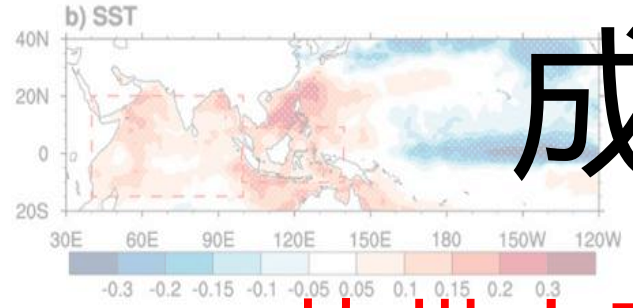
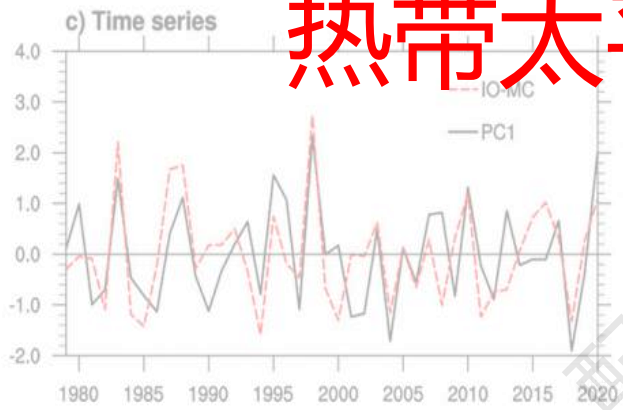
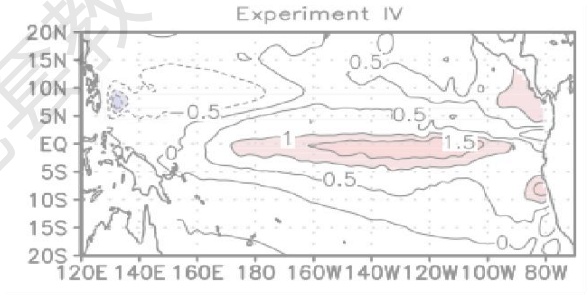
气象科研绘图1：把作业做成sci插图风格！





热带太平洋区域海温(SST) EOF分析



python™

气象科研绘图1：把作业做成sci插图风格！

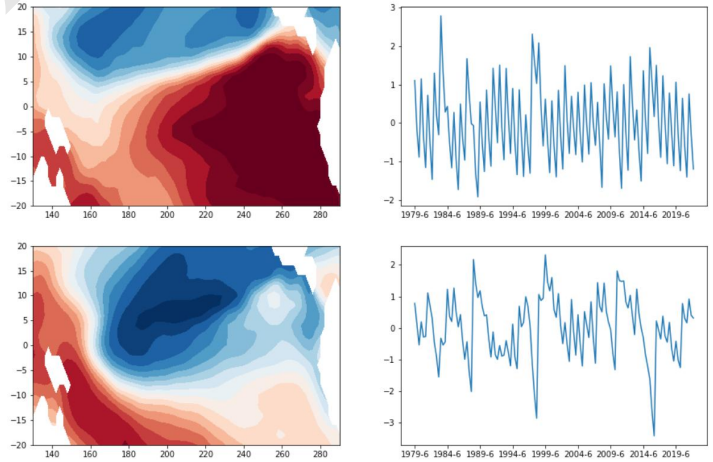
气象科研绘图2：一页多图&子图布局和美化

气象科研绘图3：地图叠加&cartopy基础应用

气象科研绘图4：等高线图contourf&colorbar

气象科研绘图5：折线图plot&时间序列处理

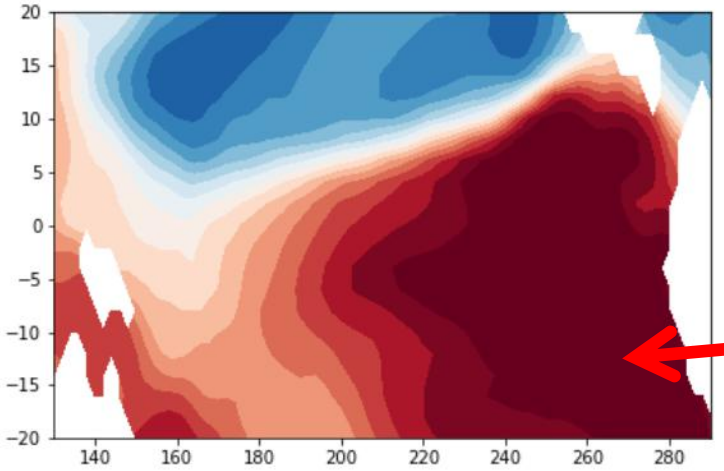
上期视频：Python期末考试

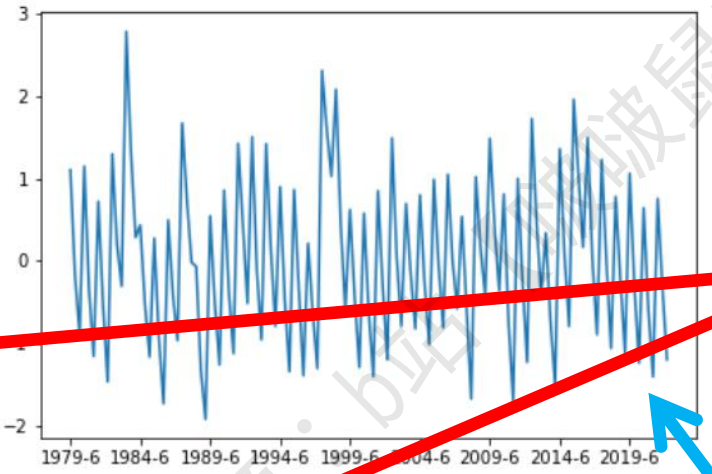


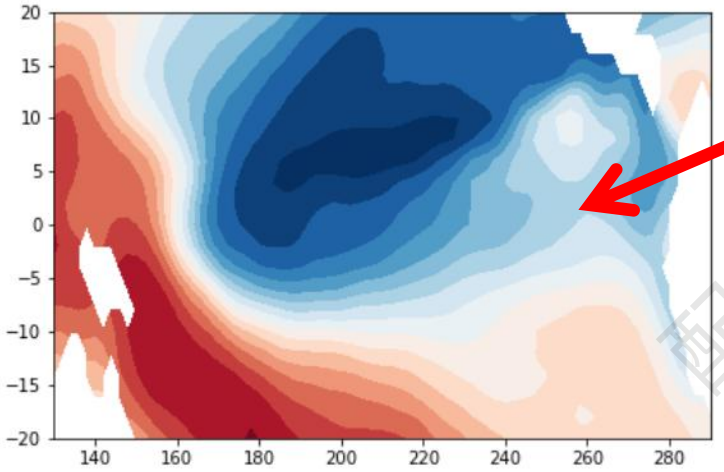
本期内容简介：热带太平洋区域海温(SST) EOF分析存在的问题

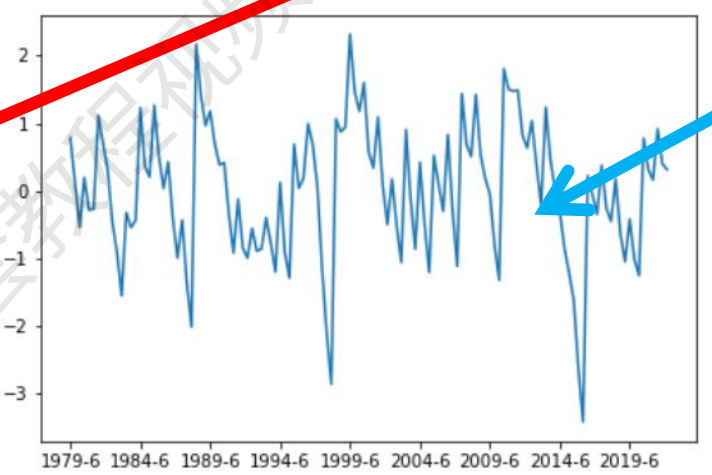
——从哪些角度去美化一张论文插图，让它接近sci插图的标准（？）

上期视频：热带太平洋区域海温(SST) EOF分析









左：EOF空间场的前两个模态

等高线填色图（contourf）

右：对应的时间系数

折线图（plot）

《Journal of Climate》插图（关键词：ENSO/SST）

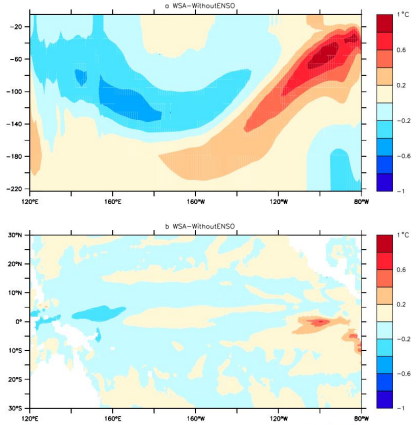
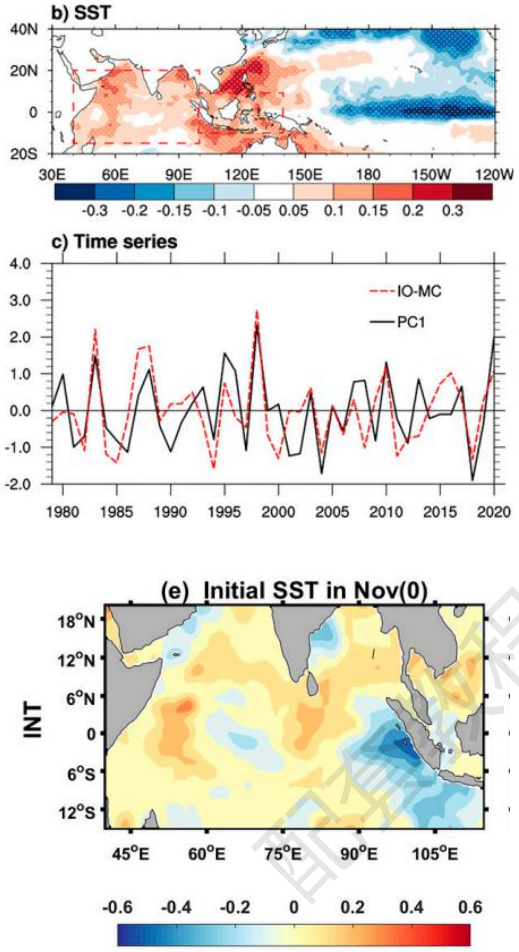


FIG. 3. Differences in the time-mean equatorial (a) upper-ocean temperature (5°N–5°S) and (b) SST between the runs with ENSO (WSA) and without ENSO (control).



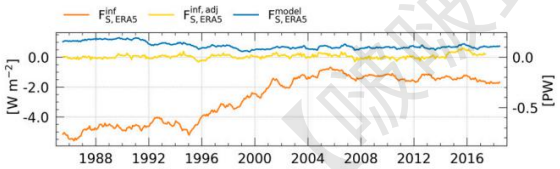


FIG. 6. As in Fig. 4a, but for the global land area.

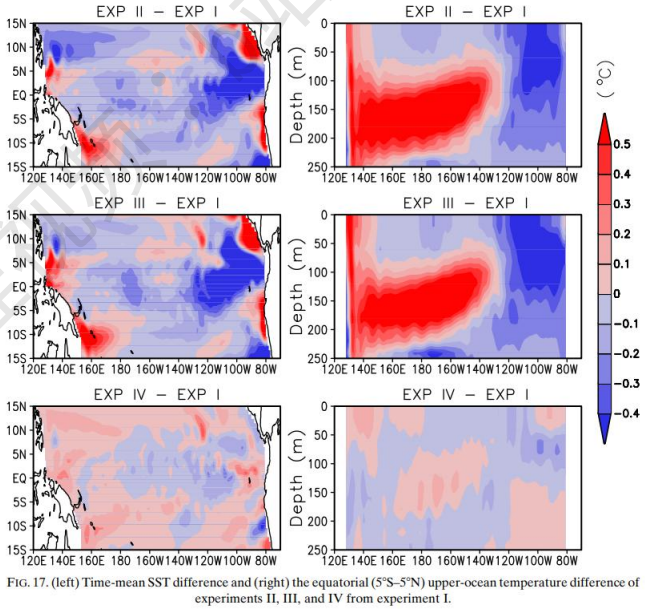
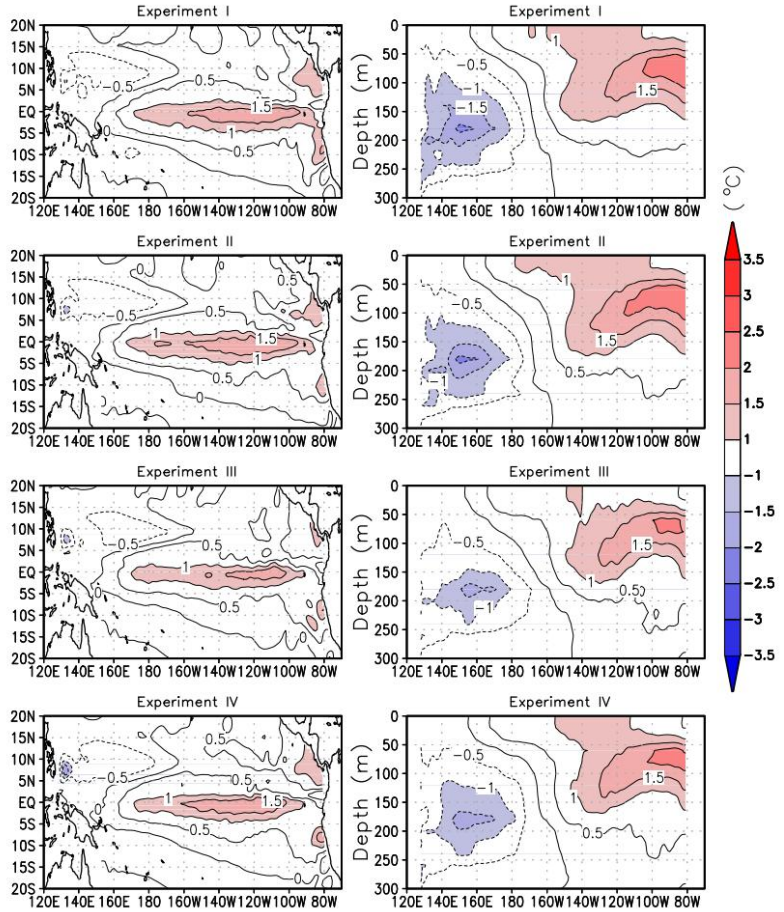


FIG. 17. (left) Time-mean SST difference and (right) the equatorial (5°S–5°N) upper-ocean temperature difference of experiments II, III, and IV from experiment I.



等高线填色图（contourf）

1.配色(colormap/cmap)

主要：红蓝/红黄蓝　　少量：色彩鲜艳

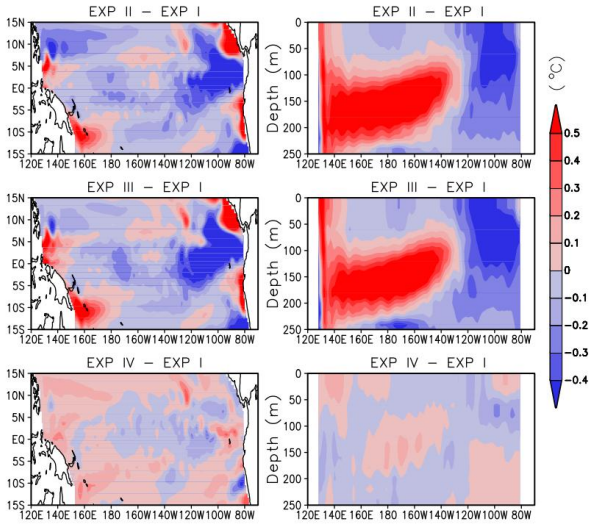
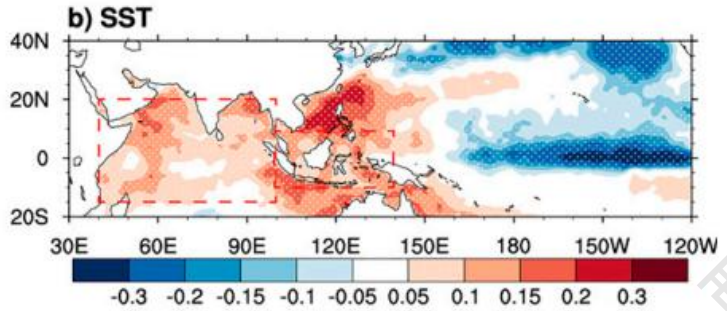
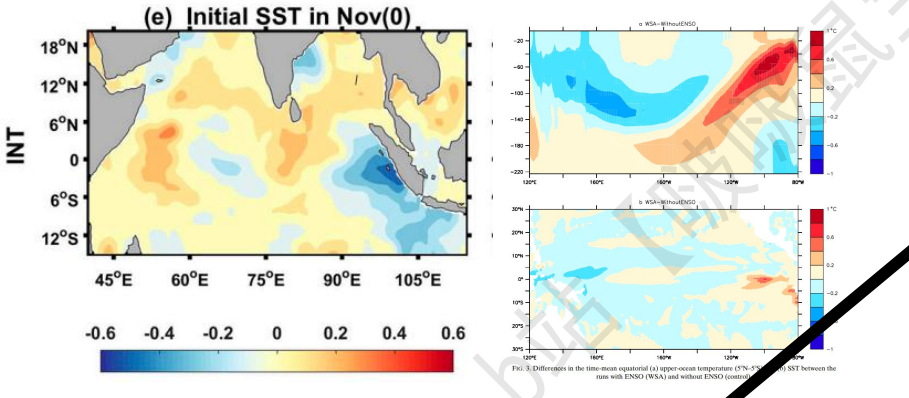
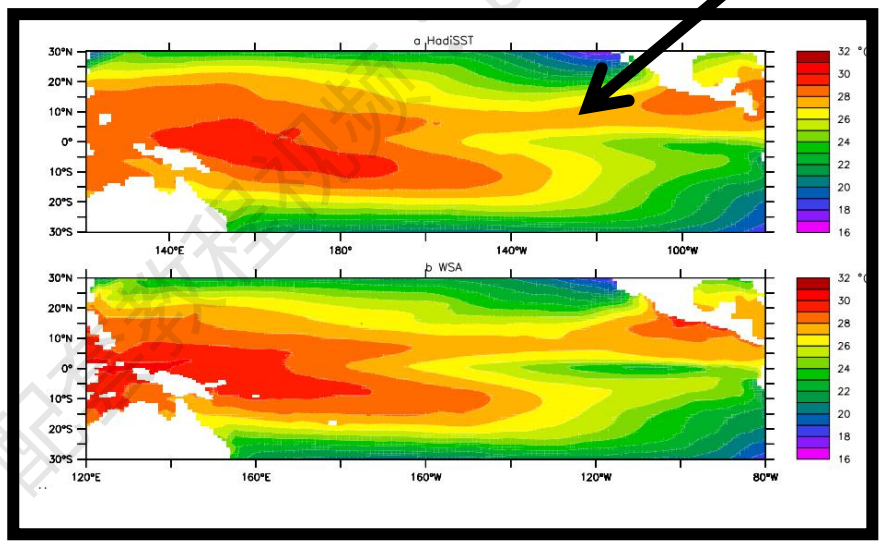
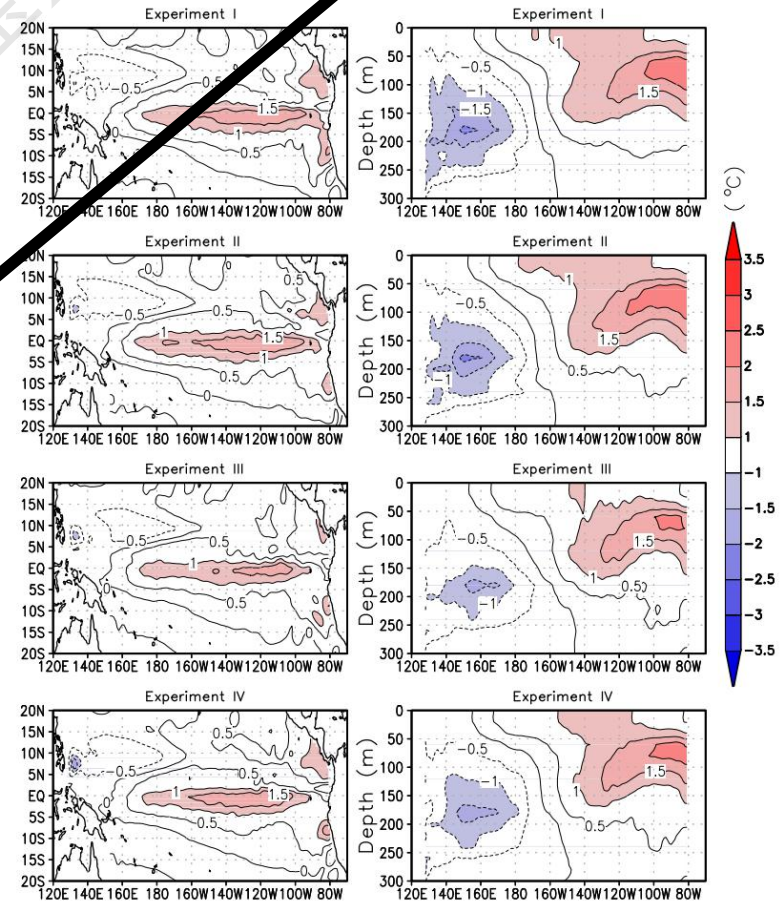


FIG. 17. (left) Time-mean SST difference and (right) the equatorial (5°S–5°N) upper-ocean temperature difference of experiments II, III, and IV from experiment I.



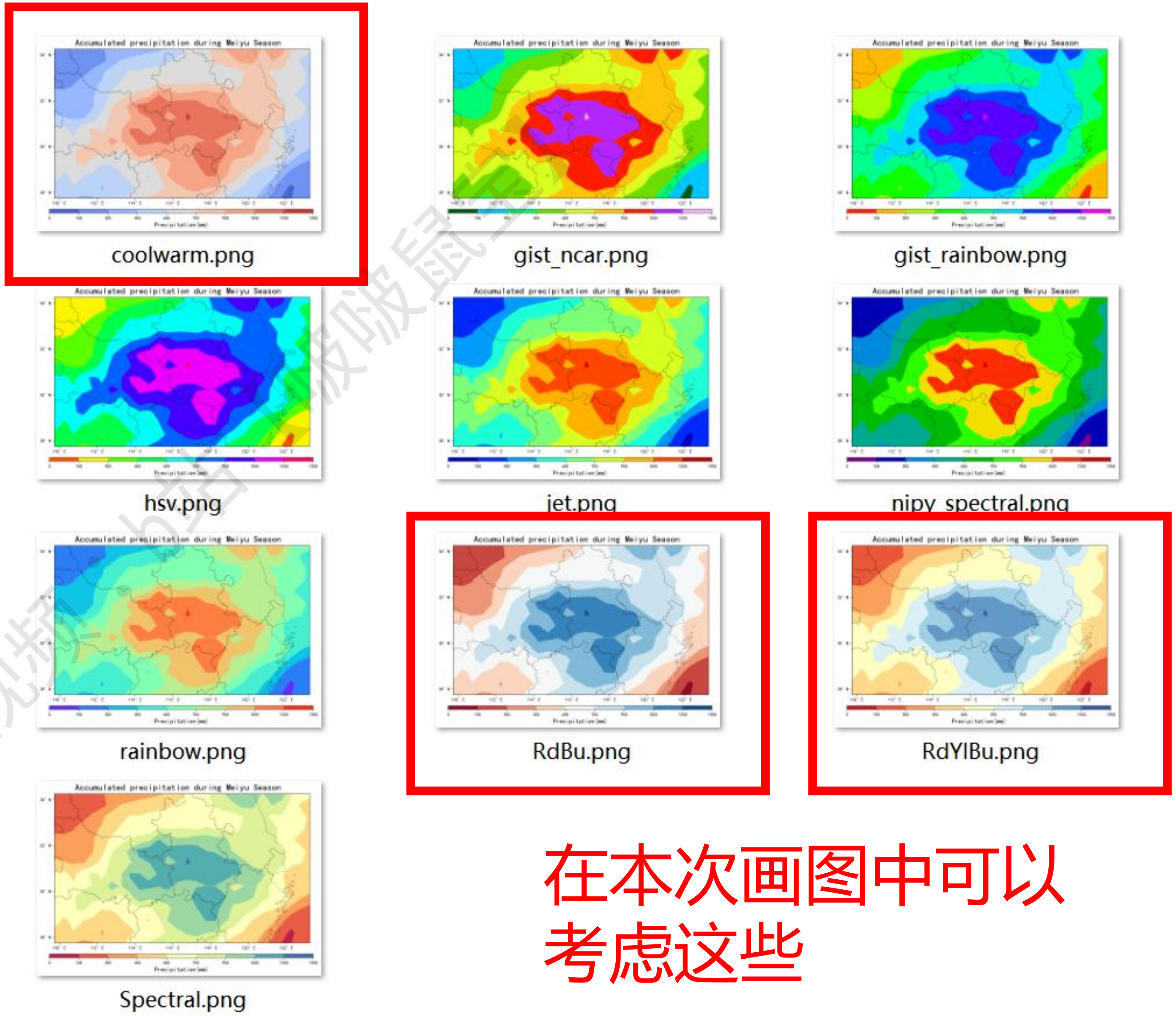






气象科研绘图
Python-matplotlib
部分colormap/cmap

- 不同的颜色区分度，适用于不同的场景
- 也可以自定义cmap或者使用其他cmap



在本次画图中可以考虑这些

2.颜色条(colorbar)

! 不要和colormap弄混

可以加单位

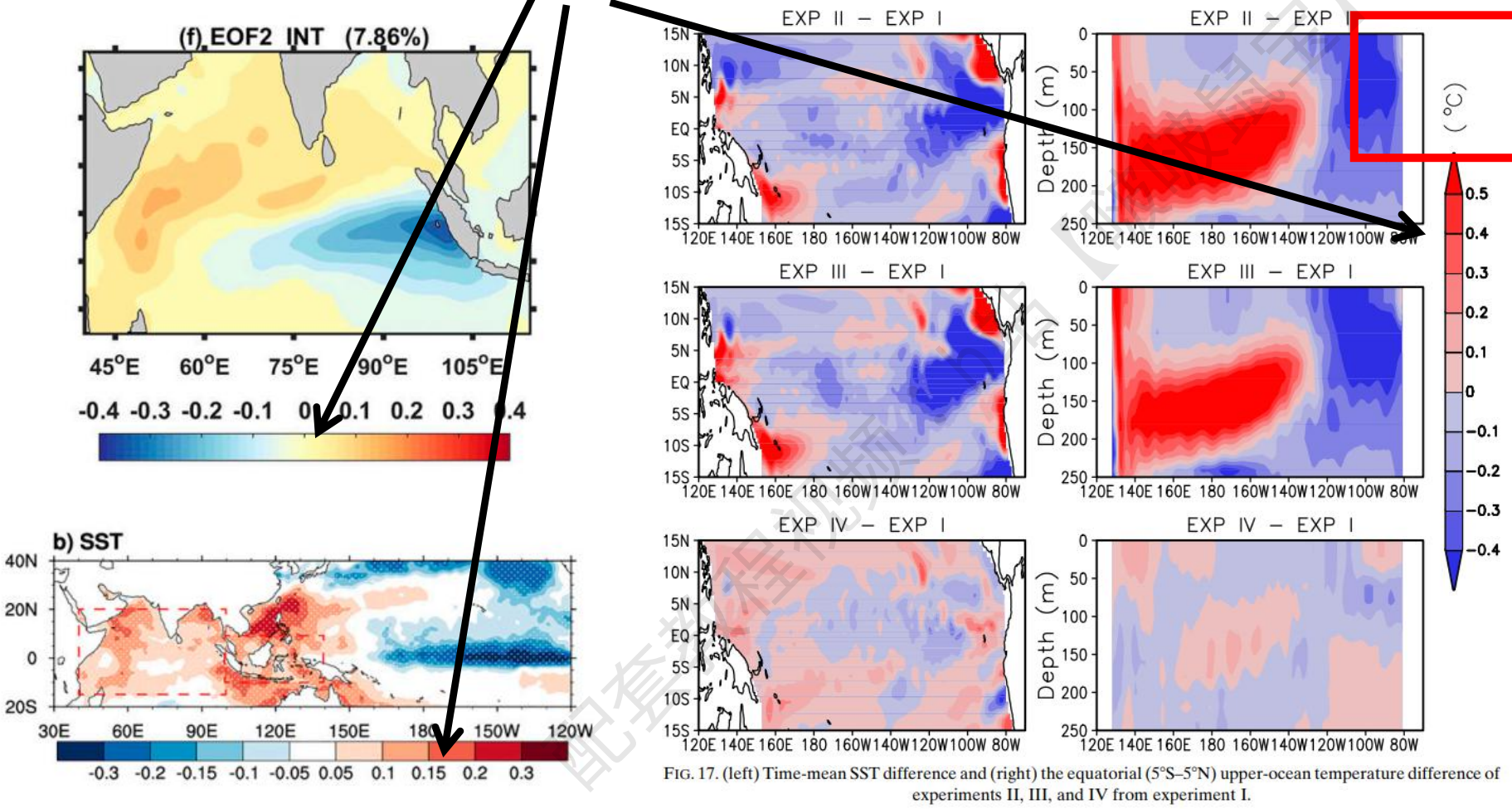


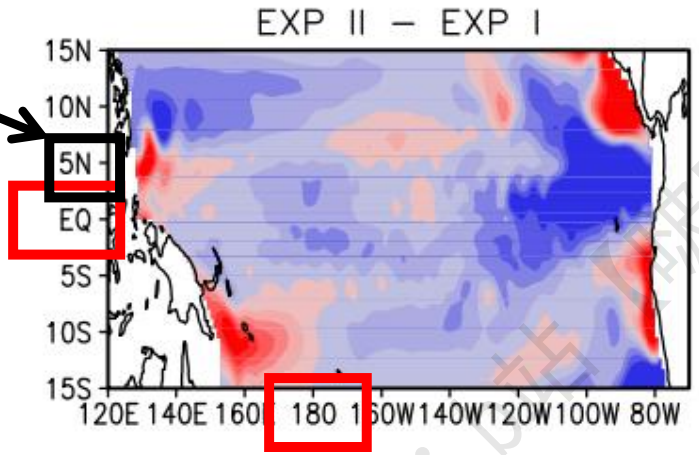
FIG. 17. (left) Time-mean SST difference and (right) the equatorial (5°S–5°N) upper-ocean temperature difference of experiments II, III, and IV from experiment I.

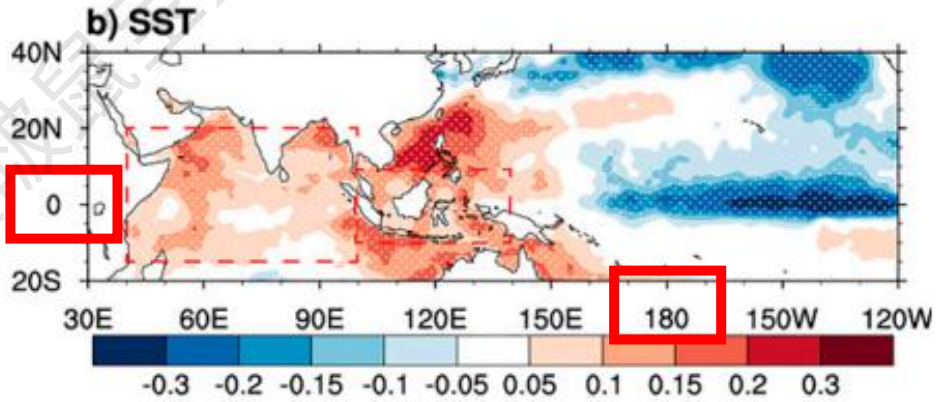
渐变、尖角、
位置、方向等
按照需要设置

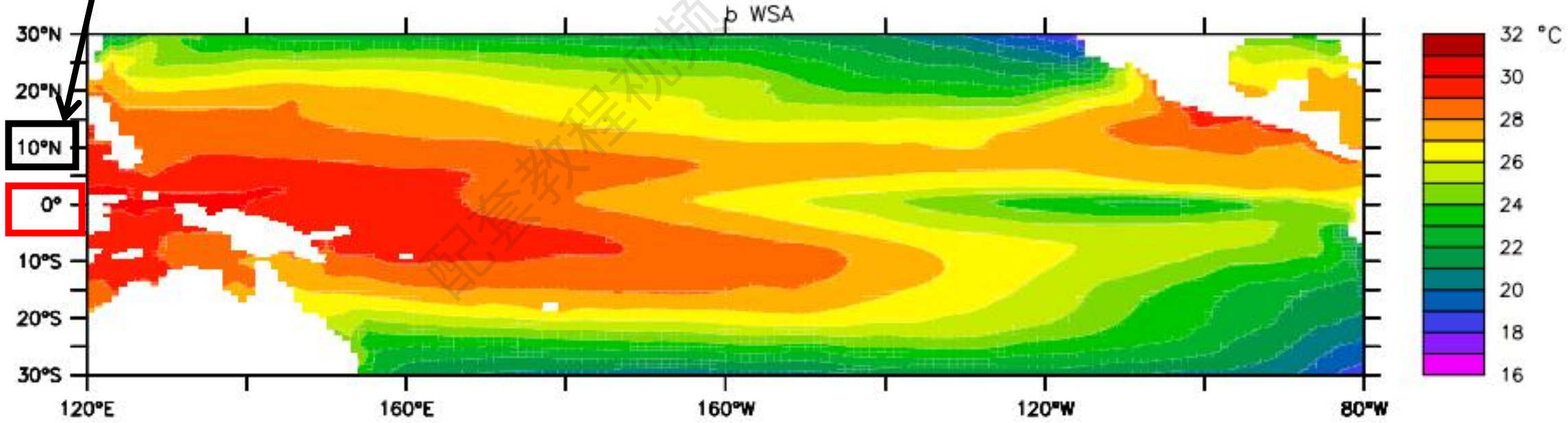
3.经纬度(刻度设置)

注意0和180是没有N/S或W/E的

- 可以带°，也可不带，但是要有N/S和W/E
- 副刻度、网格等按照需要设置







4.多个子图排列

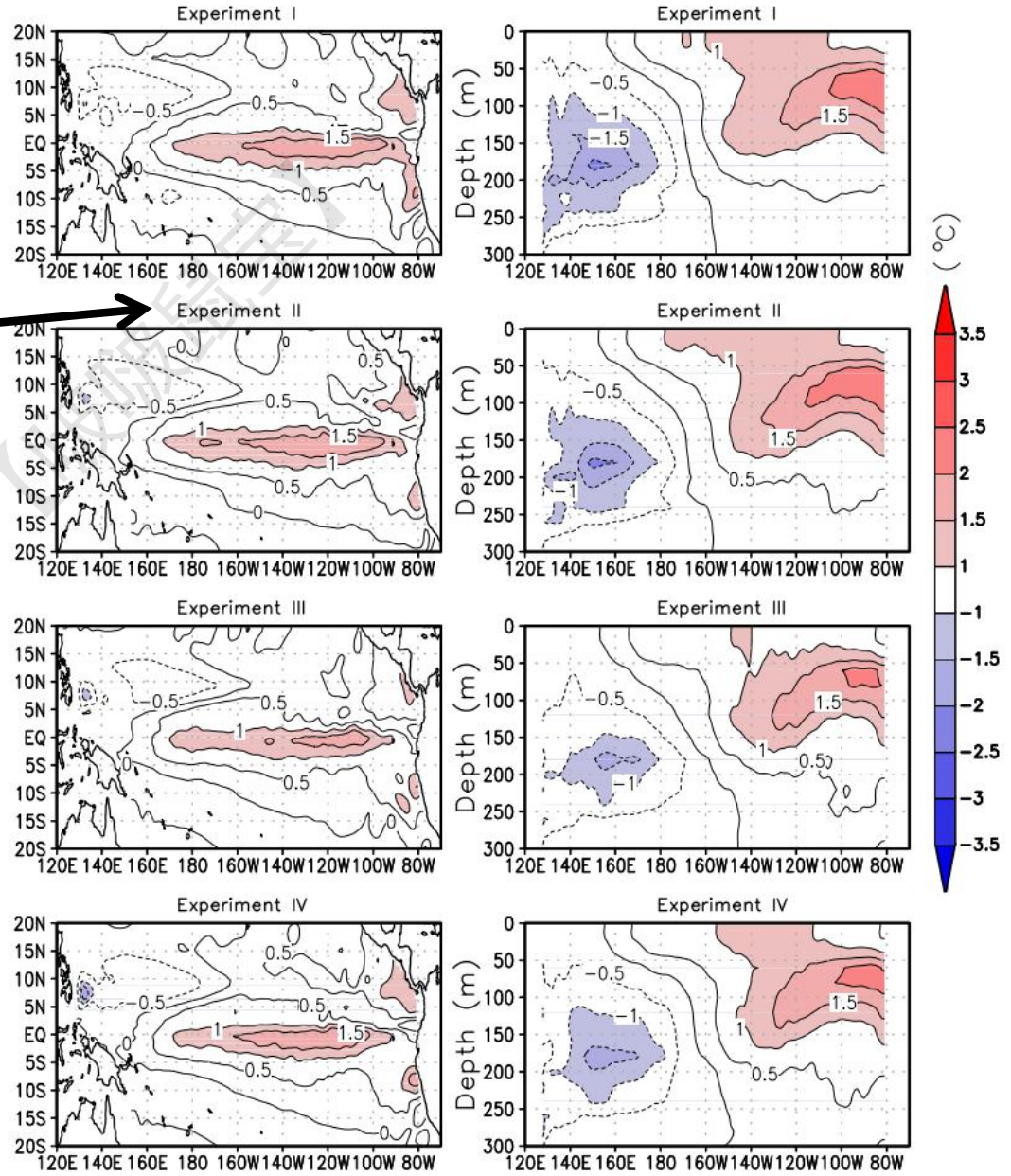
目标：信息“一目了然”

- 子图标题
- 子图之间的差异要显著

colormap选择、等高线设置、等高线图(contour)和等高线填色图(contourf)结合

- 子图间距和排版

…



等高线图(contour) ＋ 等高线填色图(contourf) ＝ contour+contourf

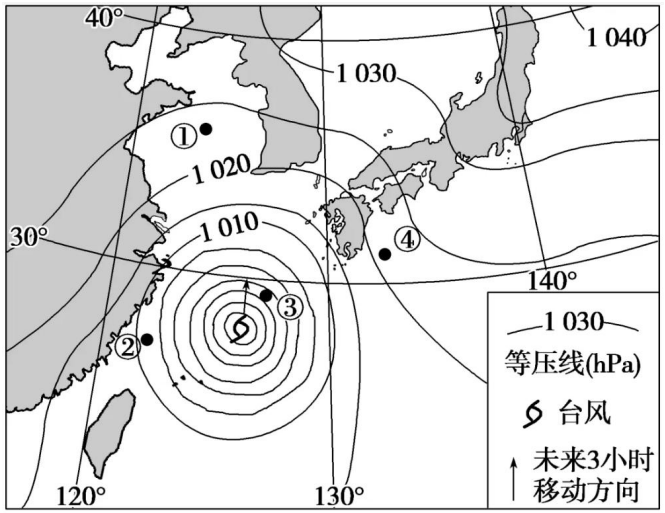
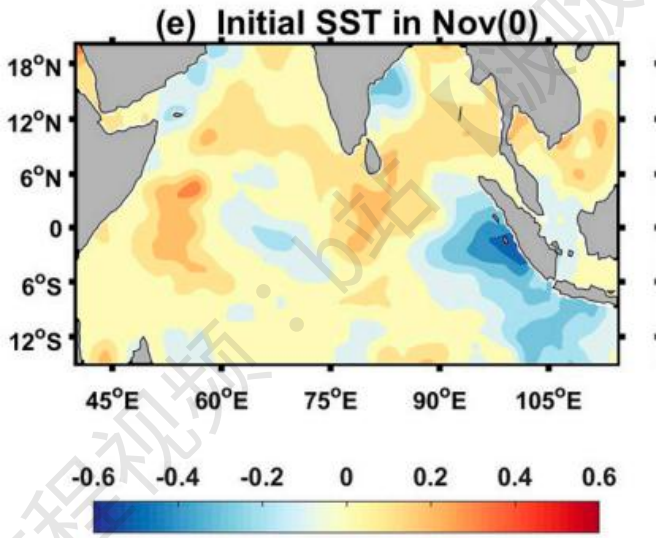
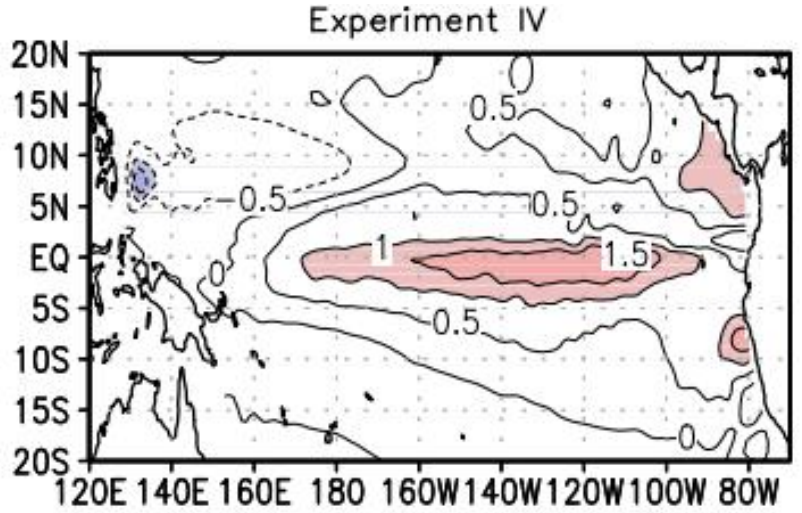


图2 某日08时亚洲局部海平面气压分布图



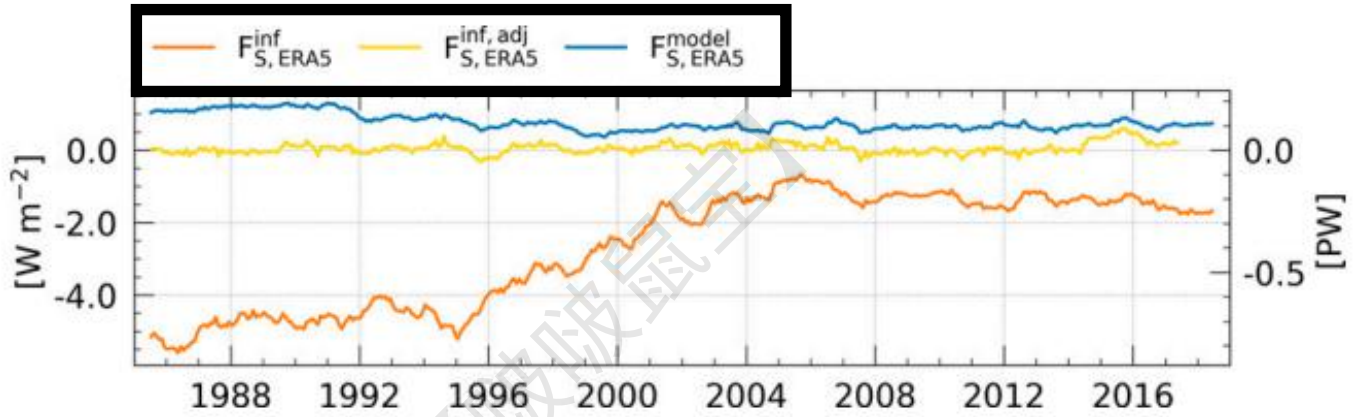


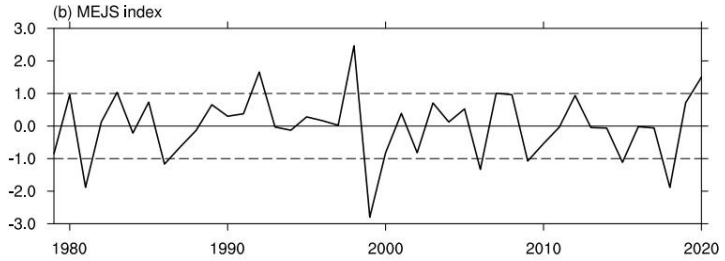
折线图（plot）

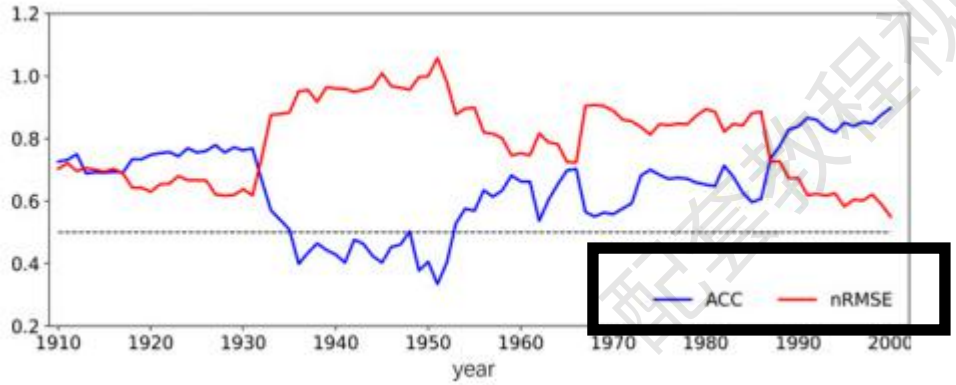
1.配色（color）

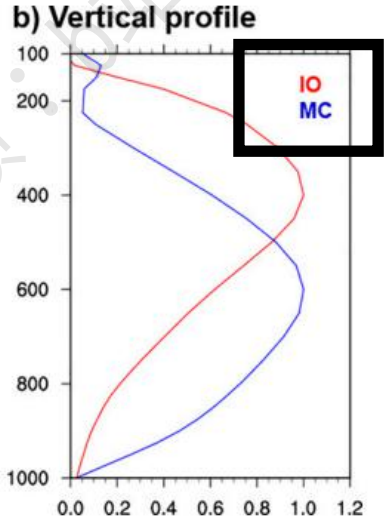
- 颜色对比度强
- 图例

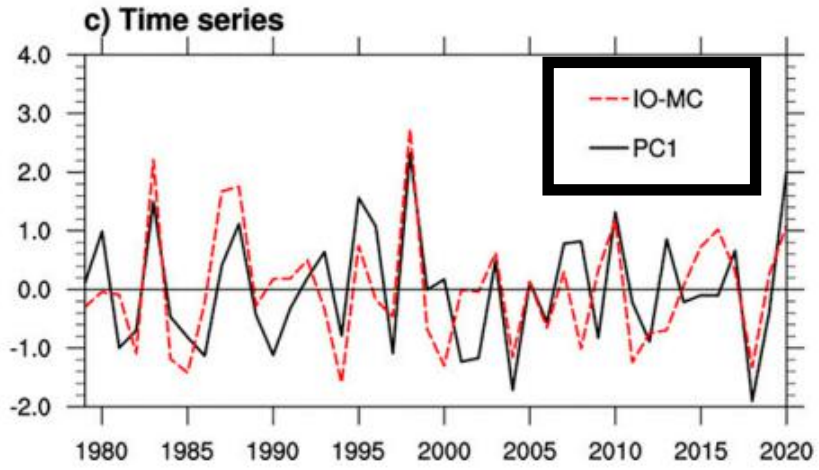
…









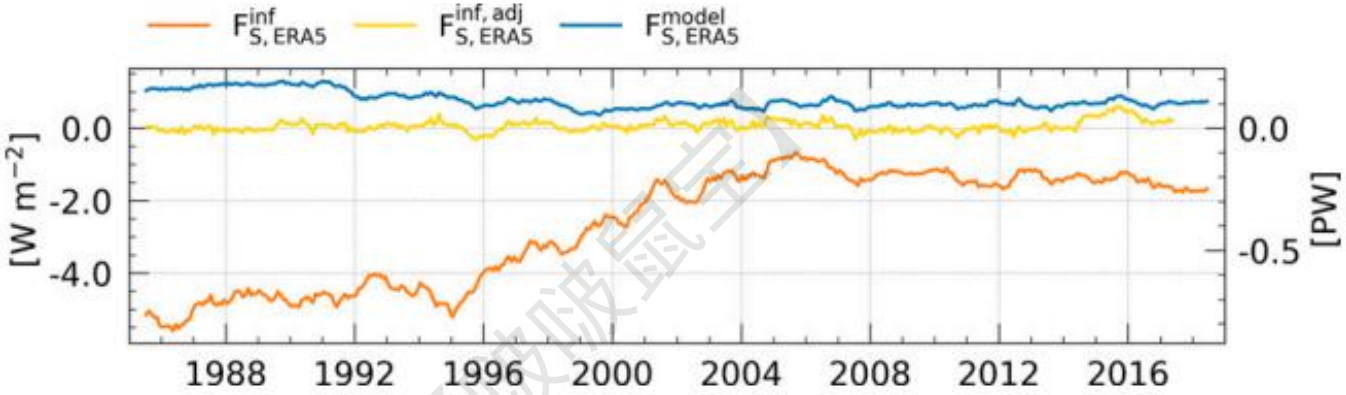


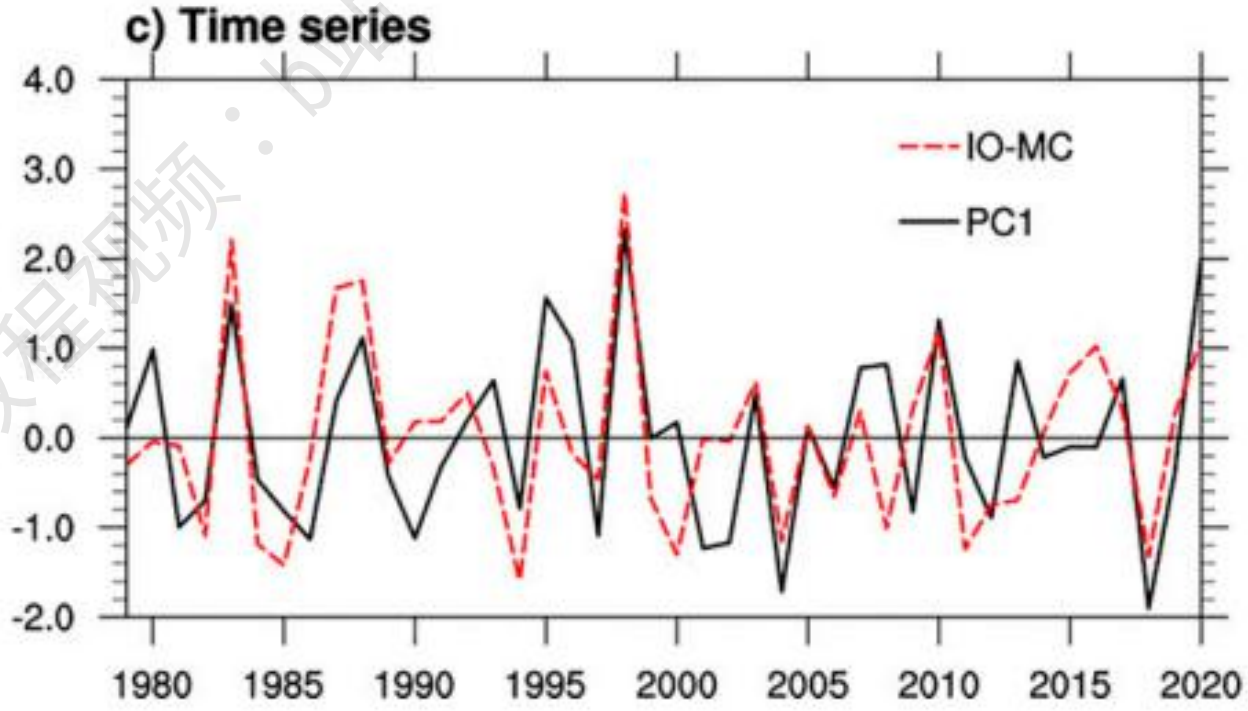
2.标注规范

- 时间系数x轴为年份
- x，y轴标签（label）
- 注意label单位上下标

Tips：让图片信息看起来更直观

副刻度、网格、平均线、趋势线等...





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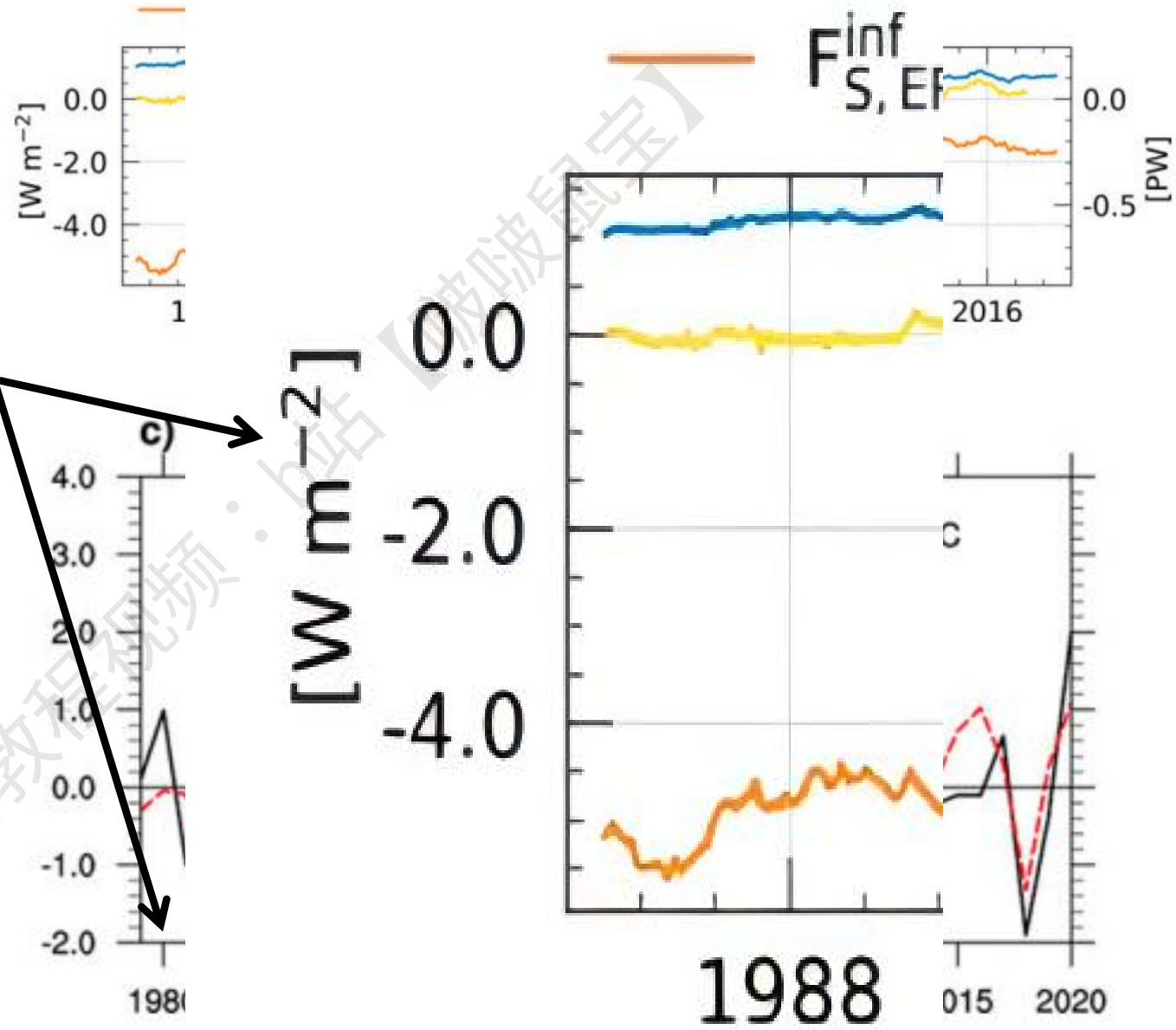
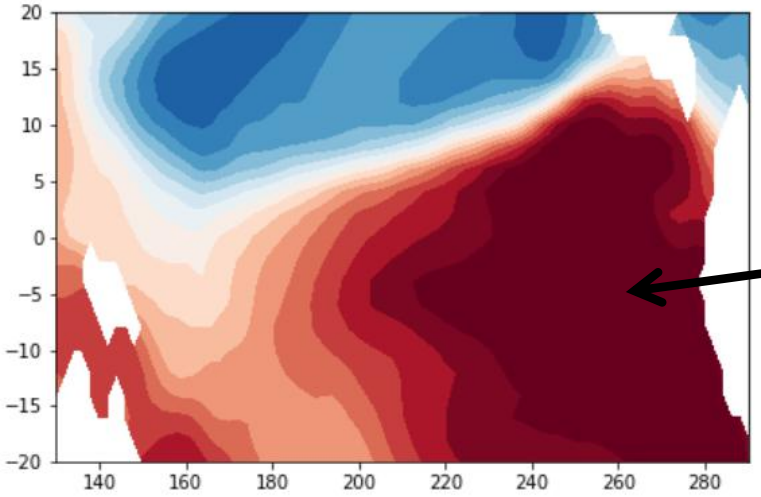
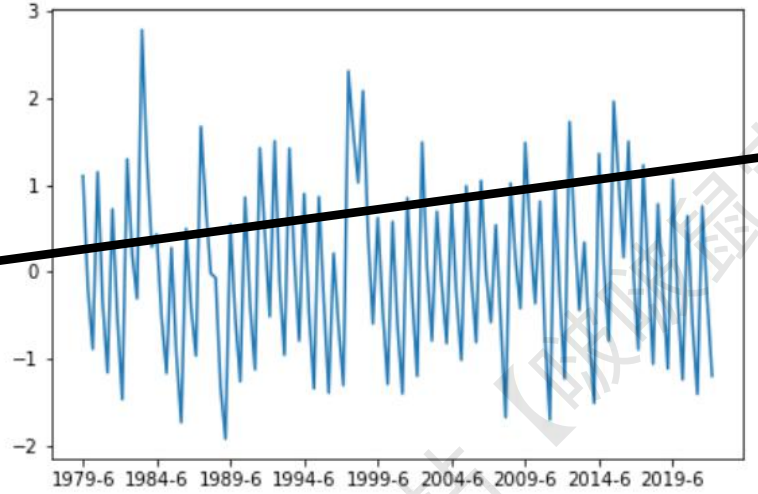
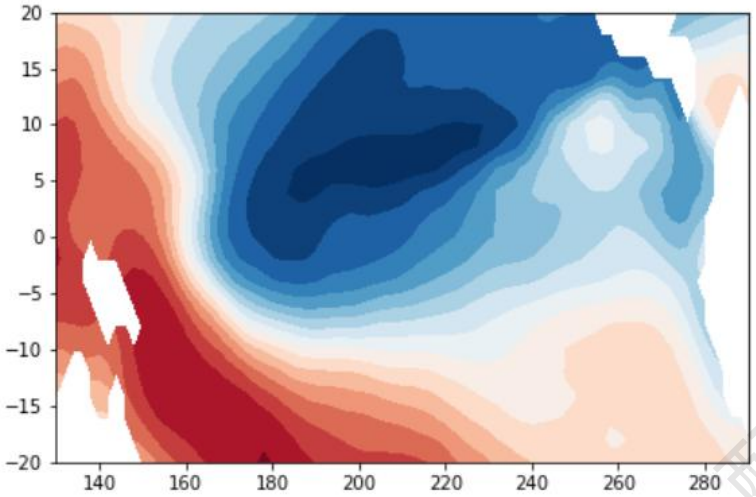
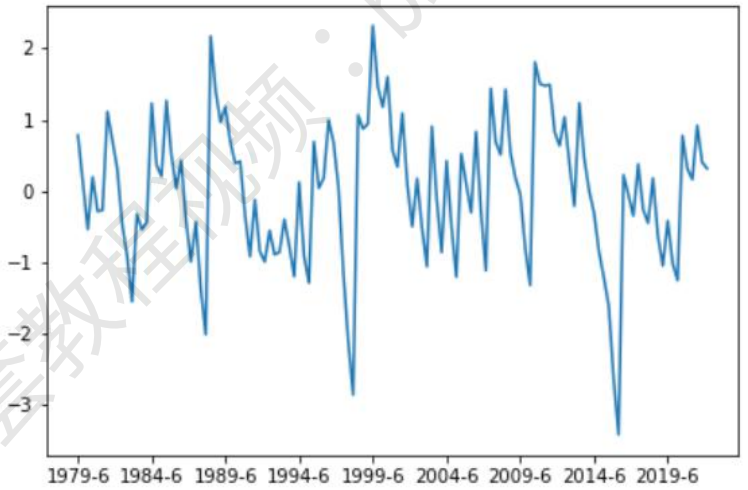


热带太平洋区域海温(SST) EOF分析 存在的问题









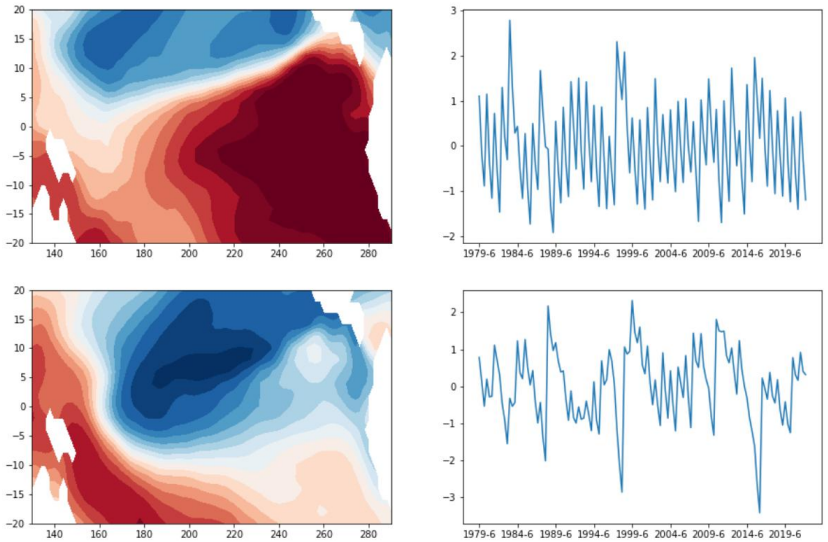
左：
1.颜色过深
2.没有颜色条（colorbar）
3.经纬度不规范
4.地图变形

右：
1.时间系数x轴
2.具体时间x对应的时间
系数y不够直观

- 刻度字体太小

成品展示

Before



After