

cppdefs.h file

```
! $Id: cppdefs.h 1628 2015-01-10 13:53:00Z marchesiello $
!
!=====
! CROCO is a branch of ROMS developped at IRD and INRIA, in France
! The two other branches from UCLA (Shchepetkin et al)
! and Rutgers University (Arango et al) are under MIT/X style license.
! CROCO specific routines (nesting) are under CeCILL-C license.
!
! CROCO website : http://www.croco-ocean.org
!=====
!
/*
  This is "cppdefs.h": MODEL CONFIGURATION FILE
  ==== == =====
*/
/*
  SELECT ACADEMIC TEST CASES
*/
#undef BASIN          /* Basin Example */
#undef CANYON         /* Canyon Example */
#undef EQUATOR        /* Equator Example */
#undef INNER_SHELF    /* Inner Shelf Example */
#undef SINGLE_COLUMN  /* 1DV vertical mixing Example */
#undef RIVER          /* River run-off Example */
#undef OVERFLOW       /* Graviational/Overflow Example */
#undef SEAMOUNT       /* Seamount Example */
#undef SHELF_FRONT    /* Shelf Front Example */
#undef SOLITON        /* Equatorial Rossby Wave Example */
#undef THACKER        /* Thacker wetting-drying Example */
#undef UPWELLING      /* Upwelling Example */
#undef VORTEX         /* Baroclinic Vortex Example */
#undef INTERNAL       /* Internal Tide Example */
#undef IGW            /* COMODO Internal Tide Example */
#undef JET            /* Baroclinic Jet Example */
#undef SHOREFACE      /* Shoreface Test Case on a Planar Beach */
#undef RIP            /* Rip Current Test Case */
#undef SANDBAR        /* Bar-generating Flume Example */
#undef SWASH          /* Swash Test Case on a Planar Beach */
#undef TANK           /* Tank Example */
#undef MOVING_BATHY    /* Moving Bathymetry Example */
#undef ACOUSTIC       /* Acoustic wave Example */
#undef GRAV_ADJ       /* Graviational Adjustment Example */
#undef ISOLITON       /* Internal Soliton Example */
#undef KH_INST        /* Kelvin-Helmholtz Instability Example */
#undef TS_HADV_TEST   /* Horizontal tracer advection Example */
#undef DUNE           /* Dune migration Example */
#undef SED_TOY        /* 1DV sediment toy Example */
#undef TIDAL_FLAT     /* 2DV tidal flat Example */
#undef ESTUARY        /* 3D tidal estuary Example */
/*
  ... OR REALISTIC CONFIGURATIONS
*/
#undef COASTAL        /* COASTAL Applications */
#define REGIONAL      /* REGIONAL Applications */

#if defined REGIONAL
/*
!=====
!                               REGIONAL (realistic) Configurations
!=====
!
!-----
! BASIC OPTIONS
!-----
!
*/
/* Configuration Name */
# define TROPATI      /* Parallelization */
# undef OPENMP
```

```

# define MPI /* Non-hydrostatic option */
# undef NBQ
# undef CROCO_QH /* Nesting */
# undef AGRIF
# undef AGRIF_2WAY /* OA and OW Coupling via OASIS (MPI) */
# undef OA_COUPLING
# undef OW_COUPLING /* Wave-current interactions */
# undef MRL_WCI /* Open Boundary Conditions */
# undef TIDES
# undef OBC_EAST
# undef OBC_WEST
# define OBC_NORTH
# define OBC_SOUTH /* Applications */
# undef BIOLOGY
# undef FLOATS
# undef STATIONS
# undef PASSIVE_TRACER
# undef SEDIMENT
# undef MUSTANG
# undef BBL /* I/O server */
# undef XIOS /* Calendar */
# undef USE_CALENDAR /* dedicated croco.log file */
# undef LOGFILE /*
!-----
! PRE-SELECTED OPTIONS
!
! ADVANCED OPTIONS ARE IN CPPDEFS_DEV.H
!-----
*/
/* Parallelization */
# ifdef MPI
# undef PARALLEL_FILES
# define NC4PAR
# define MPI_NOLAND
# undef MPI_TIME
# endif
# undef AUTOTILING /* Non-hydrostatic options */
# ifdef NBQ
# define W_HADV_TVD
# define W_VADV_TVD
# endif /* Grid configuration */
# define CURVGRID
# define SPHERICAL
# define MASKING
# undef WET_DRY
# undef NEW_S_COORD /* Model dynamics */
# define SOLVE3D
# define UV_COR
# define UV_ADV /* Equation of State */
# define SALINITY
# define NONLIN_EOS /* Lateral Momentum Advection (default UP3) */
# define UV_HADV_UP3
# undef UV_HADV_UP5
# undef UV_HADV_WENO5
# undef UV_HADV_TVD /* Lateral Explicit Momentum Mixing */
# undef UV_VIS2
# ifdef UV_VIS2
# define UV_VIS_SMAGO
# endif /* Vertical Momentum Advection */
# define UV_VADV_SPLINES
# undef UV_VADV_WENO5
# undef UV_VADV_TVD /* Lateral Tracer Advection (default UP3) */
# undef TS_HADV_UP3

```

```

# define TS_HADV_RSUP3
# undef TS_HADV_UP5
# undef TS_HADV_WENO5
/* Lateral Explicit Tracer Mixing */
# undef TS_DIF2
# undef TS_DIF4
# undef TS_MIX_S
/* Vertical Tracer Advection */
# define TS_VADV_SPLINES
# undef TS_VADV_AKIMA
# undef TS_VADV_WENO5
/* Sponge layers for UV and TS */
# define SPONGE
/* Semi-implicit Vertical Tracer/Mom Advection */
# define VADV_ADAPT_IMP
/* Bottom friction in fast 3D step */
# define LIMIT_BSTRESS
# undef BSTRESS_FAST
/* Vertical Mixing */
# undef BODYFORCE
# undef BVF_MIXING
# define LMD_MIXING
# undef GLS_MIXING
# ifdef LMD_MIXING
# define LMD_SKPP
# define LMD_BKPP
# define LMD_RIMIX
# define LMD_CONVEC
# define LMD_NONLOCAL
# undef LMD_DDMIX
# undef LMD_LANGMUIR
# endif
/* Surface Forcing */
/*
! Bulk flux algorithms (options)
! by default : COARE3p0 paramet with GUSTINESS effects
!
! To change bulk param, define one the following keys (exclusive) :
! - define BULK_ECUMEV0 : ECUME_v0 param
! - define BULK_ECUMEV6 : ECUME_v6 param
! - define BULK_WASP : WASP param
! Note : gustiness effects can be added for all params
! by defining BULK_GUSTINESS
*/
# define BULK_FLUX
# ifdef BULK_FLUX
# undef BULK_ECUMEV0
# undef BULK_ECUMEV6
# undef BULK_WASP
# define BULK_GUSTINESS
# define BULK_LW
# undef SST_SKIN
# undef ANA_DIURNAL_SW
# undef ONLINE
# ifdef ONLINE
# undef AROME
# define ERA_ECMWF
# endif
# undef READ_PATM
# ifdef READ_PATM
# define OBC_PATM
# endif
# else
# define QCORRECTION
# define SFLX_CORR
# undef SFLX_CORR_COEF
# define ANA_DIURNAL_SW
# endif
# undef SFLUX_CFB
# undef SEA_ICE_NOFLUX
/* Wave-current interactions */
# ifdef OW_COUPLING
# define MRL_WCI
# define BBL
# endif
# ifdef MRL_WCI
# ifndef OW_COUPLING
# undef WAVE_OFFLINE
# define ANA_WWAVE
# undef WKB_WWAVE
# endif

```

```

# undef WAVE_ROLLER
# define WAVE_STREAMING
# define WAVE_FRICTION
# define WAVE_RAMP
# ifdef WKB_WWAVE
#   undef WKB_OBC_NORTH
#   undef WKB_OBC_SOUTH
#   undef WKB_OBC_WEST
#   undef WKB_OBC_EAST
# endif
# endif

/* Lateral Forcing */
# undef CLIMATOLOGY
# ifdef CLIMATOLOGY
#   define ZCLIMATOLOGY
#   define M2CLIMATOLOGY
#   define M3CLIMATOLOGY
#   define TCLIMATOLOGY

#   define ZNUDGING
#   define M2NUDGING
#   define M3NUDGING
#   define TNUDGING
#   undef ROBUST_DIAG
# endif

# define FRC_BRV
# ifdef FRC_BRV
#   define Z_FRC_BRV
#   define M2_FRC_BRV
#   define M3_FRC_BRV
#   define T_FRC_BRV
# endif

/* Bottom Forcing */
# define ANA_BSFLUX
# define ANA_BTFLUX

/* Point Sources - Rivers */
# define PSOURCE
# define PSOURCE_NCFILE
# ifdef PSOURCE_NCFILE
#   define PSOURCE_NCFILE_TS
# endif

/* Open Boundary Conditions */
# ifdef TIDES
#   define SSH_TIDES
#   define UV_TIDES
#   define POT_TIDES
#   undef TIDES_MAS
#   ifndef UV_TIDES
#     define OBC_REDUCED_PHYSICS
#   endif
# endif
# define TIDERAMP
# endif
# define OBC_M2CHARACT
# undef OBC_M2ORLANSKI
# define OBC_M3ORLANSKI
# define OBC_TORLANSKI
# undef OBC_M2SPECIFIED
# undef OBC_M3SPECIFIED
# undef OBC_TSPECIFIED

/* Input/Output */
# define AVERAGES
# define AVERAGES_K
# define OUTPUTS_SURFACE
# undef HOURLY_VELOCITIES

/* Exact restart */
# undef EXACT_RESTART

/* Parallel reproducibility or restartability test */
# undef RVTK_DEBUG
# undef RVTK_DEBUG_PERFRST
# if defined RVTK_DEBUG && !defined RVTK_DEBUG_PERFRST
!   Parallel reproducibility test
#   undef RVTK_DEBUG_ADVANCED
#   define XXXRVTK_DEBUG_READ
# elif defined RVTK_DEBUG && defined RVTK_DEBUG_PERFRST
!   Restartability test
#   define EXACT_RESTART
#   undef RVTK_DEBUG_ADVANCED
#   define XXXRVTK_DEBUG_READ
# endif
!   RVTK test (Restartability or Parallel reproducibility)

```

```

# if defined RVTK_DEBUG && defined BULK_FLUX && defined ONLINE
#   define BULK_MONTH_1DIGIT
# endif
/*
!
!----- Diagnostics -----
! 3D Tracer & momentum balance
! 2D Mixing layer balance
! Depth-mean vorticity and energy balance
! Eddy terms
!-----
!
*/
# undef DO_NOT_OVERWRITE

# undef DIAGNOSTICS_TS
# undef DIAGNOSTICS_UV
# ifdef DIAGNOSTICS_TS
#   undef DIAGNOSTICS_TS_ADV
#   undef DIAGNOSTICS_TS_MLD
# endif

# undef DIAGNOSTICS_TSVAR
# ifdef DIAGNOSTICS_TSVAR
#   define DIAGNOSTICS_TS
#   define DIAGNOSTICS_TS_ADV
# endif

# undef DIAGNOSTICS_VRT
# undef DIAGNOSTICS_EK
# ifdef DIAGNOSTICS_EK
#   undef DIAGNOSTICS_EK_FULL
#   undef DIAGNOSTICS_EK_MLD
# endif

# undef DIAGNOSTICS_BARO
# undef DIAGNOSTICS_PV
# undef DIAGNOSTICS_DISS
# ifdef DIAGNOSTICS_DISS
#   define DIAGNOSTICS_PV
# endif

# undef DIAGNOSTICS_EDDY

# undef TENDENCY
# ifdef TENDENCY
#   define DIAGNOSTICS_UV
# endif
/*
!
!----- Applications: -----
! Biology, floats, Stations,
! Passive tracer, Sediments, BBL
!-----
!
!   Quasi-monotone lateral advection scheme (WENO5)
!   for passive/biology/sediment tracers
*/
# if defined PASSIVE_TRACER || defined BIOLOGY || defined SEDIMENT \
    || defined MUSTANG
#   define BIO_HADV_WENO5
# endif
/*   Choice of Biology models   */
# ifdef BIOLOGY
#   undef PISCES
#   undef BIO_NCh1PZD
#   undef BIO_N2Ch1PZD2
#   define BIO_BioEBUS
/*   Biology options   */
#   ifdef PISCES
#     undef DIURNAL_INPUT_SRFLX
#     define key_pisces
#   endif
#   ifdef BIO_NCh1PZD
#     define OXYGEN
#   endif
#   ifdef BIO_BioEBUS
#     define NITROUS_OXIDE
#   endif
/*   Biology diagnostics   */
#   define DIAGNOSTICS_BIO

```

```

# if defined DIAGNOSTICS_BIO && defined PISCES
#   define key_trc_diaadd
# endif
# endif

/* Lagrangian floats model */
# ifdef FLOATS
#   undef FLOATS_GLOBAL_ATTRIBUTES
#   undef IBM
#   undef RANDOM_WALK
#   ifdef RANDOM_WALK
#     define DIEL_MIGRATION
#     define RANDOM_VERTICAL
#     define RANDOM_HORIZONTAL
#   endif
# endif

/* Stations recording */
# ifdef STATIONS
#   define ALL_SIGMA
# endif

/* USGS Sediment model */
# ifdef SEDIMENT
#   define SUSPLOAD
#   define BEDLOAD
#   define MORPHODYN
# endif

/* MUSTANG Sediment model */
# ifdef MUSTANG
#   undef key_MUSTANG_V2
#   undef key_MUSTANG_bedload
#   undef MORPHODYN
#   define key_sand2D
#   define MUSTANG_CORFLUX
#   undef key_tauskin_c_upwind
#   undef WAVE_OFFLINE
# endif

#elif defined COASTAL

:

#endif /* END OF CONFIGURATION CHOICE */

#include "cppdefs_dev.h"
#include "set_global_definitions.h"

```