Note: Present the results as in homework 1.

1. Plot a color contour map of the January climatology of sea surface temperature (SST) which is provided in the netcdf file data.nc, including a colorbar.
   1. Load the data and make the plot using the following instructions:
      1. Inspect the netcdf file with the command ncdisp(‘data.nc’) and you will see that the 12-month climatology of SST is stored in a 3-d array sst(360,180,12) where 360 is the number of longitude points, 180 is the number of latitude points, and 12 is the number of calendar months (Jan=1, Feb=2, …, Dec=12).
      2. Load the data and the position vectors using the matlab built in function ncread as follows:

lon=ncread('data.nc','X');

lat=ncread('data.nc','Y');

time=ncread('data.nc','T');

sst=ncread('data.nc','sst');

* + 1. Select and move the January SST climatology from the 3D array sst into a new 2D array jansst as follows

jansst=sst(:,:,1);

* + 1. Since the missing-data flag indicating data over land is a very large negative number, identify the flag value using the matlab min function and fill the flagged data with NaNs using the function nanfill as follows:

miss=min(min(jansst)); jansstnan=nanfill(jansst,miss);

* + 1. Make the plot using the matlab function h=pcolor(lon, lat, jansstnan’), where h is a “handle” that allows modifying various features of the plot after the plot is done and the prime in jansstnan transposes the array as required by the pcolor subroutine.
    2. Eliminate the black grid using the handle h using the command: set(h,'EdgeColor','none');
    3. and add a colorbar using the matlab command: colorbar;
  1. Superimpose a coastline using the functions coastmap(V,dxdy) with V=[min(lon) max(lon) min(lat) max (lat)]; and map ticmarks every dxdy=40 degrees. Use”hold on” before calling coastmap.

1. Plot a color countour map as in problem 1 but for the July climatology of SST.
2. Compute the global mean (average over the entire world ocean) of SST for the January climatology using the matlab function mean (omit the flagged data over land). Note that the result would be a number.