MET 3601 Syntax Problem #9

Please do your work in the syntax-problems folder on the JupyterHub and DON'T forget to also upload both the figure and the .ipynb file to Canvas!

https://fit25f.ees220002.projects.jetstream-cloud.org/

Objectives

1. Practice writing and running Python code with maps
2. Use File I/O for input into program

Due by 11:00 am on 10/20/2025

Problem

1. Write a Python program that reads in NCEP-NCAR Reanalysis 1991-2020 long-term mean (LTM) of the Visible Beam Downward Solar Flux (variable name **vbdsf**) from a remote THREDDS server using xarray. Plot (contours, shading, and colorbar) the LTM flux for the month of March (time index 2) with contours every 10 W/m^2. DO NOT download the data! Use the xarray open_dataset function to access the URL directly from the server, i.e.

http://psl.noaa.gov/thredds/dodsC/Datasets/ncep.reanalysis/Monthlies/surface_gauss/vbdsf.sfc.mon.ltm.1991-2020.nc

Notes:

If you are interested in seeing the multitude of files in the THREDDS folder that I pulled the link above from, feel free to check it out, it is…

https://psl.noaa.gov/thredds/catalog/Datasets/ncep.reanalysis.derived/surface_gauss/catalog.html

Call the image sunshine.png

• Make sure documentation (e.g., comment block and comments throughout code) is present in your source code.
• Your figure should be global, have a title, and the coastlines on it.
• It is okay to have the 'gap' in the global plot.
• Make the output informative so that anyone running your program understand what is being produced without seeing the assignment.

• Rename the program (notebook)

syntax9_lastname.ipynb

where ‘lastname’ is your lastname 😊