SoccerHycomHF summaries

Common inputs explained

dataset: This is name of the .nc data after reading it in using Dataset() function in python

filename: This is the FULL path of the .nc file

**lon,lat=Lats\_lons(**dataset**):**

Description: Function that outputs longitudes and latitudes of an nc file

Input:

* dataset: This is name of the .nc data after reading it in using Dataset() function in python

Output:

* lon: array of longitudes
* lat: array of latitudes

Comment: This should work with any of the .nc files in SOCCER folder. If it doesn’t then another exception needs to be added.

**timeH,dt=get\_Time(**dataset**)**:

Description: function for getting the time and starting date of an nc file

Input:

* dataset: This is name of the .nc data after reading it in using Dataset() function in python

Output:

* timeH: array of numbers which can represent hours, days, or minutes
* dt: Starting date in datetime format

**Important!!!!**: You need to read the the dump of the .nc file to see if its minutes, hours or days. Ordinal time in python is hard to work with, so this should be used with datetime module. Below is code for the Track files and HF data

TRACK

if dt==datetime.datetime(1979,1,1,0,0):

dt2=datetime.datetime.min

offsetD=datetime.timedelta(days=1)

dateDF=dt2+datetime.timedelta(days=timeHF[0,i])

dateDF=dateDF-offsetD

cro=dateDF-relativedelta(years=1)

elif dt==datetime.datetime(1900,1,1,0,0):

cro=dt+datetime.timedelta(days=timeHF[i])

elif dt==datetime.datetime(1980,1,1,0,0):

cro=dt+datetime.timedelta(minutes=timeHF[i])

HIGH FREQUENCY

cro=dt+datetime.timedelta(hours=timeHF[i])

**uHy,vHy=Hyvelocities(**dataset**)**:

Description: reads in Hycom Waters

Input:

* dataset: This is name of the .nc data after reading it in using Dataset() function in python.

Output:

* uHy: Hycom waters u array
* vHy: Hycom waters v array

Comment: Only works with HYCOM maps!

X=I**nterpwaters(**lonHF, latHF,lonHy,latHy, xHy**)**:

Description: Gives you the interpolated waters u or v values with respect to given measured lon and lats

Input:

* lonHF: Longitude of measured data
* latHF: Latitude of measured data
* lonHy: Longitude of Hycom
* latHy: Latitude of Hycom
* xHy: waters u array or waters v array (Hycom velocities)

Output:

* X= Outputs an array equal to the number of longitude and latitude pairs in input. The values in the array are interpolated u or v values depending on input.

Comment: Can put in large arrays or single point ones.

**file,Hycom=HycomName(**date,hour**)**:

Description: Opens Hycom file and reads in the dataset

Input:

* date: date of wanted Hycom file. Needs to be formatted: 'YYYYmmd'
* hour: The hour wanted. Has to be a multiple of 3 or be 0

Output:

* file: returns the name of the file opened
* Hycom: This is the dataset of the file. (an Ordered Dict of all variables,description, etc)

**NCwritetoHF**:

Description: Solely adding the given waters array into HF file

Input:

* filename: This is the FULL path of the .nc file
* U: Waters u
* V: Waters v

Output:

* Data added to HF file

Comment: There is no calculation here, only adding data Hycom to HF.

**U=TimeInterp(**preU,posU,pretime,postime,intHour**)**:

Description: Interpolates between time for given arrays and time

Input:

* preU: an array or point with interpolated waters U/V value before the target time
* posU: an array or point with interpolated waters U/V value after the target time
* pretime: Hour of the preU data
* postime: Hour of the posU data
* intHour: target Hour

Output:

* U= Outputs an time interpolated array.

**Total=TrackStd(**fileName**)**:

Description: adds standard deviation 7 days back for each lon&lat pair (NOAA,SHIPBOARD,DRIFTER)

Intput:

* filename: This is the FULL path of the .nc file.

**Total=HFStd(**fileName**)**:

Description: standard deviation 7 days back for each lon&lat pair (HIGH FREQUENCY)

Intput:

* filename: This is the FULL path of the .nc file.

**Total=AddHycomtoHF** (fileName):

Description: Adds waters from HYCOM to HF files

Intput:

* filename: This is the FULL path of the .nc file. Only HF files

**total=HF7dayInterp**(fileName):

Description: Adds waters from HYCOM to HF files

Intput:

* filename: This is the FULL path of the .nc file.

**Total=Track7dayInterp**(fileName):

Description: adds 7 Days back interpolation to NOAA,SHIPBOARD,DRIFTER

Intput:

* filename: This is the FULL path of the .nc file.

uHy,vHy,lonHy,latHy=**HycomGetVar**(date,hour):

Input:

* date: date of wanted Hycom file. Needs to be formatted: 'YYYYmmd'
* hour: The hour wanted. Has to be a multiple of 3 or be 0

Output:

* uHy: Hycom waters u array
* vHy: Hycom waters v array
* lon: array of longitudes of Hycom
* lat: array of latitudes of Hycom

matlab to python link

<http://mathesaurus.sourceforge.net/>