﻿"""

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"""

import xarray as xr

import numpy as np

import matplotlib.pyplot as plt

data = xr.open\_dataset('/Users/roryeggleston/Downloads/CESM.003.SST.1980.nc')

lat = np.array(data.lat)

lon = np.array(data.lon)

data = np.array(data.SST)

data

Out[1]:

array([[[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

...,

[-1.801011 , -1.8009781, -1.8009448, ..., -1.8011017,

-1.8010732, -1.8010437],

[-1.8005607, -1.8005456, -1.8005308, ..., -1.8006089,

-1.8005923, -1.8005762],

[-1.8000543, -1.8000516, -1.800049 , ..., -1.800063 ,

-1.80006 , -1.8000572]],

[[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

...,

[-1.8003076, -1.8002812, -1.8002526, ..., -1.800377 ,

-1.8003554, -1.8003322],

[-1.8003292, -1.8003246, -1.8003204, ..., -1.8003466,

-1.8003403, -1.8003345],

[-1.8001331, -1.8001313, -1.8001295, ..., -1.8001386,

-1.8001367, -1.8001349]],

[[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

...,

[-1.7999357, -1.7998886, -1.7998408, ..., -1.8000666,

-1.8000252, -1.7999823],

[-1.7992343, -1.799203 , -1.7991716, ..., -1.7993257,

-1.7992955, -1.7992651],

[-1.7991197, -1.799109 , -1.7990983, ..., -1.799152 ,

-1.7991413, -1.7991306]],

...,

[[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

...,

[-1.7971301, -1.7972082, -1.7972833, ..., -1.7968988,

-1.7969744, -1.797049 ],

[-1.7991402, -1.7991787, -1.7992169, ..., -1.7990228,

-1.7990623, -1.7991014],

[-1.8009756, -1.8009845, -1.8009934, ..., -1.800949 ,

-1.8009579, -1.8009667]],

[[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

...,

[-1.8003566, -1.8002627, -1.8001657, ..., -1.8006 ,

-1.8005269, -1.8004475],

[-1.7980388, -1.7980016, -1.7979645, ..., -1.7981507,

-1.7981133, -1.798076 ],

[-1.797019 , -1.7970107, -1.7970022, ..., -1.7970442,

-1.7970358, -1.7970275]],

[[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

[ nan, nan, nan, ..., nan,

nan, nan],

...,

[-1.8001564, -1.8001677, -1.800182 , ..., -1.8001393,

-1.8001423, -1.8001478],

[-1.8004109, -1.8004327, -1.8004551, ..., -1.8003485,

-1.8003688, -1.8003895],

[-1.8015555, -1.8015622, -1.801569 , ..., -1.8015368,

-1.8015429, -1.8015491]]], dtype=float32)

﻿data.shape

Out[2]: (12, 180, 360)

SST = plt.figure(figsize=(8,6))

plt.subplots()

Out[3]:

(<Figure size 432x288 with 1 Axes>,

<matplotlib.axes.\_subplots.AxesSubplot at 0x319c20908>)<Figure size 576x432 with 0 Axes>



﻿fig, ax = plt.subplots(figsize=(8,6), ncols=4, nrows=3, sharex=True, sharey=True)

ax[0,0].pcolormesh(lon, lat, data[0,:,:])

ax[0,0].set\_title('January', fontsize=12)

ax[0,1].pcolormesh(lon, lat, data[1,:,:])

ax[0,1].set\_title('February', fontsize=12)

ax[0,2].pcolormesh(lon, lat, data[2,:,:])

ax[0,2].set\_title('March', fontsize=12)

ax[0,3].pcolormesh(lon, lat, data[3,:,:])

ax[0,3].set\_title('April', fontsize=12)

ax[1,0].pcolormesh(lon, lat, data[4,:,:])

ax[1,0].set\_title('May', fontsize=12)

ax[1,1].pcolormesh(lon, lat, data[5,:,:])

ax[1,1].set\_title('June', fontsize=12)

ax[1,2].pcolormesh(lon, lat, data[6,:,:])

ax[1,2].set\_title('July', fontsize=12)

ax[1,3].pcolormesh(lon, lat, data[7,:,:])

ax[1,3].set\_title('August', fontsize=12)

ax[2,0].pcolormesh(lon, lat, data[8,:,:])

ax[2,0].set\_title('September', fontsize=12)

ax[2,1].pcolormesh(lon, lat, data[9,:,:])

ax[2,1].set\_title('October', fontsize=12)

ax[2,2].pcolormesh(lon, lat, data[10,:,:])

ax[2,2].set\_title('November', fontsize=12)

ax[2,3].pcolormesh(lon, lat, data[11,:,:])

ax[2,3].set\_title('December', fontsize=12)

im = ax[0,0].pcolormesh(lon, lat, data[0,:,:])

fig.colorbar(im, ax = ax, extend="both")

Out[4]: <matplotlib.colorbar.Colorbar at 0x31a930198>



﻿fig, ax = plt.subplots(figsize=(10,6), ncols=4, nrows=3, sharex=True, sharey=True)

cmax = 27

cmin = 0

n = 0

months = ('January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September', 'October', 'November', 'December')

for i in range(0,3):

for j in range(0,4):

ax[i,j].pcolormesh(lon,lat,data[n,:,:], vmin = 0, vmax = 27)

ax[i,j].set\_title(months[n])

n +=1 #this is the counter which keeps the order correct and makes it start at0 and go to 11

im = ax[0,0].pcolormesh(lon, lat, data[0,:,:])

fig.colorbar(im, ax = ax, extend="both")

Out[5]: <matplotlib.colorbar.Colorbar at 0x31d7950b8>

