地理信息系统与遥感应用

第七讲　GIS综合应用

南方科技大学 · 环境科学与工程学院

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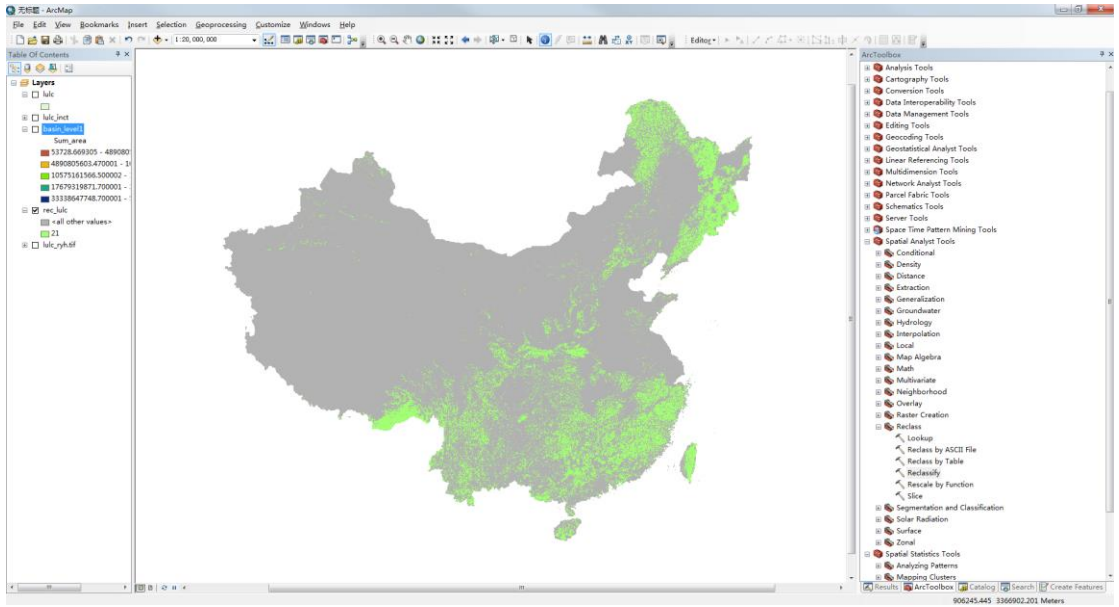
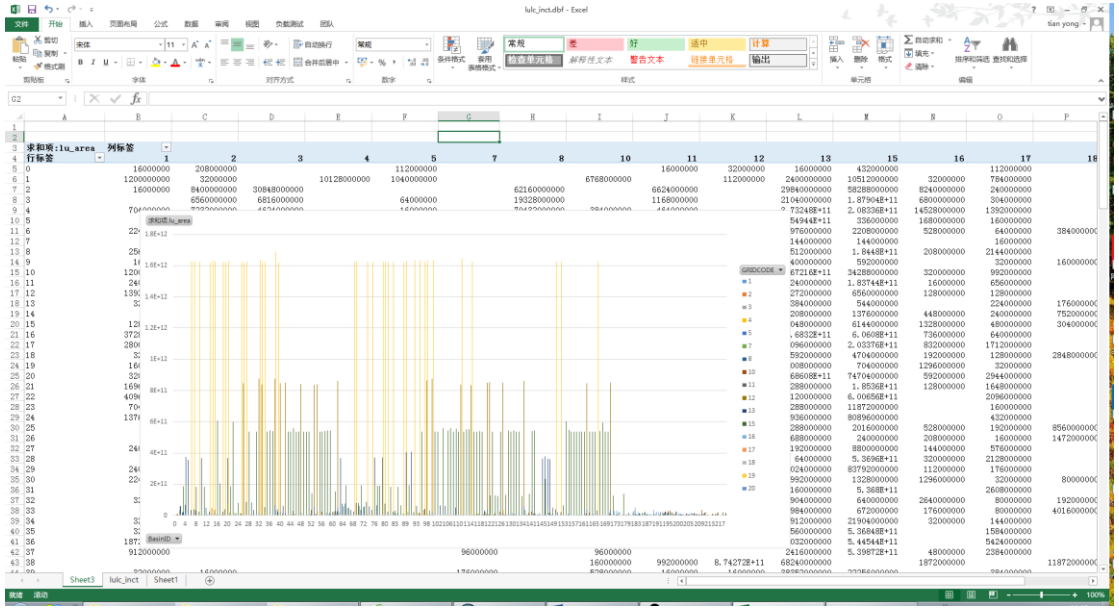
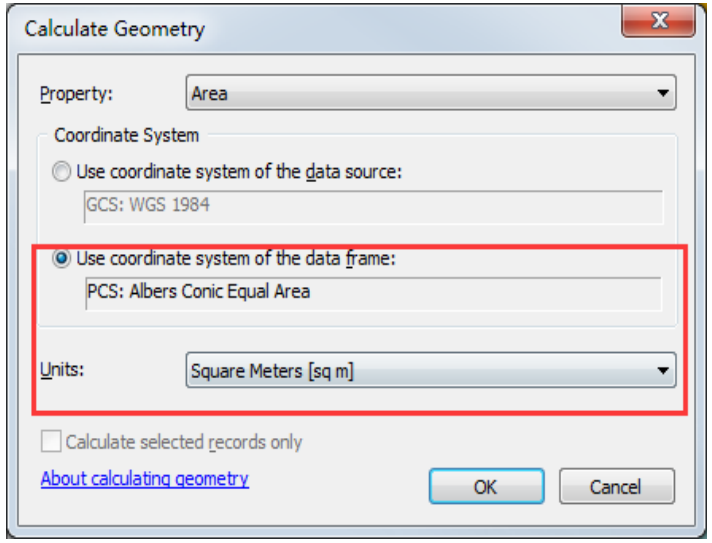
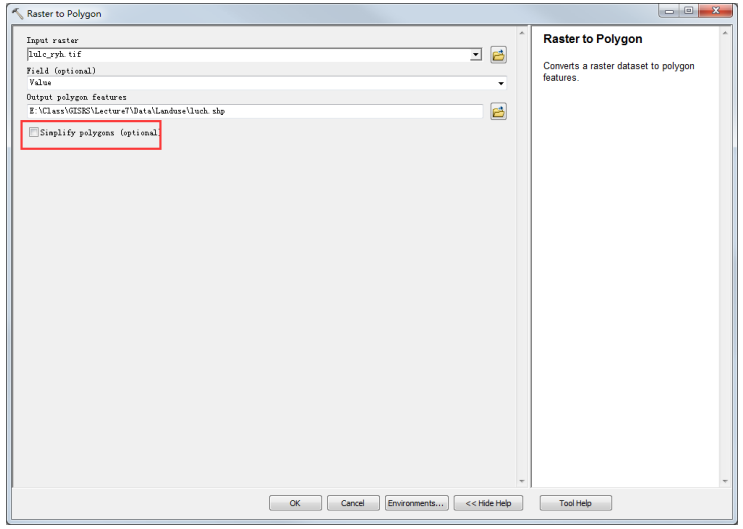
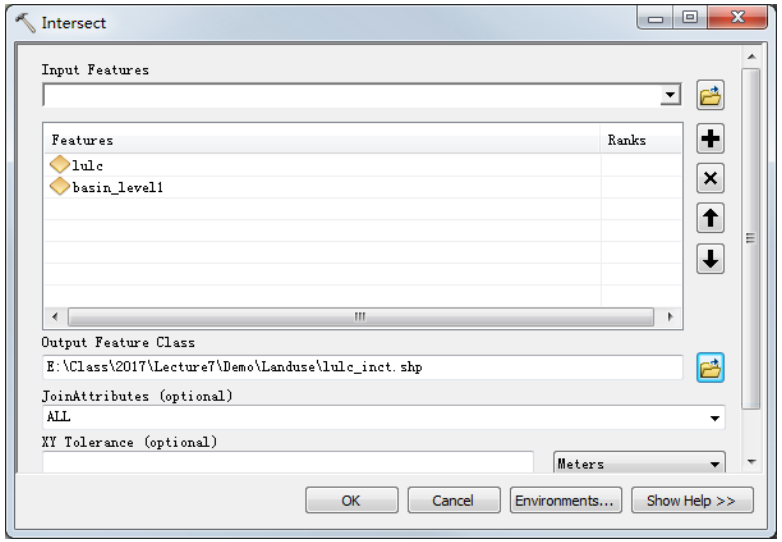
Lab7.1　新建学校选址与最优路线规划

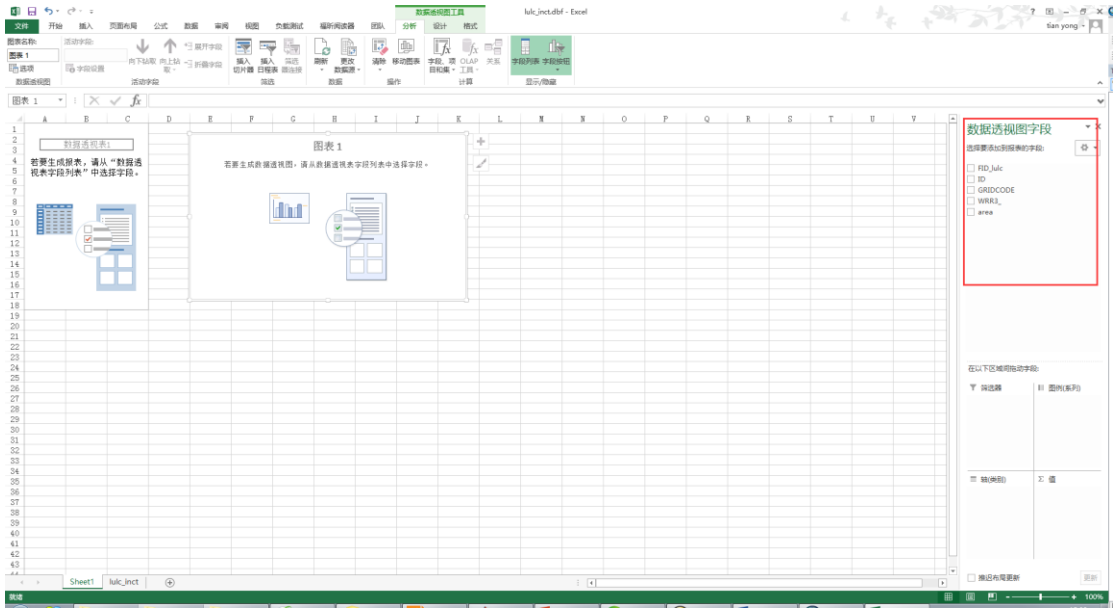




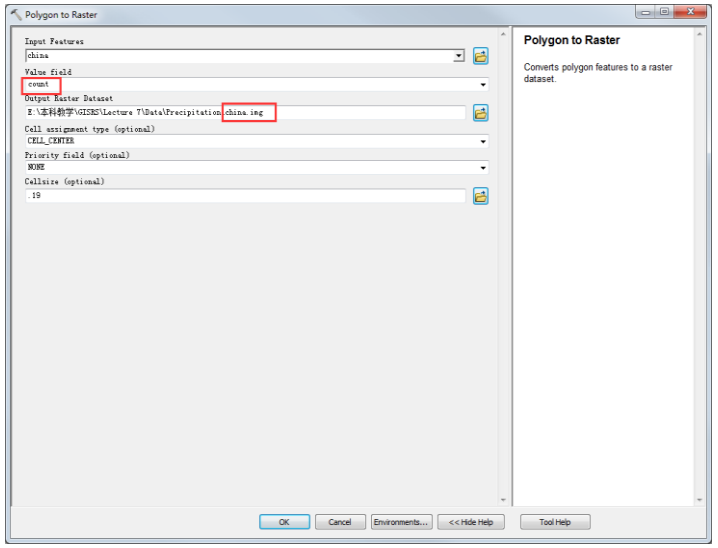

Calculate Geometry
Property:
Area
Coordinate System
Use coordinate system of the data source:
GCS: WGS 1984
Use coordinate system of the data frame:
PCS: Albers Conic Equal Area
Units:
Square Meters [sq m]
Calculate selected records only
About calculating geometry
OK
Cancel

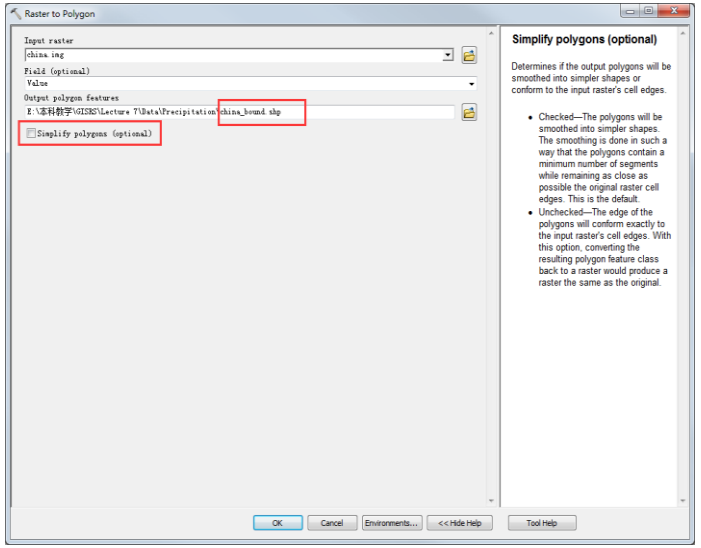

Raster to Polygon
Input raster
lulc_ryh.tif
Field (optional)
Value
Output polygon features
E:\Class\GISRS\Lecture7\Data\Landuse\luch.shp
Simplify polygons (optional)
Raster to Polygon
Converts a raster dataset to polygon features.
OK
Cancel
Environments...
<< Hide Help
Tool Help

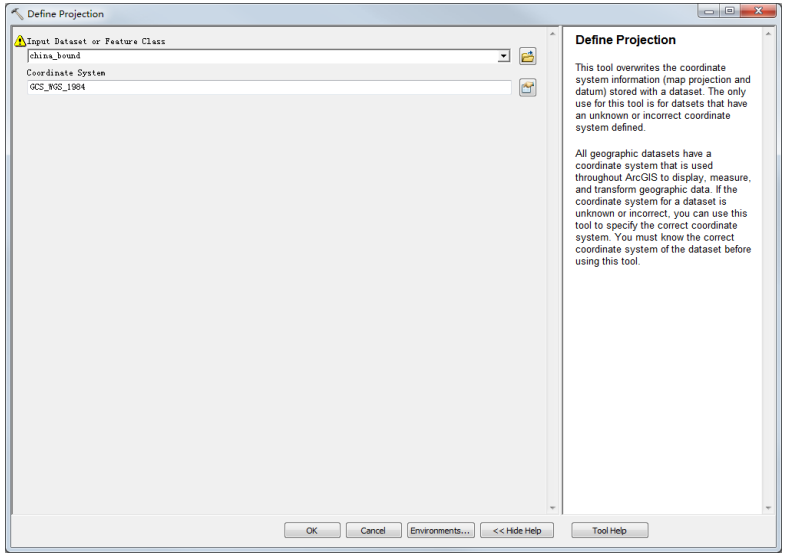

Intersect
Input Features
Features
Ranks
lulc
basin_level1
Output Feature Class
E:\Class\2017\Lecture7\Demo\Landuse\lulc_inct.shp
JoinAttributes (optional)
ALL
XY Tolerance (optional)
Meters
OK
Cancel
Environments...
Show Help >>

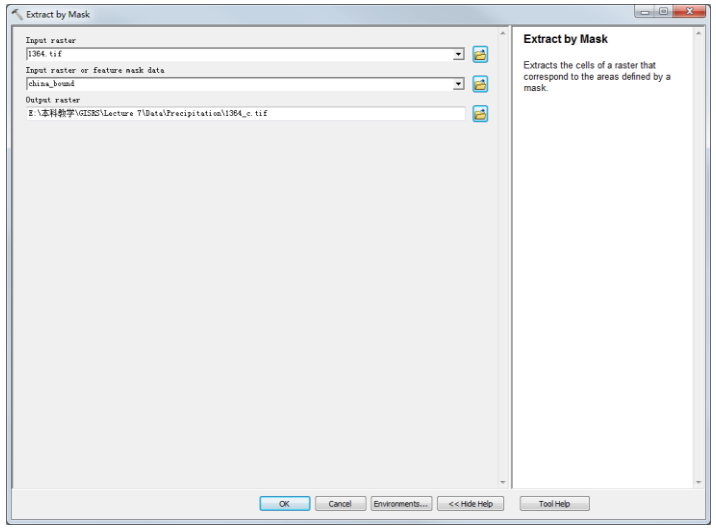

lulc_inct.dbf - Excel
数据透视图字段
图表 1
若要生成报表，请从“数据透视表字段列表”中选择字段。
FID_lulc
ID
GRIDCODE
WRK1_
area
Sheet1
lulc_inct

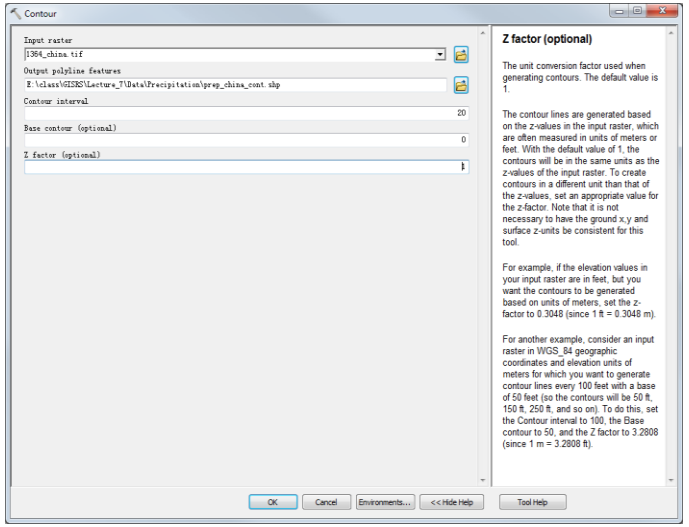
Lab7.2 分析全国降水量时空分布

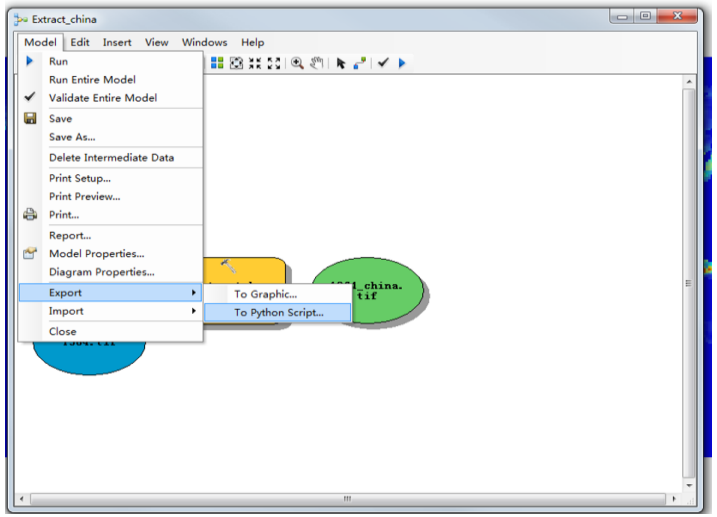












extract_prep.py - E:\Heihe\HRB\GeoData\Script\extract_prep.py (2.7.9)

File Edit Format Run Options Windows Help

```
# Created on: 2016-10-26 21:14:23.00000
#   (generated by ArcGIS/ModelBuilder)
# Description:
# ---------------------------------------------------------------------------

# Import arcpy module
import arcpy

# Check out any necessary licenses
arcpy.CheckOutExtension("spatial")

# Local variables
# 1364.tif所在目录
in_dir = "E:\\class\\GISRS\\Lecture_7\\Data\\Precipitation\\"
# 提取之后的RASTER存放路径
out_dir = "E:\\class\\GISRS\\Lecture_7\\Data\\Precipitation\\china\\"
# Mask 文件
china_bound = "E:\\class\GISRS\\Lecture_7\\Data\\Precipitation\\china.shp"
# 文件名起始编号
start_index = 1359
end_index = 1382

# 输出统计文件目录
stat_file = out_dir + "stat_prep.csv"
fs_stat = open(stat_file,'w')
print>>fs_stat,"Index",",","Mean"

for index in range(start_index, end_index+1):
    fn_in = in_dir + str(index) + ".tif"
    fn_out = out_dir + str(index)+ "_china.tif"
    # Process: Extract by Mask
    arcpy.gp.ExtractByMask_sa(fn_in, china_bound, fn_out)
    # Process: Get statastics of output raster
    st = arcpy.GetRasterProperties_management(fn_out, "MEAN")
    mean= st.getOutput(0)
    print index
    print>>fs_stat,index,",",mean

fs_stat.close()
```

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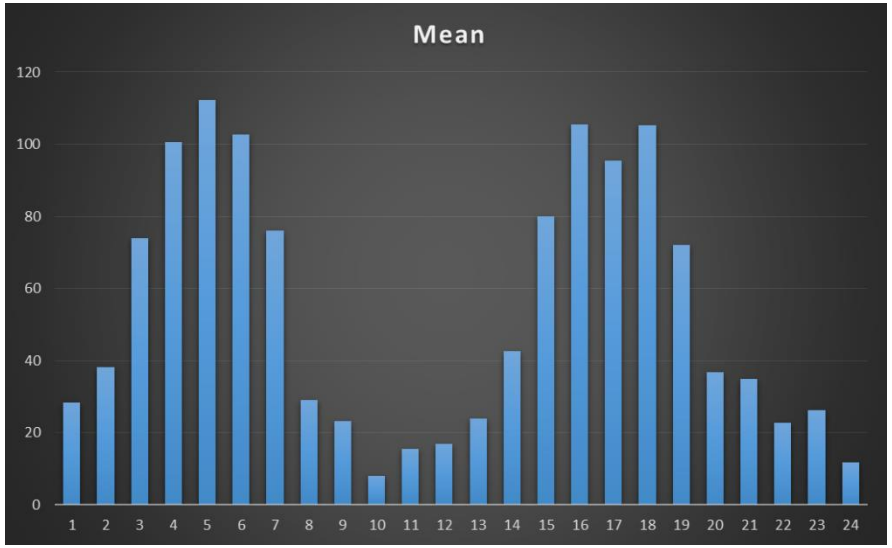

Lab7.3 中国一级流域的Budyko假设检验

cal_cell_sum.py - C:\Gis\Lecture7\Budyko\cal_cell_sum.py (2.7.10)

File Edit Format Run Options Window Help

```
#调用模块
print 'import modules......\n\n'
import arcpy
import os
print 'import modules over.\n\n'

#设置输入tif文件所在文件夹的目录
input_dir = 'C:\\Gis\\Lecture7\\Budyko\\ET'
os.chdir(input_dir)

#将tif文件转换至输入格式
list_input = []
list_file_name = os.listdir(input_dir)
for each in range(0,len(list_file_name)):
    every_file_dir = os.path.join(input_dir,list_file_name[each])
    if os.path.splitext(every_file_dir)[-1] == '.tif':
        print 'add ' + list_file_name[each] + '......\n'
        list_input.append(list_file_name[each])

str_input = ''
for each in range(0,len(list_input)):
    str_input += list_input[each] + ';'
str_input = str_input[:-1]


#设置输出目录
output_name = 'sum_ET'
os.mkdir(output_name)
output_path = os.path.join(input_dir,output_name,output_name + '.tif')


# Process: Cell Statistics
print 'processing cell statistics......\n\n'
arcpy.gp.CellStatistics_sa(str_input, output_path, "SUM", "DATA")
print 'cell statistics over.'
```

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