Excercise 02

1. Southern Ocean

Remake the map we just made but instead focus on the Southern Ocean.

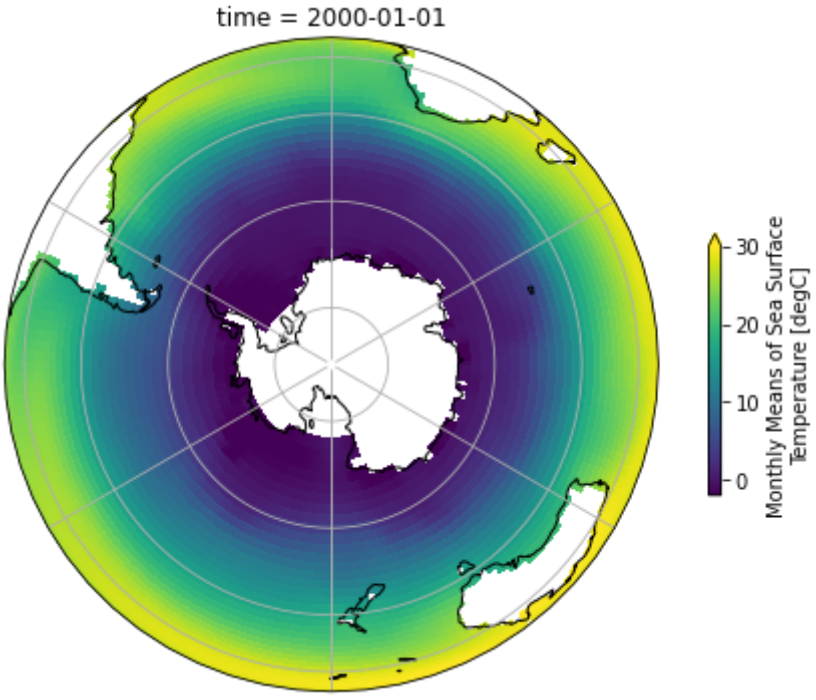
Change the map projection to `ccrs.Orthographic(__,__)` and make plot so that the South Pole is in the center of the map.

In [8]:
```
import xarray as xr
import cartopy.crs as ccrs
import matplotlib.pyplot as plt

%matplotlib inline
```

In [9]:
```
url = 'http://www.esrl.noaa.gov/psd/thredds/dodsC/Datasets/noaa.ersst.v5/sst.mnm
ds = xr.open_dataset(url, drop_variables=['time_bnds'])

sst = ds.sst.sel(time='2000-01-01', method='nearest')
```

In [10]:
```
fig = plt.figure(figsize=(9,6))
ax = plt.axes(projection=ccrs.Orthographic(0,-90))
ax.coastlines()
ax.gridlines()
sst.plot(ax=ax, transform=ccrs.PlateCarree(),
         vmin=-2, vmax=30, cbar_kwargs={'shrink': 0.4})
```

Out[10]:
```
<matplotlib.collections.QuadMesh at 0x7fa4c9e4f6d0>
```



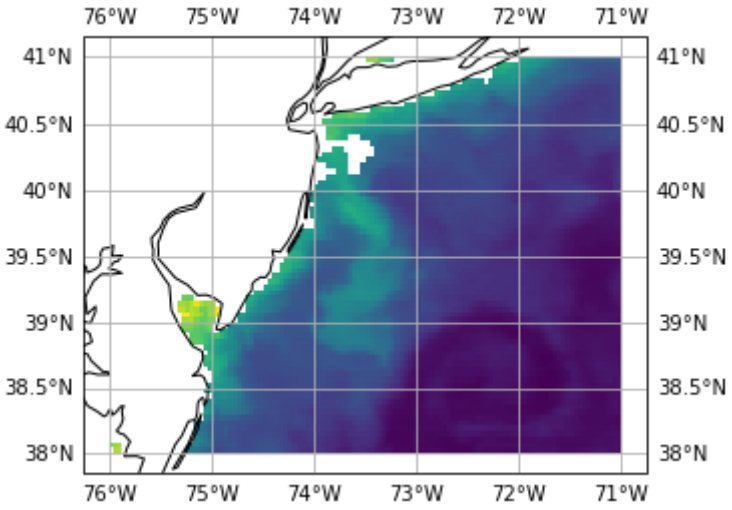
2. Chlorophyll off MAB

Remake the map of chlorophyll that we looked at before using Mercator projection. Make sure to plot the log of chlorophyll as `np.log10(___)` and this means we need to load numpy, too.

In [25]:
```
import numpy as np

url = 'https://oceandata.sci.gsfc.nasa.gov:443/opendap/MODISA/L3SMI/2019/210/A20
data = xr.open_dataset(url)

data_mab_nj = data.sel( lat=slice(41, 38), lon=slice(-76,-71))
```

In [26]:
```
fig = plt.figure()
ax = plt.axes(projection=ccrs.Mercator())
ax.gridlines(draw_labels=True)
ax.coastlines(resolution='50m')

plt.pcolormesh(data_mab_nj.lon, data_mab_nj.lat, np.log10(data_mab_nj.chlor_a),
```

Out[26]:
```
<matplotlib.collections.QuadMesh at 0x7fa4c9db7c40>
```



In [ ]: