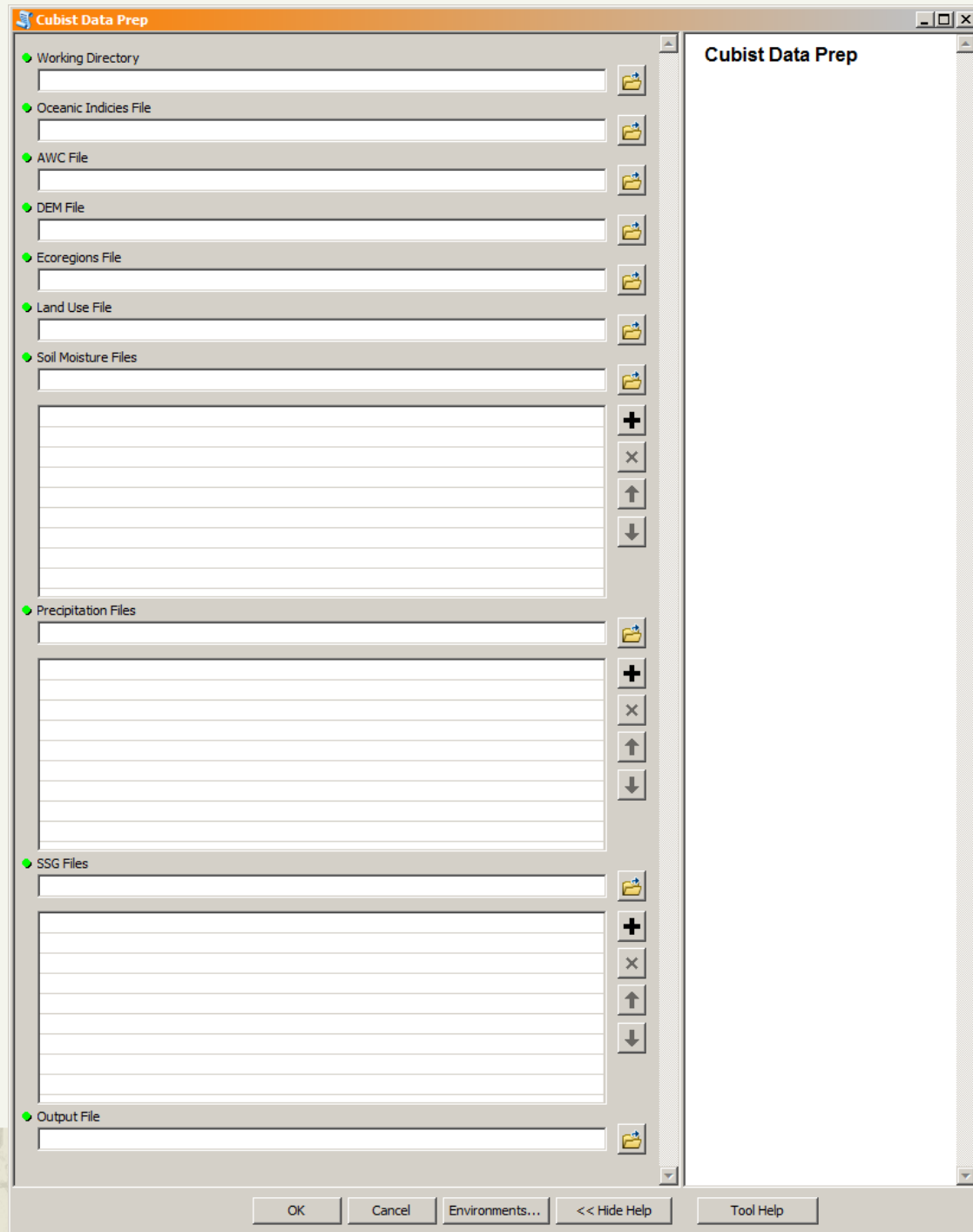


Managing Model Inputs with Python

ArcGIS script tool

Allows users who do not know Python to easily change inputs



Accessing inputs

```
indicesFile = open(sys.argv[2], 'r')
AWCFile = sys.argv[3]
DEMFile = sys.argv[4]
EcoFile = sys.argv[5]
LUFile = sys.argv[6]
SMfileup = sys.argv[7]
SMfilelist = sorted(SMfileup.split(';'))
PCPfileup = sys.argv[8]
PCPfilelist = sorted(PCPfileup.split(';'))
SSGfileup = sys.argv[9]
SSGfilelist = sorted(SSGfileup.split(';'))
```

Grid attributes

`rowCount = Raster(AWCFile).height`

`columnCount = Raster(AWCFile).width`

`theCellSize = Raster(AWCFile).meanCellHeight`

`halfCS = theCellSize/2`

`gridExtent = Raster(AWCFile).extent`

`theXMin = gridExtent.XMin + halfCS`

`theXMax = gridExtent.XMax - halfCS`

`theYMin = gridExtent.YMin + halfCS`

`theYMax = gridExtent.YMax - halfCS`

Convert raster to Numpy Array

Allows for much quicker raster calculations
and cell by cell access

```
AWCArray = arcpy.RasterToNumPyArray(AWCFile, nodata_to_value=-99900)
DEMArray = arcpy.RasterToNumPyArray(DEMFile, nodata_to_value=-99900)
EcoArray = arcpy.RasterToNumPyArray(EcoFile, nodata_to_value=-99900)
LUArray = arcpy.RasterToNumPyArray(LUFile, nodata_to_value=-99900)
```

Convert raster to Numpy Array

```
SSGArrayList = []
theYearList = []
thePentList = []
theDekList = []
SSGArrayList = []
PCPArrayList = []
SMArrayList = []
for s in SSGfilelist:
    theyear = '20' + s[-8:-6]
    thepent = s[-6:-4]
    thedek = str(int(s[-6:-4])/2)
    SSGArray = arcpy.RasterToNumPyArray(s, nodata_to_value=-99900)
    theYearList.append(theyear)
    thePentList.append(thepent)
    theDekList.append(thedek)
    SSGArrayList.append(SSGArray)
for p in PCPfilelist:
    PCPArray = arcpy.RasterToNumPyArray(p, nodata_to_value=-99900)
    PCPArrayList.append(SSGArray)
for m in SMfilelist:
    SMArray = arcpy.RasterToNumPyArray(m, nodata_to_value=-99900)
    SMArrayList.append(SSGArray)
```

Extract values cell by cell from arrays

```
r = 0
gridID = 1
y = theYMax
while r < rowCount:
    x = theXMin
    c = 0
    while c < columnCount:
        for index, ssg in enumerate(SSGArrayList):
            if index % 3 == 0:
                monthindex = index/3
                theYear = theYearList[index]
                thePent = thePentList[index]
                theDek = theDekList[index]
                theAWC = AWCArray[r,c]
                theDEM = DEMArray[r,c]
                theEco = EcoArray[r,c]
                theLU = LUArray[r,c]
                theAMM = indiciesList[monthindex][0]
                theAMO = indiciesList[monthindex][1]
                theBEST = indiciesList[monthindex][2]
```

Extract values cell by cell from arrays

```
theDMI = indicesList[monthindex][3]
    theMEI = indicesList[monthindex][4]
    theNAO = indicesList[monthindex][5]
    theNino34 = indicesList[monthindex][6]
    theNino4 = indicesList[monthindex][7]
    theONI = indicesList[monthindex][8]
    thePDO = indicesList[monthindex][9]
    thePNA = indicesList[monthindex][10]
    theQBO = indicesList[monthindex][11]
    theSFLUX = indicesList[monthindex][12]
    theSOI = indicesList[monthindex][13]
    theTIN = indicesList[monthindex][14]
    theTNA = indicesList[monthindex][15]
    theTSA = indicesList[monthindex][16]
    thePCP = PCPArrayList[index][r,c]
    theSM = PCPArrayList[index][r,c]
    theSSG = ssg[r,c]
```