

# Re-gridding variables

**Data Visualization of Marine Met data using FERRET**  
*27 – 31 August, 2018*

## Re-gridding variables

- Re-gridding is essential for algebraic operations that combine variables on incompatible grids.
- Ferret provides the commands DEFINE AXIS and DEFINE GRID to assist with the creation of arbitrary grids
- Re-gridding is used in two ways:
  - Change the resolutions of existing grids
    - Eg: If the file has 1 x1 resolution and we want to create the same file with 0.25 x 0.25 grid resolution, then we can define the grid and recreate a file.
  - With the use of transformations
    - `var[G=name@trn]` to regrid all axes using transform "trn"
- Note: The result grid of a re-gridding operation does not necessarily match exactly the destination grid requested.

## Examples of re-gridding

- Let us re-grid the sst in coads\_climatology file from 2 x 2 to 1 x 1 degree grid resolution.
- Yes? coads\_climatology
- Yes? show grid sst

```

GRID GSQ1
name  axis      # pts  start      end
COADSX LONGITUDE  180mr 21E      19E(379)
COADSY LATITUDE   90 r 89S      89N
normal Z
TIME  TIME        12mr 16-JAN 06:00  16-DEC 01:20

```

- Yes? Show grid/x sst

```

      I  X      XBOX  XBOXLO
1> 21E      2    20E
2> 23E      2    22E
3> 25E      2    24E
4> 27E      2    26E
5> 29E      2    28E

```

- This grid resolution shows 2 x 2 and with 12 time stamps

- Note that we use
  - Define axis
  - Define grid commands for achieving the re-gridding the variables in the files
- Define axis/x=xlow:xhigh:delx/npoints=##/units="xzy"  
name\_of\_axis
- Define the same way for y,z,t if applicable.
- Define  
grid/x=name\_of\_xaxis/y=name\_of\_yaxis/z=z\_name/t=t\_name name\_of\_grid
- We use the grid name to re-grid the variable and save it .
- The re-gridded variable can be saved to a file as  
save/file="filename.nc" variable[g=name\_of\_grid]

## Script for re-gridding

```
yes? define axis/x=21E:19E:1/npoints=360 xaxis  
yes? define axis/y=89S:89N:1/npoints=180 yaxis  
yes? define grid/x=xaxis/y=yaxis newgrid  
yes? save/file=newcoads.nc sst[g=newgrid]  
LISTing to file newcoads.nc
```

This will create a file with new grid resolution of 1 x 1 and save it to a file named newcoads.nc

yes? use newcoads.nc

yes? sh da

currently SET data sets:

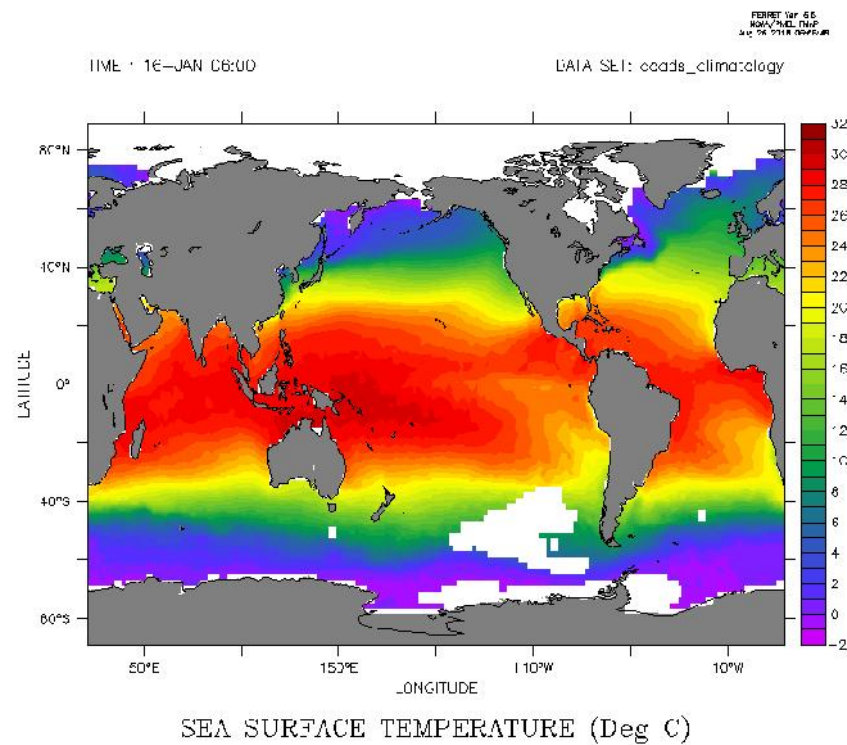
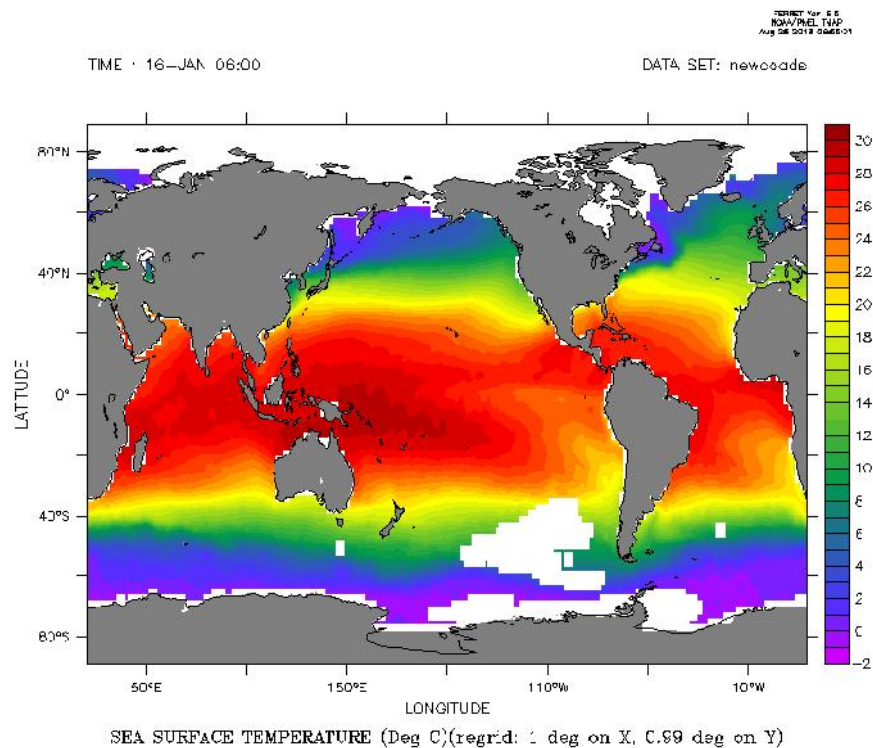
1> ./newcoads.nc (default)

name	title	I	J	K	L		
SST	SEA SURFACE TEMPERATURE				1:360	1:180	... 1:12
(regrid: 1 deg on X, 0.99 deg on Y)							

yes? sh grid sst

GRID GFB1

name	axis	# pts	start	end
XAXIS	LONGITUDE	360mr	21E	19E(379)
YAXIS	LATITUDE	180 r	89S	89N
normal	Z			
TIME	TIME	12mr	16-JAN 06:00	16-DEC 01:20



## Virtual re-gridding

When two files are loaded and are of different grid types, the grid names can be used for temporarily re-gridding with actually changing the data.

Eg:

yes? Use ocean\_atlas\_subset

yes? Use coads\_climatology

! Lets compare the difference between SST and Temp[z=0]

yes? let diff = sst - temp[d=1,k=1,g=sst[d=2]]

yes? fill diff[l=8];go fland;go land

This will create a variable “diff” such that the temp of levitus data matched to that of SST from coads file



