```
>> Espresso_read
Source:
           http://tds.marine.rutgers.edu:8080/thredds/dodsC/roms/espresso/20
Format:
           64bit
Global Attributes:
           file             = 'espresso_his_3479_0004.nc'
           format           = 'netCDF-4/HDF5 file'
           Conventions      = 'CF-1.4, _Coordinates'
           type             = 'ROMS/TOMS history file'
           title            = 'ROMS ESPRESSO Real-Time Operational IS4DVAR F
           rst_file         = 'espresso_rst_3479.nc'
           his_base         = 'espresso_his_3479'
           avg_base         = 'espresso_avg_3479'
           flt_file         = 'espresso_flt_3479.nc'
           grd_file         = '/home/om/roms/espresso/Data/espresso_grid_c05
           ini_file         = '/home/julia/ROMS/espresso/RealTime/Storage/ru
           frc_file_01      = '/home/om/roms/espresso/Data/espresso_tide_c05
           frc_file_02      = '../Data/espresso_river.nc'
           frc_file_03      = '../Data/rain_ncepnam_3hourly_MAB_and_GoM.nc'
           frc_file_04      = '../Data/swrad_ncepnam_3hourly_MAB_and_GoM.nc'
           frc_file_05      = '../Data/Tair_ncepnam_3hourly_MAB_and_GoM.nc'
           frc_file_06      = '../Data/Pair_ncepnam_3hourly_MAB_and_GoM.nc'
           frc_file_07      = '../Data/Qair_ncepnam_3hourly_MAB_and_GoM.nc'
           frc_file_08      = '../Data/lwrad_down_ncepnam_3hourly_MAB_and_Go
           frc_file_09      = '../Data/Uwind_ncepnam_3hourly_MAB_and_GoM.nc'
           frc_file_10      = '../Data/Vwind_ncepnam_3hourly_MAB_and_GoM.nc'
           bry_file         = '../Data/espresso_bdry_new.nc'
           clm_file         = '../Data/espresso_clm_new.nc'
           script_file      = 'nl_ocean_espresso.in'
           fpos_file        = '/home/om/roms/espresso/Data/espresso_floats_g
           svn_url          = 'https://www.myroms.org/svn/src/trunk'
           svn_rev          = 'exported'
           code_dir         = '/home/julia/ROMS/espresso/svn1409'
           header_dir       = '/home/julia/ROMS/espresso/RealTime/Compile/fw
           header_file      = 'espresso.h'
           os               = 'Linux'
           cpu              = 'x86_64'
           compiler_system  = 'pgi'
           compiler_command = '/opt/pgisoft/openmpi/bin/mpif90'
           compiler_flags   = ' -O3 -Mfree'
           tiling           = '004x002'
           history          = 'ROMS/TOMS, Version 3.5, Wednesday - July 15,
                              FMRC Best Dataset'
           ana_file         = 'ROMS/Functionals/ana_btflux.h, /home/julia/RO
```

```
           CPP_options      = 'MyCPP, ADD_FSOBC, ADD_M2OBC, ANA_BSFLUX, ANA_
           _CoordSysBuilder = 'ucar.nc2.dataset.conv.CF1Convention'
           cdm_data_type    = 'GRID'
           featureType      = 'GRID'
           location         = 'Proto fmrc:espresso_2013_da_his_best'
           summary          = 'Operational nowcast/forecast system version 2
Dimensions:
           ocean_time = 24    (UNLIMITED)
           boundary   = 4
           eta_psi    = 81
           eta_rho    = 82
           eta_u      = 82
           eta_v      = 81
           s_rho      = 36
           s_w        = 37
           time       = 19020
           tracer     = 2
           xi_psi     = 129
           xi_rho     = 130
           xi_u       = 129
           xi_v       = 130
Variables:
    ntimes
           Size:       1x1
           Dimensions:
           Datatype:   int32
           Attributes:
                       long_name = 'number of long time-steps'
    ndtfast
           Size:       1x1
           Dimensions:
           Datatype:   int32
           Attributes:
                       long_name = 'number of short time-steps'
    dt
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                       units     = 'second'
                       long_name = 'size of long time-steps'
    dtfast
           Size:       1x1
           Dimensions:
           Datatype:   double
```

```
            Attributes:
                        units     = 'second'
                        long_name = 'size of short time-steps'
    dstart
            Size:       1x1
            Dimensions:
            Datatype:   double
            Attributes:
                        units     = 'days since 2006-01-01 00:00:00'
                        long_name = 'time stamp assigned to model initilizati
    shuffle
            Size:       1x1
            Dimensions:
            Datatype:   int32
            Attributes:
                        long_name = 'NetCDF-4/HDF5 file format shuffle filer
    deflate
            Size:       1x1
            Dimensions:
            Datatype:   int32
            Attributes:
                        long_name = 'NetCDF-4/HDF5 file format deflate filer
    deflate_level
            Size:       1x1
            Dimensions:
            Datatype:   int32
            Attributes:
                        long_name = 'NetCDF-4/HDF5 file format deflate level
    nHIS
            Size:       1x1
            Dimensions:
            Datatype:   int32
            Attributes:
                        long_name = 'number of time-steps between history rec
    ndefHIS
            Size:       1x1
            Dimensions:
            Datatype:   int32
            Attributes:
                        long_name = 'number of time-steps between the creatio
    nRST
            Size:       1x1
            Dimensions:
            Datatype:   int32
            Attributes:
```

```
                    long_name = 'number of time-steps between restart rec
    ntsAVG
           Size:       1x1
           Dimensions:
           Datatype:   int32
           Attributes:
                    long_name = 'starting time-step for accumulation of t
    nAVG
           Size:       1x1
           Dimensions:
           Datatype:   int32
           Attributes:
                    long_name = 'number of time-steps between time-averag
    ndefAVG
           Size:       1x1
           Dimensions:
           Datatype:   int32
           Attributes:
                    long_name = 'number of time-steps between the creatio
    Falpha
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'Power-law shape barotropic filter parame
    Fbeta
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'Power-law shape barotropic filter parame
    Fgamma
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'Power-law shape barotropic filter parame
    nl_tnu2
           Size:       2x1
           Dimensions: tracer
           Datatype:   double
           Attributes:
                    units     = 'meter2 second-1'
                    long_name = 'nonlinear model Laplacian mixing coeffic
    nl_visc2
```

```
            Size:       1x1
            Dimensions:
            Datatype:   double
            Attributes:
                        units     = 'meter2 second-1'
                        long_name = 'nonlinear model Laplacian mixing coeffic
    Akt_bak
            Size:       2x1
            Dimensions: tracer
            Datatype:   double
            Attributes:
                        units     = 'meter2 second-1'
                        long_name = 'background vertical mixing coefficient f
    Akv_bak
            Size:       1x1
            Dimensions:
            Datatype:   double
            Attributes:
                        units     = 'meter2 second-1'
                        long_name = 'background vertical mixing coefficient f
    Akk_bak
            Size:       1x1
            Dimensions:
            Datatype:   double
            Attributes:
                        units     = 'meter2 second-1'
                        long_name = 'background vertical mixing coefficient f
    Akp_bak
            Size:       1x1
            Dimensions:
            Datatype:   double
            Attributes:
                        units     = 'meter2 second-1'
                        long_name = 'background vertical mixing coefficient f
    rdrg
            Size:       1x1
            Dimensions:
            Datatype:   double
            Attributes:
                        units     = 'meter second-1'
                        long_name = 'linear drag coefficient'
    rdrg2
            Size:       1x1
            Dimensions:
            Datatype:   double
```

```
226             Attributes:
227                         long_name = 'quadratic drag coefficient'
228     Zob
229             Size:       1x1
230             Dimensions:
231             Datatype:   double
232             Attributes:
233                         units     = 'meter'
234                         long_name = 'bottom roughness'
235     Zos
236             Size:       1x1
237             Dimensions:
238             Datatype:   double
239             Attributes:
240                         units     = 'meter'
241                         long_name = 'surface roughness'
242     gls_p
243             Size:       1x1
244             Dimensions:
245             Datatype:   double
246             Attributes:
247                         long_name = 'stability exponent'
248     gls_m
249             Size:       1x1
250             Dimensions:
251             Datatype:   double
252             Attributes:
253                         long_name = 'turbulent kinetic energy exponent'
254     gls_n
255             Size:       1x1
256             Dimensions:
257             Datatype:   double
258             Attributes:
259                         long_name = 'turbulent length scale exponent'
260     gls_cmu0
261             Size:       1x1
262             Dimensions:
263             Datatype:   double
264             Attributes:
265                         long_name = 'stability coefficient'
266     gls_c1
267             Size:       1x1
268             Dimensions:
269             Datatype:   double
270             Attributes:
```

```
                    long_name = 'shear production coefficient'
    gls_c2
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'dissipation coefficient'
    gls_c3m
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'buoyancy production coefficient (minus)'
    gls_c3p
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'buoyancy production coefficient (plus)'
    gls_sigk
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'constant Schmidt number for TKE'
    gls_sigp
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'constant Schmidt number for PSI'
    gls_Kmin
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'minimum value of specific turbulent kine
    gls_Pmin
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'minimum Value of dissipation'
    Charnok_alpha
           Size:       1x1
```

```
316             Dimensions:
317             Datatype:   double
318             Attributes:
319                         long_name = 'Charnok factor for surface roughness'
320     Zos_hsig_alpha
321             Size:       1x1
322             Dimensions:
323             Datatype:   double
324             Attributes:
325                         long_name = 'wave amplitude factor for surface rough
326     sz_alpha
327             Size:       1x1
328             Dimensions:
329             Datatype:   double
330             Attributes:
331                         long_name = 'surface flux from wave dissipation'
332     CrgBan_cw
333             Size:       1x1
334             Dimensions:
335             Datatype:   double
336             Attributes:
337                         long_name = 'surface flux due to Craig and Banner wa
338     Znudg
339             Size:       1x1
340             Dimensions:
341             Datatype:   double
342             Attributes:
343                         units     = 'day-1'
344                         long_name = 'free-surface nudging/relaxation inverse
345     M2nudg
346             Size:       1x1
347             Dimensions:
348             Datatype:   double
349             Attributes:
350                         units     = 'day-1'
351                         long_name = '2D momentum nudging/relaxation inverse
352     M3nudg
353             Size:       1x1
354             Dimensions:
355             Datatype:   double
356             Attributes:
357                         units     = 'day-1'
358                         long_name = '3D momentum nudging/relaxation inverse
359     Tnudg
360             Size:       2x1
```

```
           Dimensions: tracer
           Datatype:   double
           Attributes:
                       units     = 'day-1'
                       long_name = 'Tracers nudging/relaxation inverse time
    FSobc_in
           Size:       4x1
           Dimensions: boundary
           Datatype:   double
           Attributes:
                       units     = 'second-1'
                       long_name = 'free-surface inflow, nudging inverse ti
    FSobc_out
           Size:       4x1
           Dimensions: boundary
           Datatype:   double
           Attributes:
                       units     = 'second-1'
                       long_name = 'free-surface outflow, nudging inverse t
    M2obc_in
           Size:       4x1
           Dimensions: boundary
           Datatype:   double
           Attributes:
                       units     = 'second-1'
                       long_name = '2D momentum inflow, nudging inverse tim
    M2obc_out
           Size:       4x1
           Dimensions: boundary
           Datatype:   double
           Attributes:
                       units     = 'second-1'
                       long_name = '2D momentum outflow, nudging inverse ti
    Tobc_in
           Size:       2x4
           Dimensions: tracer,boundary
           Datatype:   double
           Attributes:
                       units      = 'second-1'
                       long_name  = 'tracers inflow, nudging inverse time s
                       _ChunkSize = [4  2]
    Tobc_out
           Size:       2x4
           Dimensions: tracer,boundary
           Datatype:   double
```

```
406             Attributes:
407                         units      = 'second-1'
408                         long_name  = 'tracers outflow, nudging inverse time
409                         _ChunkSize = [4  2]
410     M3obc_in
411             Size:       4x1
412             Dimensions: boundary
413             Datatype:   double
414             Attributes:
415                         units     = 'second-1'
416                         long_name = '3D momentum inflow, nudging inverse tim
417     M3obc_out
418             Size:       4x1
419             Dimensions: boundary
420             Datatype:   double
421             Attributes:
422                         units     = 'second-1'
423                         long_name = '3D momentum outflow, nudging inverse ti
424     rho0
425             Size:       1x1
426             Dimensions:
427             Datatype:   double
428             Attributes:
429                         units     = 'kilogram meter-3'
430                         long_name = 'mean density used in Boussinesq approxi
431     gamma2
432             Size:       1x1
433             Dimensions:
434             Datatype:   double
435             Attributes:
436                         long_name = 'slipperiness parameter'
437     LtracerSrc
438             Size:       2x1
439             Dimensions: tracer
440             Datatype:   int32
441             Attributes:
442                         long_name     = 'tracer point sources and sink activ
443                         flag_values   = [0  1]
444                         flag_meanings = '.FALSE. .TRUE.'
445     spherical
446             Size:       1x1
447             Dimensions:
448             Datatype:   int32
449             Attributes:
450                         long_name     = 'grid type logical switch'
```

```
                    flag_values   = [0  1]
                    flag_meanings = 'Cartesian spherical'
    xl
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    units     = 'meter'
                    long_name = 'domain length in the XI-direction'
    el
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    units     = 'meter'
                    long_name = 'domain length in the ETA-direction'
    Vtransform
           Size:       1x1
           Dimensions:
           Datatype:   int32
           Attributes:
                    long_name = 'vertical terrain-following transformati
    Vstretching
           Size:       1x1
           Dimensions:
           Datatype:   int32
           Attributes:
                    long_name = 'vertical terrain-following stretching f
    theta_s
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'S-coordinate surface control parameter'
    theta_b
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    long_name = 'S-coordinate bottom control parameter'
    Tcline
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
```

```
                    units     = 'meter'
                    long_name = 'S-coordinate surface/bottom layer width
    hc
           Size:       1x1
           Dimensions:
           Datatype:   double
           Attributes:
                    units     = 'meter'
                    long_name = 'S-coordinate parameter, critical depth'
    Cs_r
           Size:       36x1
           Dimensions: s_rho
           Datatype:   double
           Attributes:
                    long_name = 'S-coordinate stretching curves at RHO-p
                    valid_min = -1
                    valid_max = 0
                    field     = 'Cs_r, scalar'
    Cs_w
           Size:       37x1
           Dimensions: s_w
           Datatype:   double
           Attributes:
                    long_name = 'S-coordinate stretching curves at W-poi
                    valid_min = -1
                    valid_max = 0
                    field     = 'Cs_w, scalar'
    h
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                    units         = 'meter'
                    long_name     = 'bathymetry at RHO-points'
                    coordinates   = 'lat_rho lon_rho '
                    field         = 'bath, scalar'
                    _ChunkSize    = [82  130]
                    standard_name = 'sea_floor_depth'
    f
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                    units       = 'second-1'
                    long_name   = 'Coriolis parameter at RHO-points'
```

```
                    coordinates = 'lat_rho lon_rho '
                    field       = 'coriolis, scalar'
                    _ChunkSize  = [82  130]
    pm
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                    units       = 'meter-1'
                    long_name   = 'curvilinear coordinate metric in XI'
                    coordinates = 'lat_rho lon_rho '
                    field       = 'pm, scalar'
                    _ChunkSize  = [82  130]
    pn
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                    units       = 'meter-1'
                    long_name   = 'curvilinear coordinate metric in ETA'
                    coordinates = 'lat_rho lon_rho '
                    field       = 'pn, scalar'
                    _ChunkSize  = [82  130]
    angle
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                    units       = 'radians'
                    long_name   = 'angle between XI-axis and EAST'
                    coordinates = 'lat_rho lon_rho '
                    field       = 'angle, scalar'
                    _ChunkSize  = [82  130]
    mask_rho
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                    long_name     = 'mask on RHO-points'
                    flag_values   = [0  1]
                    flag_meanings = 'land water'
                    coordinates   = 'lat_rho lon_rho '
                    _ChunkSize    = [82  130]
    mask_u
           Size:       129x82
```

```
           Dimensions: xi_u,eta_u
           Datatype:   double
           Attributes:
                       long_name     = 'mask on U-points'
                       flag_values   = [0  1]
                       flag_meanings = 'land water'
                       coordinates   = 'lat_u lon_u '
                       _ChunkSize    = [82  129]
    mask_v
           Size:       130x81
           Dimensions: xi_v,eta_v
           Datatype:   double
           Attributes:
                       long_name     = 'mask on V-points'
                       flag_values   = [0  1]
                       flag_meanings = 'land water'
                       coordinates   = 'lat_v lon_v '
                       _ChunkSize    = [81  130]
    mask_psi
           Size:       129x81
           Dimensions: xi_psi,eta_psi
           Datatype:   double
           Attributes:
                       long_name     = 'mask on psi-points'
                       flag_values   = [0  1]
                       flag_meanings = 'land water'
                       coordinates   = 'lat_psi lon_psi '
                       _ChunkSize    = [81  129]
    zeta
           Size:       130x82x19020
           Dimensions: xi_rho,eta_rho,time
           Datatype:   single
           Attributes:
                       units         = 'meter'
                       long_name     = 'free-surface'
                       time          = 'ocean_time'
                       coordinates   = 'time_run time lat_rho lon_rho '
                       field         = 'free-surface, scalar, series'
                       _FillValue    = 9.999999933815813e+36
                       _ChunkSize    = [1   82  130]
                       standard_name = 'sea_surface_height'
    ubar
           Size:       129x82x19020
           Dimensions: xi_u,eta_u,time
           Datatype:   single
```

```
631             Attributes:
632                     units       = 'meter second-1'
633                     long_name   = 'vertically integrated u-momentum comp
634                     time        = 'ocean_time'
635                     coordinates = 'time_run time lat_u lon_u '
636                     field       = 'ubar-velocity, scalar, series'
637                     _FillValue  = 9.999999933815813e+36
638                     _ChunkSize  = [1   82  129]
639     DU_avg1
640             Size:       129x82x19020
641             Dimensions: xi_u,eta_u,time
642             Datatype:   single
643             Attributes:
644                     units       = 'meter3 second-1'
645                     long_name   = 'time averaged u-flux for 2D equations
646                     time        = 'ocean_time'
647                     coordinates = 'time_run time lat_u lon_u '
648                     field       = 'DU_avg1, scalar, series'
649                     _FillValue  = 9.999999933815813e+36
650                     _ChunkSize  = [1   82  129]
651     DU_avg2
652             Size:       129x82x19020
653             Dimensions: xi_u,eta_u,time
654             Datatype:   single
655             Attributes:
656                     units       = 'meter3 second-1'
657                     long_name   = 'time averaged u-flux for 3D equations
658                     time        = 'ocean_time'
659                     coordinates = 'time_run time lat_u lon_u '
660                     field       = 'DU_avg2, scalar, series'
661                     _FillValue  = 9.999999933815813e+36
662                     _ChunkSize  = [1   82  129]
663     vbar
664             Size:       130x81x19020
665             Dimensions: xi_v,eta_v,time
666             Datatype:   single
667             Attributes:
668                     units       = 'meter second-1'
669                     long_name   = 'vertically integrated v-momentum comp
670                     time        = 'ocean_time'
671                     coordinates = 'time_run time lat_v lon_v '
672                     field       = 'vbar-velocity, scalar, series'
673                     _FillValue  = 9.999999933815813e+36
674                     _ChunkSize  = [1   81  130]
675     DV_avg1
```

```
676             Size:       130x81x19020
677             Dimensions: xi_v,eta_v,time
678             Datatype:   single
679             Attributes:
680                         units       = 'meter3 second-1'
681                         long_name   = 'time averaged v-flux for 2D equations
682                         time        = 'ocean_time'
683                         coordinates = 'time_run time lat_v lon_v '
684                         field       = 'DV_avg1, scalar, series'
685                         _FillValue  = 9.999999933815813e+36
686                         _ChunkSize  = [1   81  130]
687     DV_avg2
688             Size:       130x81x19020
689             Dimensions: xi_v,eta_v,time
690             Datatype:   single
691             Attributes:
692                         units       = 'meter3 second-1'
693                         long_name   = 'time averaged v-flux for 3D equations
694                         time        = 'ocean_time'
695                         coordinates = 'time_run time lat_v lon_v '
696                         field       = 'DV_avg2, scalar, series'
697                         _FillValue  = 9.999999933815813e+36
698                         _ChunkSize  = [1   81  130]
699     u
700             Size:       129x82x36x19020
701             Dimensions: xi_u,eta_u,s_rho,time
702             Datatype:   single
703             Attributes:
704                         units         = 'meter second-1'
705                         long_name     = 'u-momentum component'
706                         time          = 'ocean_time'
707                         coordinates   = 'time_run time s_rho lat_u lon_u '
708                         field         = 'u-velocity, scalar, series'
709                         _FillValue    = 9.999999933815813e+36
710                         _ChunkSize    = [1   36   82  129]
711                         standard_name = 'eastward_sea_water_velocity'
712     v
713             Size:       130x81x36x19020
714             Dimensions: xi_v,eta_v,s_rho,time
715             Datatype:   single
716             Attributes:
717                         units         = 'meter second-1'
718                         long_name     = 'v-momentum component'
719                         time          = 'ocean_time'
720                         coordinates   = 'time_run time s_rho lat_v lon_v '
```

```
                    field         = 'v-velocity, scalar, series'
                    _FillValue    = 9.999999933815813e+36
                    _ChunkSize    = [1   36   81  130]
                    standard_name = 'northward_sea_water_velocity'
    w
           Size:       130x82x37x19020
           Dimensions: xi_rho,eta_rho,s_w,time
           Datatype:   single
           Attributes:
                    units       = 'meter second-1'
                    long_name   = 'vertical momentum component'
                    time        = 'ocean_time'
                    coordinates = 'time_run time s_w lat_rho lon_rho '
                    field       = 'w-velocity, scalar, series'
                    _FillValue  = 9.999999933815813e+36
                    _ChunkSize  = [1   37   82  130]
    temp
           Size:       130x82x36x19020
           Dimensions: xi_rho,eta_rho,s_rho,time
           Datatype:   single
           Attributes:
                    units         = 'Celsius'
                    long_name     = 'potential temperature'
                    time          = 'ocean_time'
                    coordinates   = 'time_run time s_rho lat_rho lon_rho
                    field         = 'temperature, scalar, series'
                    _FillValue    = 9.999999933815813e+36
                    _ChunkSize    = [1   36   82  130]
                    standard_name = 'sea_water_potential_temperature'
    salt
           Size:       130x82x36x19020
           Dimensions: xi_rho,eta_rho,s_rho,time
           Datatype:   single
           Attributes:
                    long_name     = 'salinity'
                    time          = 'ocean_time'
                    coordinates   = 'time_run time s_rho lat_rho lon_rho
                    field         = 'salinity, scalar, series'
                    _FillValue    = 9.999999933815813e+36
                    _ChunkSize    = [1   36   82  130]
                    standard_name = 'sea_water_salinity'
    shflux
           Size:       130x82x19020
           Dimensions: xi_rho,eta_rho,time
           Datatype:   single
```

```
            Attributes:
                        units          = 'watt meter-2'
                        long_name      = 'surface net heat flux'
                        negative_value = 'upward flux, cooling'
                        positive_value = 'downward flux, heating'
                        time           = 'ocean_time'
                        coordinates    = 'time_run time lat_rho lon_rho '
                        field          = 'surface heat flux, scalar, series'
                        _FillValue     = 9.999999933815813e+36
                        _ChunkSize     = [1   82  130]
    sustr
            Size:       129x82x19020
            Dimensions: xi_u,eta_u,time
            Datatype:   single
            Attributes:
                        units       = 'newton meter-2'
                        long_name   = 'surface u-momentum stress'
                        time        = 'ocean_time'
                        coordinates = 'time_run time lat_u lon_u '
                        field       = 'surface u-momentum stress, scalar, se
                        _FillValue  = 9.999999933815813e+36
                        _ChunkSize  = [1   82  129]
    svstr
            Size:       130x81x19020
            Dimensions: xi_v,eta_v,time
            Datatype:   single
            Attributes:
                        units       = 'newton meter-2'
                        long_name   = 'surface v-momentum stress'
                        time        = 'ocean_time'
                        coordinates = 'time_run time lat_v lon_v '
                        field       = 'surface v-momentum stress, scalar, se
                        _FillValue  = 9.999999933815813e+36
                        _ChunkSize  = [1   81  130]
    bustr
            Size:       129x82x19020
            Dimensions: xi_u,eta_u,time
            Datatype:   single
            Attributes:
                        units       = 'newton meter-2'
                        long_name   = 'bottom u-momentum stress'
                        time        = 'ocean_time'
                        coordinates = 'time_run time lat_u lon_u '
                        field       = 'bottom u-momentum stress, scalar, ser
                        _FillValue  = 9.999999933815813e+36
```

```
                    _ChunkSize  = [1   82  129]
    bvstr
           Size:       130x81x19020
           Dimensions: xi_v,eta_v,time
           Datatype:   single
           Attributes:
                       units       = 'newton meter-2'
                       long_name   = 'bottom v-momentum stress'
                       time        = 'ocean_time'
                       coordinates = 'time_run time lat_v lon_v '
                       field       = 'bottom v-momentum stress, scalar, ser
                       _FillValue  = 9.999999933815813e+36
                       _ChunkSize  = [1   81  130]
    time_offset
           Size:       19020x1
           Dimensions: time
           Datatype:   double
           Attributes:
                       long_name     = 'offset hour from start of run for c
                       standard_name = 'forecast_period'
                       units         = 'hours since 2013-05-18T00:00:00Z'
                       missing_value = NaN
    s_rho
           Size:       36x1
           Dimensions: s_rho
           Datatype:   double
           Attributes:
                       units                    = ''
                       long_name                = 'S-coordinate at RHO-poin
                       valid_min                = -1
                       valid_max                = 0
                       positive                 = 'up'
                       standard_name            = 'ocean_s_coordinate_g1'
                       formula_terms            = 's: s_rho C: Cs_r eta: ze
                       field                    = 's_rho, scalar'
                       _CoordinateTransformType = 'Vertical'
                       _CoordinateAxisType      = 'GeoZ'
                       _CoordinateZisPositive   = 'up'
                       _CoordinateAxes          = 's_rho'
    s_w
           Size:       37x1
           Dimensions: s_w
           Datatype:   double
           Attributes:
                       units                    = ''
```

```
                        long_name                = 'S-coordinate at W-points
                        valid_min                = -1
                        valid_max                = 0
                        positive                 = 'up'
                        standard_name            = 'ocean_s_coordinate_g1'
                        formula_terms            = 's: s_w C: Cs_w eta: zeta
                        field                    = 's_w, scalar'
                        _CoordinateTransformType = 'Vertical'
                        _CoordinateAxisType      = 'GeoZ'
                        _CoordinateZisPositive   = 'up'
                        _CoordinateAxes          = 's_w'
    lon_rho
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                        units               = 'degrees_east'
                        long_name           = 'longitude of RHO-points'
                        standard_name       = 'longitude'
                        field               = 'lon_rho, scalar'
                        _ChunkSize          = [82  130]
                        _CoordinateAxisType = 'Lon'
    lat_rho
           Size:       130x82
           Dimensions: xi_rho,eta_rho
           Datatype:   double
           Attributes:
                        units               = 'degrees_north'
                        long_name           = 'latitude of RHO-points'
                        standard_name       = 'latitude'
                        field               = 'lat_rho, scalar'
                        _ChunkSize          = [82  130]
                        _CoordinateAxisType = 'Lat'
    lon_u
           Size:       129x82
           Dimensions: xi_u,eta_u
           Datatype:   double
           Attributes:
                        units               = 'degrees_east'
                        long_name           = 'longitude of U-points'
                        standard_name       = 'longitude'
                        field               = 'lon_u, scalar'
                        _ChunkSize          = [82  129]
                        _CoordinateAxisType = 'Lon'
    lat_u
```

```
            Size:       129x82
            Dimensions: xi_u,eta_u
            Datatype:   double
            Attributes:
                        units               = 'degrees_north'
                        long_name           = 'latitude of U-points'
                        standard_name       = 'latitude'
                        field               = 'lat_u, scalar'
                        _ChunkSize          = [82  129]
                        _CoordinateAxisType = 'Lat'
    lon_v
            Size:       130x81
            Dimensions: xi_v,eta_v
            Datatype:   double
            Attributes:
                        units               = 'degrees_east'
                        long_name           = 'longitude of V-points'
                        standard_name       = 'longitude'
                        field               = 'lon_v, scalar'
                        _ChunkSize          = [81  130]
                        _CoordinateAxisType = 'Lon'
    lat_v
            Size:       130x81
            Dimensions: xi_v,eta_v
            Datatype:   double
            Attributes:
                        units               = 'degrees_north'
                        long_name           = 'latitude of V-points'
                        standard_name       = 'latitude'
                        field               = 'lat_v, scalar'
                        _ChunkSize          = [81  130]
                        _CoordinateAxisType = 'Lat'
    lon_psi
            Size:       129x81
            Dimensions: xi_psi,eta_psi
            Datatype:   double
            Attributes:
                        units               = 'degrees_east'
                        long_name           = 'longitude of PSI-points'
                        standard_name       = 'longitude'
                        field               = 'lon_psi, scalar'
                        _ChunkSize          = [81  129]
                        _CoordinateAxisType = 'Lon'
    lat_psi
            Size:       129x81
```

```
            Dimensions: xi_psi,eta_psi
            Datatype:   double
            Attributes:
                        units               = 'degrees_north'
                        long_name           = 'latitude of PSI-points'
                        standard_name       = 'latitude'
                        field               = 'lat_psi, scalar'
                        _ChunkSize          = [81  129]
                        _CoordinateAxisType = 'Lat'
    ocean_time
            Size:       24x1
            Dimensions: ocean_time
            Datatype:   double
            Attributes:
                        units               = 'seconds since 2006-01-01 00:0
                        long_name           = 'time since initialization'
                        calendar            = 'gregorian'
                        field               = 'time, scalar, series'
                        _ChunkSize          = 1
                        _CoordinateAxisType = 'Time'
    time
            Size:       19020x1
            Dimensions: time
            Datatype:   double
            Attributes:
                        long_name           = 'Forecast time for ForecastMod
                        standard_name       = 'time'
                        units               = 'hours since 2013-05-18T00:00:
                        missing_value       = NaN
                        _CoordinateAxisType = 'Time'
    time_run
            Size:       19020x1
            Dimensions: time
            Datatype:   double
            Attributes:
                        long_name           = 'run times for coordinate = ti
                        standard_name       = 'forecast_reference_time'
                        units               = 'hours since 2013-05-18T00:00:
                        missing_value       = NaN
                        _CoordinateAxisType = 'RunTime'
>>
```