models. If models in a toolbox are noticeably alphabetized, they should be used in alphabetical order. These models are labelled A and B so use A first unless you don't need to change the results for A.

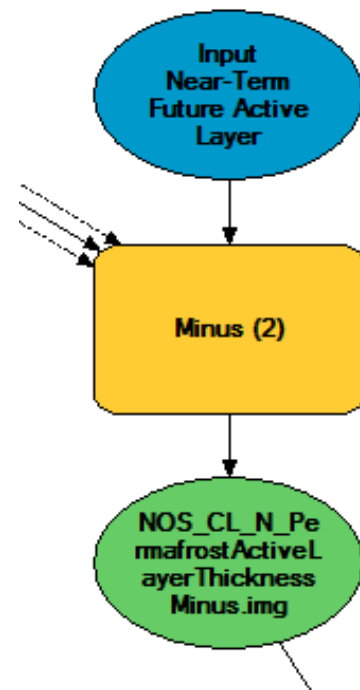


5. Right click and Edit NOS\_CM\_A\_N\_Geo\_CumulativeImpacts to see the full model.

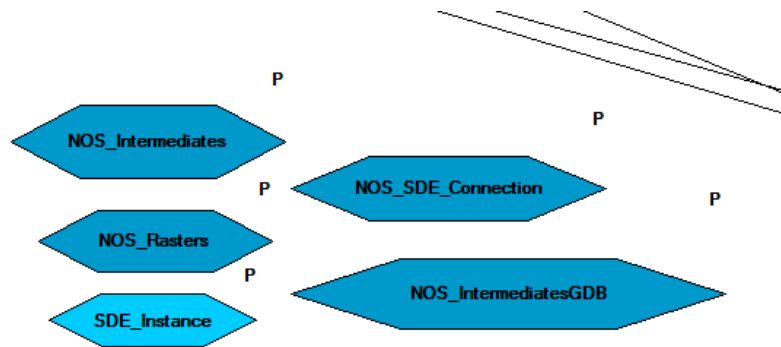


6. What do the shapes and colors in the model represent?

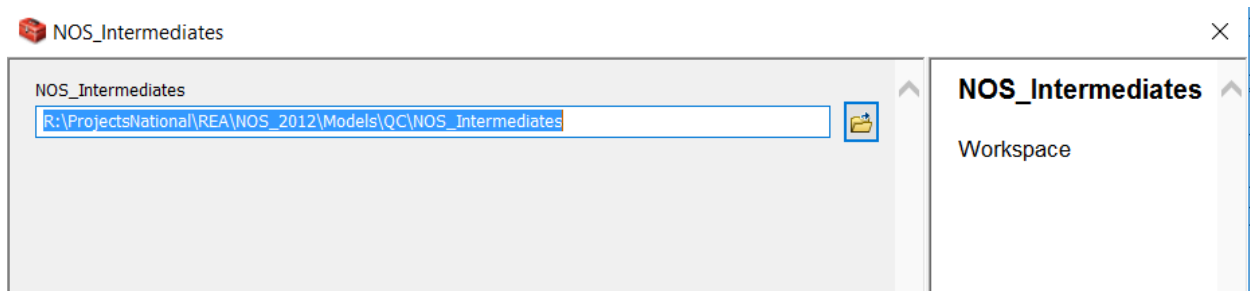
- a. Blue ellipses are input data
- b. Yellow rectangles represent processes
- c. Green ellipses represent intermediate or output data sets. Note that the output data names will be abbreviated according to the REA system:
- d. NOS\_CL\_N\_ = North Slope Climate Near-term



7. What do the blue hexagons represent?



- These are parameters placed within the model during the QC process at the NOC. They summarize locations for data used within the model.
- Each parameter represents a different location on the network and can be changed, when the model is rerun, to represent new locations for data inputs and outputs.
- For example, right click on the blue hexagon in the Model named NOS\_Intermediates
- Notice that in the list, it is checked as a Model Parameter
- And click Open.



- All parameters within the NOS and CYR models are currently pointing to the NOC (R drive and the QC folder) and can be changed to point to AKSO Citrix locations using this method. If your project is going to be large you will want to request server space from your GIS Manager. If not, outputs can be directed to your Citrix workspace under your *username*. (I have had better results by assigning a drive letter to the server path \\blm\dfs\ak...)

  - NOS\_Intermediates: this points to a workspace that holds intermediate (and often final) output data written from the model run. Change it to your workspace on the AKSO Citrix.
  - NOS\_SDE\_Connection: this points to the SDE at the NOC, change it to the AKSO NOS gdb:  
[\\blm\dfs\ak\gis\GIS\\_Data\Published\Federal\BLM\AKSO\REA\NOS\\_2012\NOS\\_2012.gdb](\\blm\dfs\ak\gis\GIS_Data\Published\Federal\BLM\AKSO\REA\NOS_2012\NOS_2012.gdb)
  - NOS\_Rasters: this folder holds rasters in sub-folders for Change Agents, Conservation Elements and Input Data:

[\\blm\dfs\ak\gis\GIS\\_Data\Published\Federal\BLM\AKSO\REA\NOS\\_2012\Raster](\\blm\dfs\ak\gis\GIS_Data\Published\Federal\BLM\AKSO\REA\NOS_2012\Raster)

- iv. NOS\_Intermediates.gdb: you will need to create a gdb in your personal workspace in Citrix to store these data
- v. SDE\_Instance will not be needed because the data are housed in a gdb, not an SDE.
- g. Validate the full model. If any of the boxes or ellipses are clear, check on their source and output data paths. This is the most likely cause. Once all shapes are colored (see step 5), you can run the model.
- h. It is a good idea to run the original model and check your results against the original output data before you make any modifications to the data.
- i. Contact us at the NOC if you have any problems.