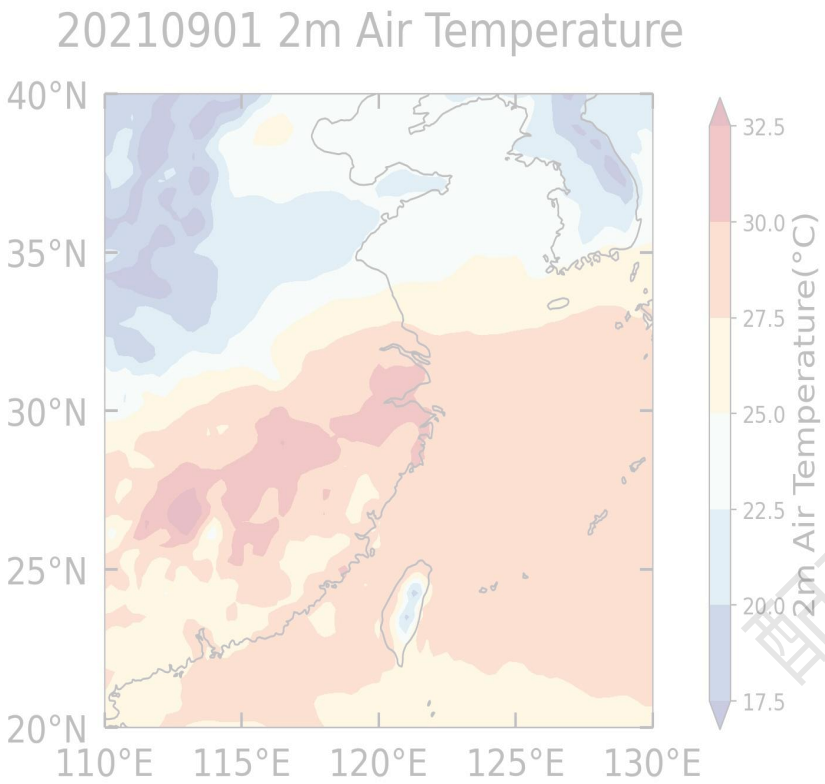
气象科研绘图10：绘图常见标注



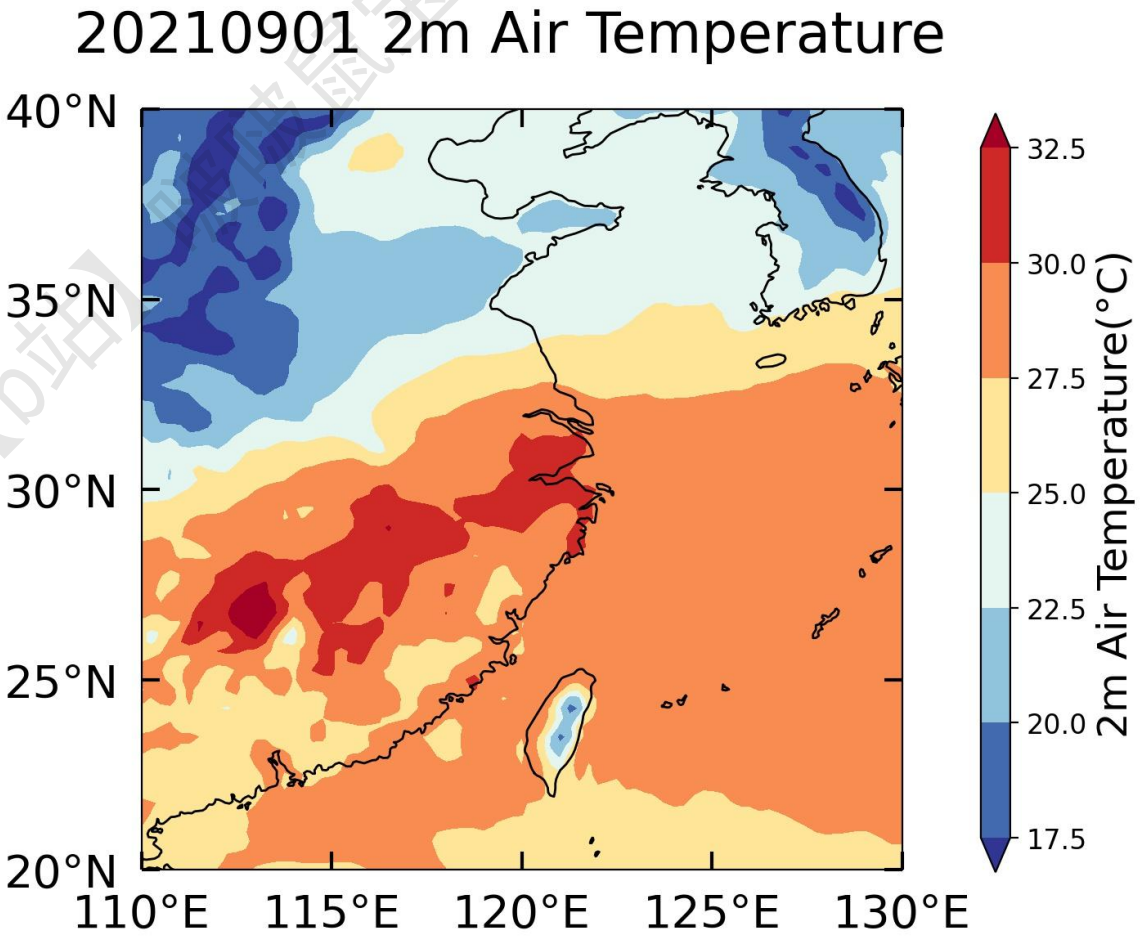
基于往期视频《气象科研绘图8：使用ECWMF数据绘制2m气温空间分布图》

- 绘图信息

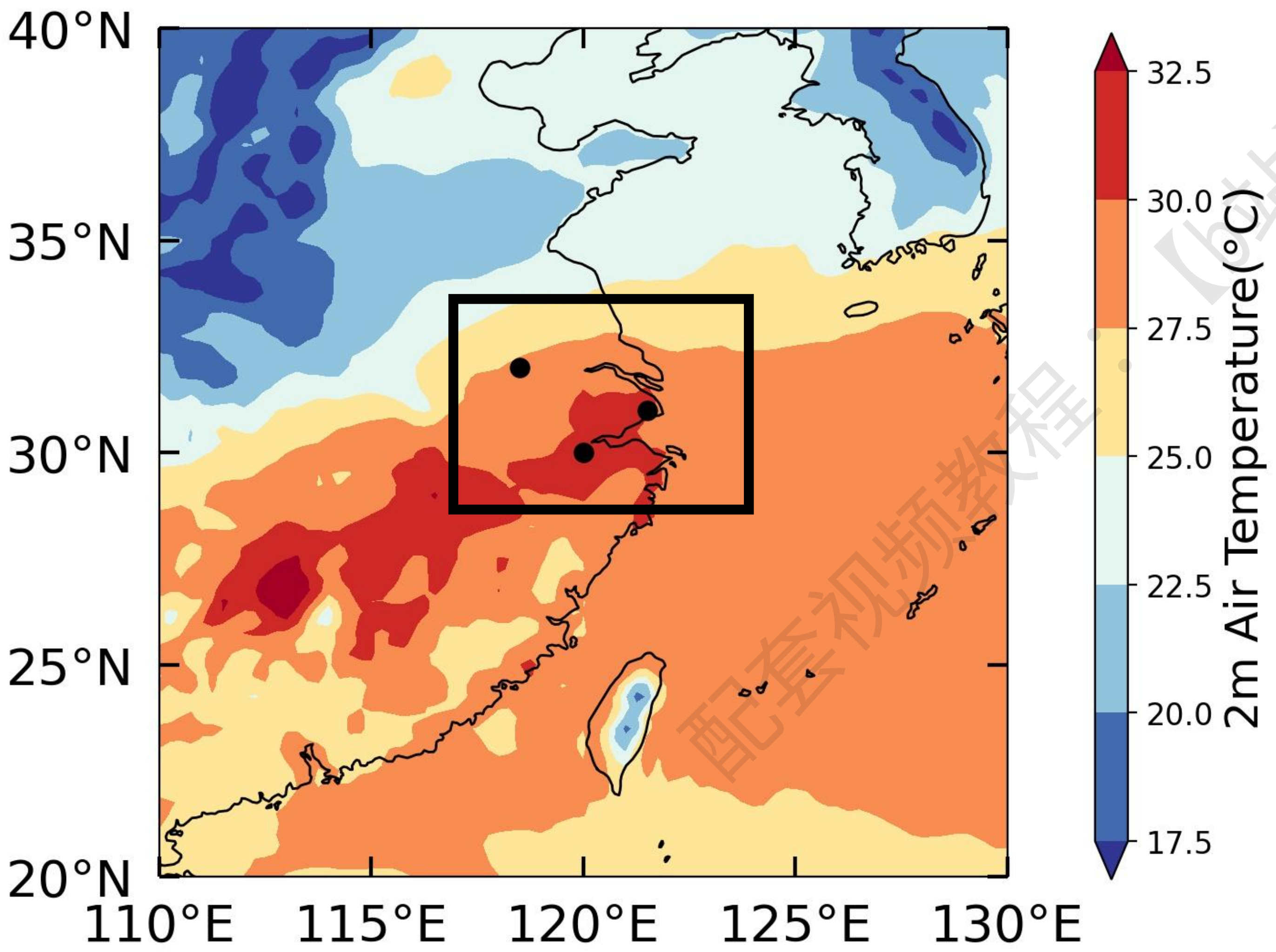
变量：2m温度场

区域范围：20N-40N，110E-130E，空间分辨率0.25°×0.25°

时间范围：2021年9月1日，0点-23点，时间分辨率1h



➢ 标注类型1：点



上海 121°30′E, 31°N
南京 118°30′E, 32°N
杭州 120°′E, 30°N

*注意：1°=60′

```
#标注
ax.scatter(121.5,31,s=50,c='k')
ax.scatter(118.5,32,s=50,c='k')
ax.scatter(120,30,s=50,c='k')
```

scatter 可自定义点的颜色、形状等

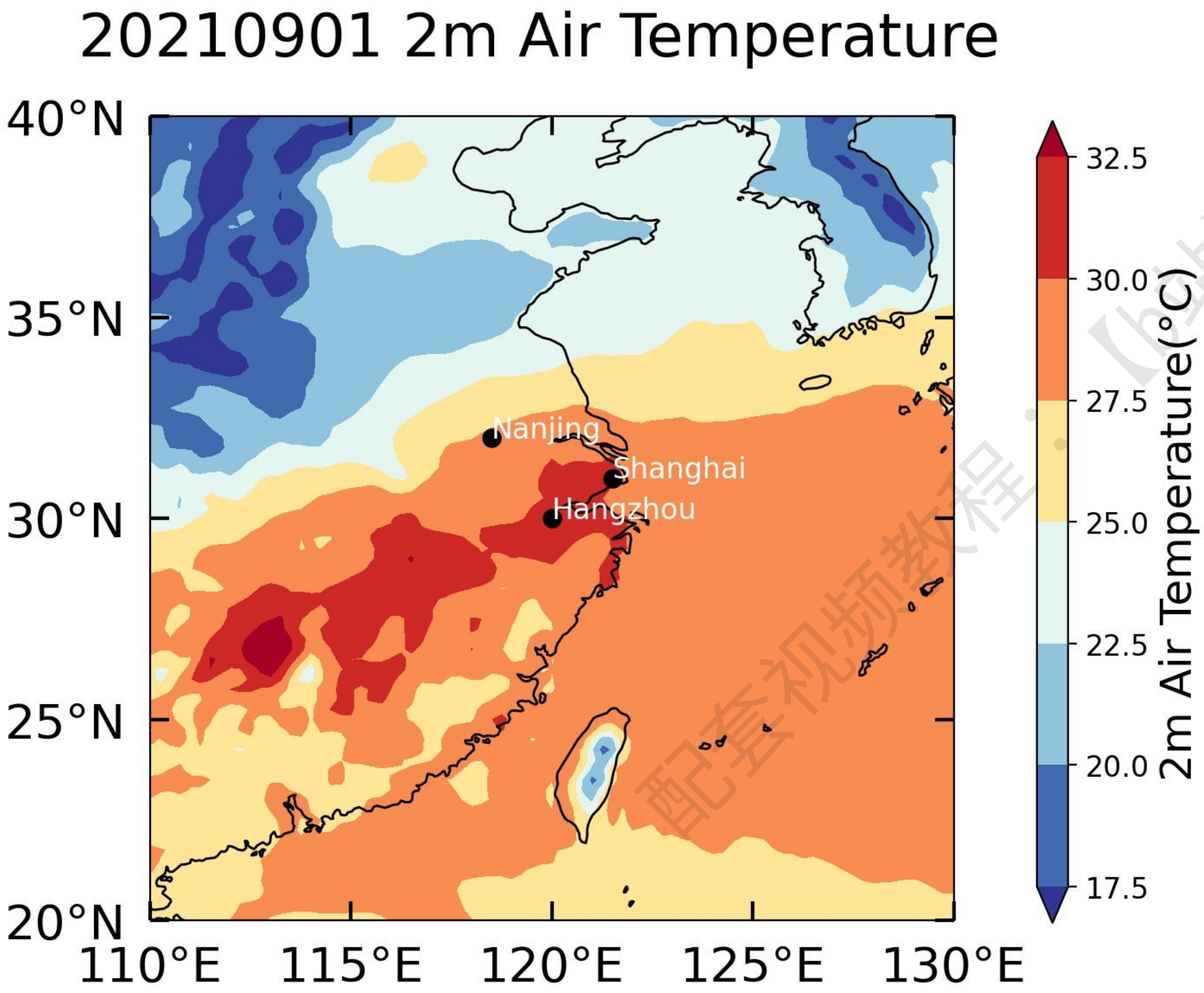
原代码的画图部分

```
#figure和ax设置
fig = plt.figure(figsize=(6,8),dpi=200)
proj = ccrs.PlateCarree()
region=[110,130,20,40]
ax = plt.axes(projection=proj)
ax.set_extent(region,crs = proj)  #设置区域与需要画图的区域范围一致
ax.add_feature(cfeature.COASTLINE.with_scale('50m'))  #海岸线

#contourf等高线填色图
con1 = ax.contourf(X,Y,t2m_mean,cmap='RdYlBu_r',extend='both')  #色卡反向

#刻度设置
ax.set_xticks([110,115,120,125,130])  #指定要显示的经纬度
ax.set_yticks([20,25,30,35,40])
ax.xaxis.set_major_formatter(LongitudeFormatter())  #刻度格式转换为经纬度样式
ax.yaxis.set_major_formatter(LatitudeFormatter())
ax.tick_params(axis='x',top=True,which='major',direction='in',length=8,width=1.5,labelsize=20,pad=10)  #刻度样式
ax.tick_params(axis='y',right=True,which='major',direction='in',length=8,width=1.5,labelsize=20,pad=10)

#colorbar颜色条
l,b,w,h = 0.98, 0.21, 0.03, 0.58
rect = [l,b,w,h]
cbar_ax = fig.add_axes(rect)
cb = fig.colorbar(con1, cax = cbar_ax,orientation='vertical',spacing='proportional')
cb.set_label('2m Air Temperature(° C)',fontsize=18)
cb.ax.tick_params(labelsize=12)

#标题
plt.suptitle('20210901 2m Air Temperature',fontsize=25,y=0.87)
plt.savefig('C:/Users/LULU/Desktop/t_20210901.jpg',bbox_inches = 'tight')  #完整保存图片
plt.show()
```

标注部分的代码应插入到contourf函数之后，savefig函数之前

```
#标注
ax.scatter(121.5,31,s=50,c='k')
ax.scatter(118.5,32,s=50,c='k')
ax.scatter(120,30,s=50,c='k')
```

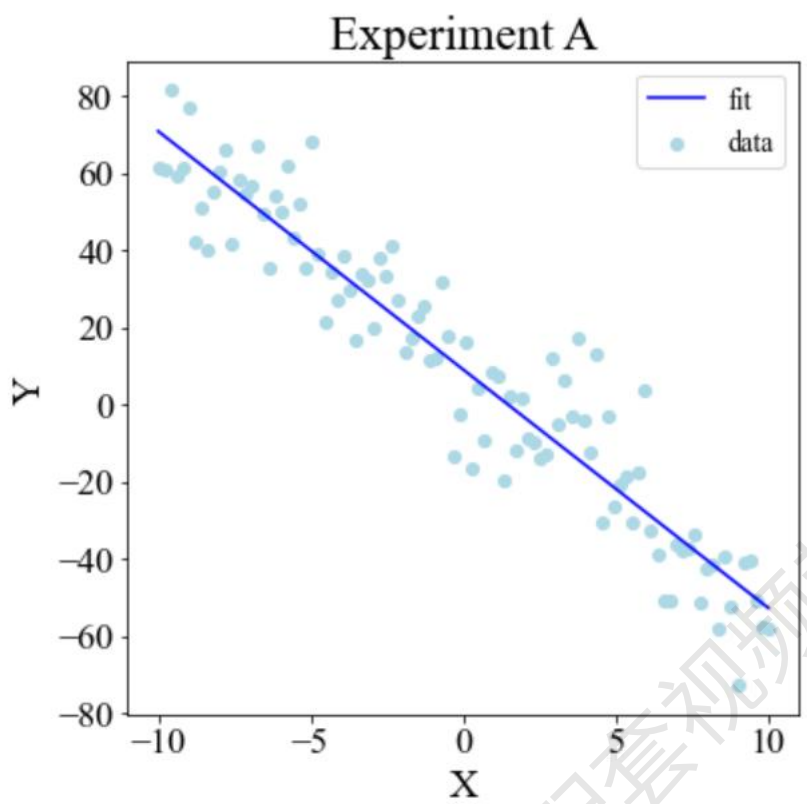
➢ 标注类型2：文字

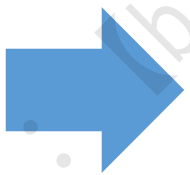


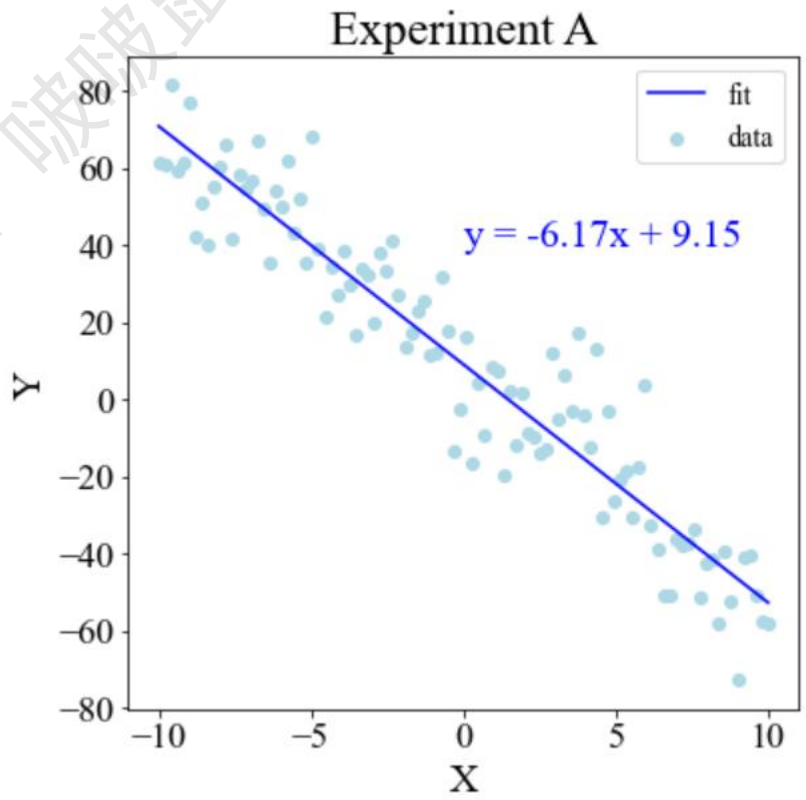

```
#标注
ax.scatter(121.5,31,s=50,c='k')
ax.scatter(118.5,32,s=50,c='k')
ax.scatter(120,30,s=50,c='k')
```

```
ax.text(121.5,31,'Shanghai',fontsize=12,c='w')
ax.text(118.5,32,'Nanjing',fontsize=12,c='w')
ax.text(120,30,'Hangzhou',fontsize=12,c='w')
```

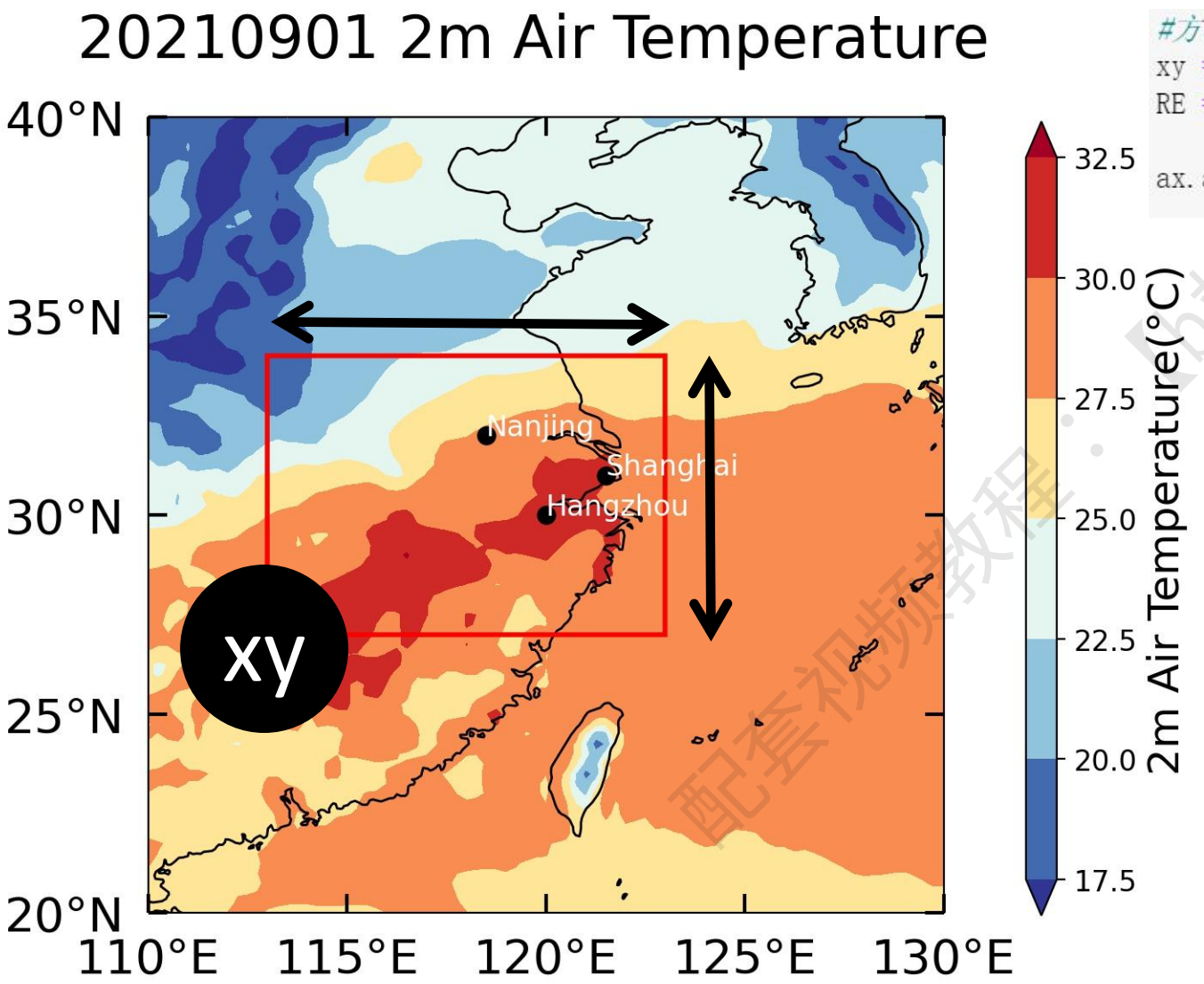
text







➢ 标注类型3：方框




```python
import matplotlib as mpl
```

```python
#方框27° N-34° N; 113° N-123° N
xy = (113,27)
RE = mpl.patches.Rectangle(xy, width=10, height=7,
                           linewidth=2,edgecolor='red',facecolor='none')
ax.add_patch(RE)
```

mpl.patches.Rectangle