Numerical Weather Prediction - Sheet 1, 26.04.19

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Download the example python program `plotField.py` and the data file `eraint_2019010100.nc` from the lecture's website. Open the program with a text editor e.g. `gedit`. The program so far reads in one meteorological field from the datafile as an example. Your task is to extend this program to produce plots of the fields that the datafile contains and to basically work with the data.

1. How many and what fields does the file contain?
2. What is the resolution?
3. Produce plots of all the fields of the file using the command `contourf` and save them to disk.
4. Calculate the zonal mean wind and the enstrophy.
5. Write a function to rearrange the data in the following way: longitudinal axis first, only the northern hemisphere, latitudes in ascending order.
6. Again produce plots from this rearranged data.
7. Compare your results and your code to other members of your class.

Additional exercises:

1. Produce plots involving continents by using e.g. `basemap`.
2. Add colorbars to the plots, set the contour levels by hand.
3. Try different colormaps.