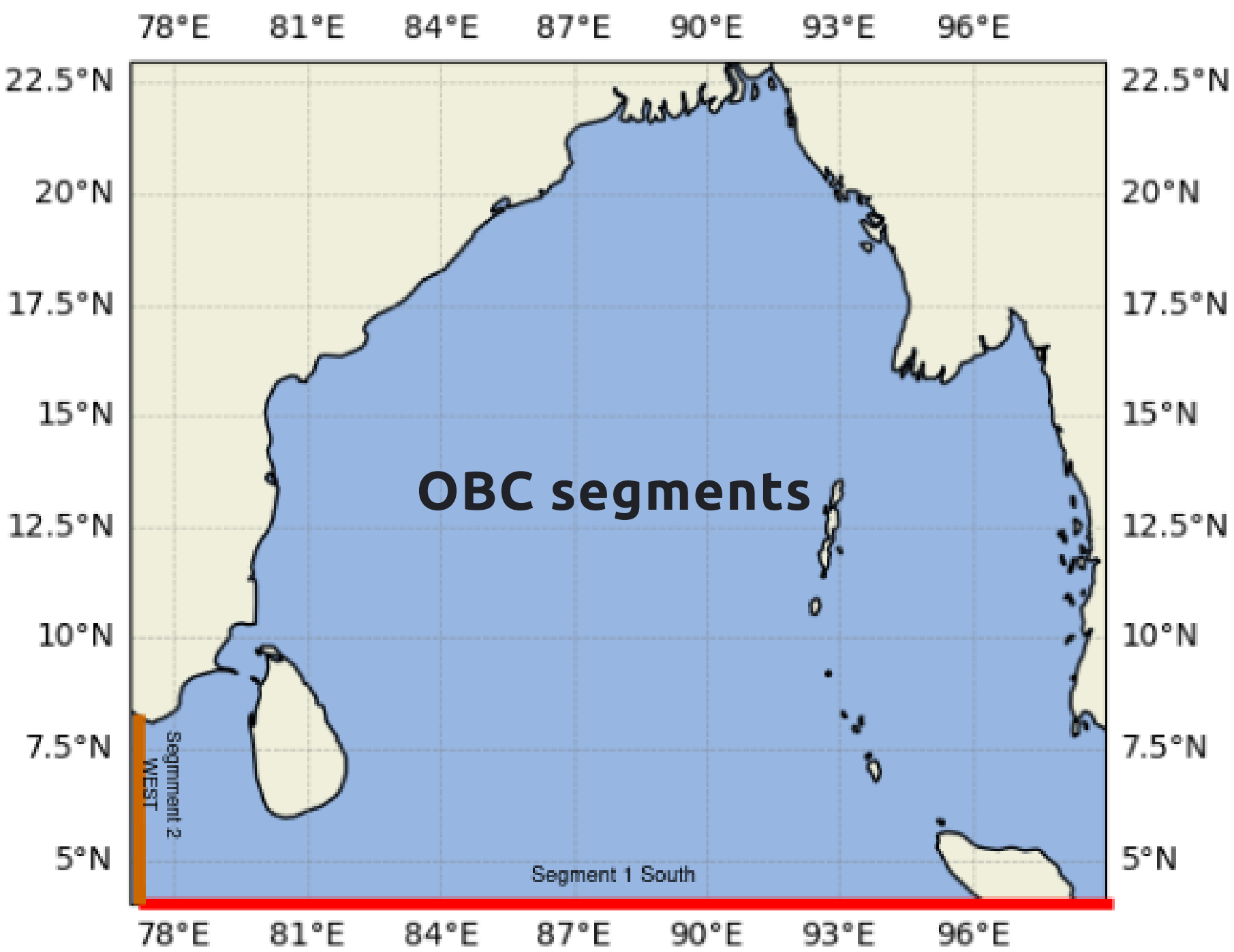
1. Creating an complete obc input datasets of
    1. SST
    2. U
    3. V
    4. Temp
    5. SSH
2. Slicing for required region and time
3. From Hgrid file making points for obc grid objects
    1. Southern edge
    2. Western edge

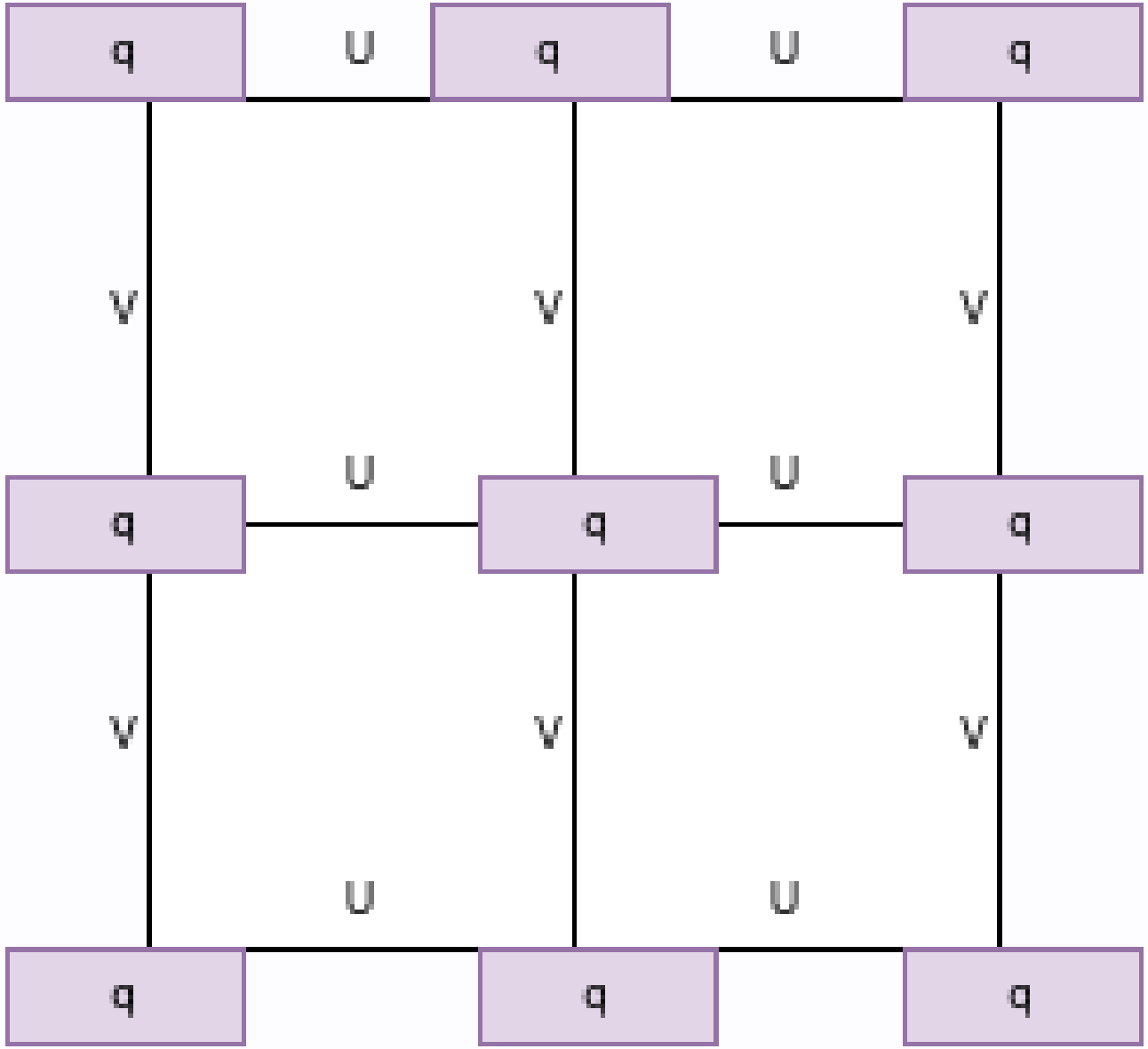
4. Regridding the input data to grid objects
5. filling over z levels
6. Creating a seperate nc datasets for south and west boundaries
7. Creating dz for each variables
8. Interpolating and regridding input vertical grid to model grid system
9. Save the netcdf file

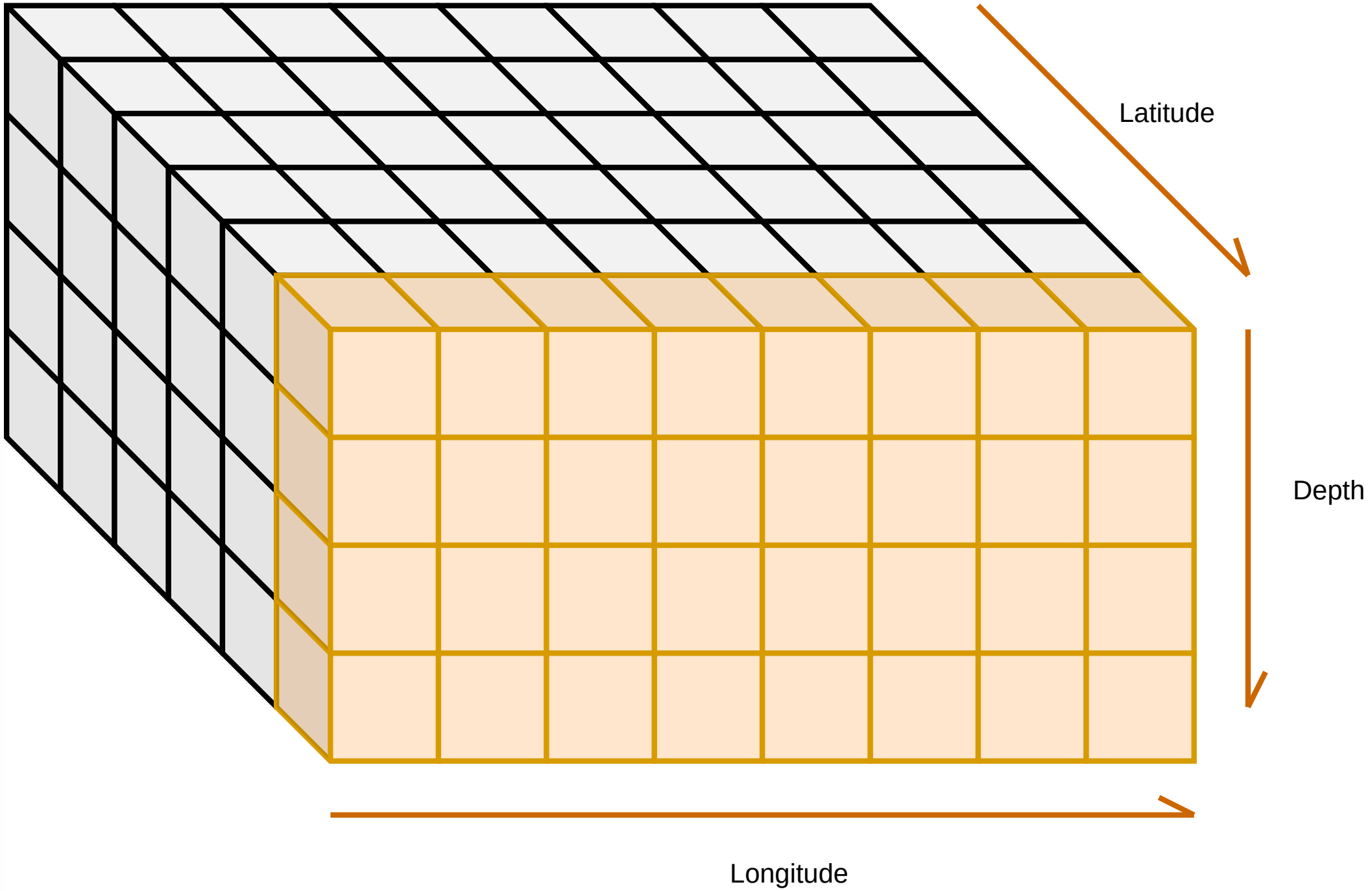
Preparing Open Boundary Conditions for MOM version 6

Open boundaries

- It is the “water-water” boundary between the ocean waters of the model domain with the surrounding water. An open boundary condition allows waves to pass out of the region without reflection


78°E
81°E
84°E
87°E
90°E
93°E
96°E
22.5°N
20°N
17.5°N
15°N
12.5°N
10°N
7.5°N
5°N
OBC segments
Segment 2 WEST
Segment 1 South


q
U
q
U
q
V
V
V
U
U
q
q
q
V
V
V
U
U
q
q
q


Latitude
Depth
Longitude

Code Overview

1. create input datasets (U,V,SSH,S,T)

```
ds = xr.merge([uu,vv,salt,ssh,temp])
```

2. boundary regional grid object

```
xgrid = grid.x[::2,::2]
ygrid = grid.y[::2,::2]

south = xr.Dataset()

south['lon'] = xgrid.isel(nyp=0)
south['lat'] = ygrid.isel(nyp=0)
```

3. Regrid functions to regrid input data to regional grid

```
v_south = regrid_south(ds_cut['v'])
u_south = regrid_south(ds_cut['u'])
temp_south = regrid_south(ds_cut['temp'])
ssh_south = regrid_south(ds_cut['eta_t'])
salt_south = regrid_south(ds_cut['salt'])
```

4. Fill values in z levels

```
drowned_v_south = v_south.ffill(dim='nxp').ffill(dim='st_ocean')
drowned_u_south =u_south.ffill(dim='nxp').ffill(dim='st_ocean')
drowned_temp_south = temp_south.ffill(dim='nxp').ffill(dim='st_ocean')
drowned_salt_south = salt_south.ffill(dim='nxp').ffill(dim='st_ocean')
drowned_ssh_south = ssh_south.ffill(dim='nxp')
```

5. creating dz data for each variable

```
cur_depth = south_obc.zl.values

reg_south_obc = south_obc.interp(zl=hy_depth)


south_dz_new = np.array
(len(reg_south_obc.xh.values)*
[np.array(len(reg_south_obc.yq.values)*
[np.array(len(reg_south_obc.time.values)*
[np.insert(np.diff(hy_depth),
```

6. time axis correction

```
use nsouth.nc
define axis/t=1-jan-2012:31-dec-2013:1/units=days/calendar
=noleap/t0=31-dec-2011 time

let v11_segment_001 = v[gt=time@asn]
let u11_segment_001 = u[gt=time@asn]
let pt_segment_001 = temp[gt=time@asn]
let s_segment_001 = salt[gt=time@asn]
let ssh_segment_001 = ssh[gt=time@asn]
let dz_v11_segment_001 = dz_v[gt=time@asn]
let dz_u11_segment_001 = dz_u[gt=time@asn]
let dz_s_segment_001 = dz_salt[gt=time@asn]
let dz_pt_segment_001 = dz_temp[gt=time@asn]
set mem/size=2000
sp rm -f nsouth_only.nc
save/file=nsouth_only.nc/append
v11_segment_001,u11_segment_001,pt_segment_001
,s_segment_001,ssh_segment
```