TVRegCM

Once a model RegCM installed you will able to configure it as you want. In this workflow is given the main example for some of the available options of the model and it is setup for the region of the South-Eastern Europe.

In the first section of the name list file are options for the domain configuration.

```
! DOMAIN geolocation Stanza
!
 &geoparam
 iproj = 'LAMCON', ! Domain cartographic projection. Supported values are:
                   ! 'LAMCON', Lambert conformal.
                   ! 'POLSTR', Polar stereographic.
                   ! 'NORMER', Normal  Mercator.
                   ! 'ROTMER', Rotated Mercator.
 ds =  10.0,        ! Grid point horizontal resolution in km
 ptop = 5.0,       ! Pressure of model top in cbar
 clat = 43.0,      ! Central latitude  of model domain in degrees
                   ! North hemisphere is positive
 clon = 24.5,      ! Central longitude of model domain in degrees
                   ! West is negative.
 plat = 45.39,     ! Pole latitude (only for rotated Mercator Proj)
 plon = 13.48,     ! Pole longitude (only for rotated Mercator Proj)
 truelatl = 39.35, ! Lambert true latitude (low latitude side)
 truelath = 46.65, ! Lambert true latitude (high latitude side)
 i_band = 0,       ! Use this to enable a tropical band. In this case the ds,
                   ! iproj, clat, clon parameters are not considered.
 /
!
```

Next section is to definite the name of the domain and input/output directory for the run.

```
! DOMAIN terrain generation parameters
!
 &terrainparam
 domname  = 'r1112',   ! Name of the domain. Controls naming of input files
 smthbdy = .false.,      ! Smoothing Control flag
                         !  true  -> Perform extra smoothing in boundaries
 lakedpth    = .false.,  ! If using lakemod (see below), produce from
                         ! terrain program the domain bathymetry
 ltexture    = .false.,  ! If using DUST tracers (see below), produce from
                         ! terrain program the domain soil texture dataset
 lsmoist     = .false.,  ! Use Satellite Soil Moisture Dataset for
                         ! initialization of soil moisture.
 fudge_lnd   = .false.,  ! Fudging Control flag, for landuse of grid
 fudge_lnd_s = .false.,  ! Fudging Control flag, for landuse of subgrid
 fudge_tex   = .false.,  ! Fudging Control flag, for texture of grid
 fudge_tex_s = .false.,  ! Fudging Control flag, for texture of subgrid
 fudge_lak   = .false.,  ! Fudging Control flag, for lake of grid
 fudge_lak_s = .false.,  ! Fudging Control flag, for lake of subgrid
 h2opct = 50.,           ! Surface minimum H2O percent to be considered water
 h2ohgt = .false.,       ! Allow water points to have elevation greater than 0
 ismthlev = 1,           ! How many times apply the 121 smoothing
 dirter = '/xxxxx/xxxx/RegCM/input',      ! Output directory for terrain files
 inpter = '/xxxxx/xxxx/RegCM/REGCM_GLOBEDAT',  ! Input directory for SURFACE dataset
 /
!
```

In section 4 you can setup the buffer zone for relaxation and diffusion term of the boundary conditions

```
! Buffer Zone Control relaxation + diffusion term
!
 &boundaryparam
 nspgx  = 12, ! nspgx-1 represent the number of cross point slices on
              ! the boundary sponge or relaxation boundary conditions.
 nspgd  = 12, ! nspgd-1 represent the number of dot point slices on
              ! the boundary sponge or relaxation boundary conditions.
```

```
 high_nudge =    3.0D0, ! Nudge value high range
 medium_nudge =  2.0D0, ! Nudge value medium range
 low_nudge =     1.0D0  ! Nudge value low range
 /
!
```

Section 5 allows you to choose the initial and boundary condition from different datasets for: sea surface temperature, the global analysis dataset and also for the Global Chemistry boundary conditions. And to setup the path to the ICBC produced input files and to ICBC global datasets.

```
! ICBC Global data input control
!
 &globdatparam
 ibdyfrq =     6,             ! boundary condition interval (hours)
 ssttyp = 'ERSST',            ! Type of Sea Surface Temperature used
                              !  One in: GISST, OISST, OI2ST, OI_WK, OI2WK,
                              !          FV_A2, FV_B2, EH5A2, EH5B1, EHA1B,
                              !          EIN75, EIN15, ERSST, ERSKT, CCSST,
                              !          CA_XX, HA_XX, EC_XX, IP_XX, GF_XX,
                              !          CN_XX, MP_XX
 dattyp = 'EIN15',            ! Type of global analysis datasets used
                              !  One in: ECMWF, ERA40, EIN75, EIN15, EIN25,
                              !          ERAHI, NNRP1, NNRP2, NRP2W, GFS11,
                              !          FVGCM, FNEST, EH5A2, EH5B1, EHA1B,
                              !          CCSMN, ECEXY, CA_XX, HA_XX, EC_XX,
                              !          IP_XX, GF_XX, CN_XX, MP_XX
                              ! with XX for CMIP5 datasets in 26, 45, 85
 chemtyp = 'MZ6HR',           ! Type of Global Chemistry boundary conditions
                              ! One in : MZ6HR, 6 hours MOZART output
                              !        : MZCLM, MOZART climatology 1999-2009
 gdate1 = 1999110100,         ! Start date for ICBC data generation
 gdate2 = 2009123100,         ! End data for ICBC data generation
 calendar = 'gregorian',      ! Calendar type : gregorian, noleap, 360_day
 dirglob = '/xxxxx/xxxx/RegCM/input',         ! Path for ICBC produced input files
 inpglob = '/xxxxx/xxxx/RegCM/REGCM_GLOBEDAT',      ! Path for ICBC global input
datasets.
 ensemble_run = .false.,      ! If this is a member of a perturbed ensemble
                              ! run. Activate random noise added to input
                              ! ICBC controlled by the perturbparam stanza
                    ! Look http://users.ictp.it/~pubregcm/RegCM4/globedat.htm
                    ! on how to download them.
 /
!
```

Next 3 sections are used to setup the start/restart, timing and output control.

```
! Model start/restart control
!
 &restartparam
 ifrest  = .false. ,    ! If a restart
 mdate0  = 2007012000, ! Global start (is globidate1)
 mdate1  = 2007012000, ! Start date of this run
 mdate2  = 2009120100, ! End date for this run
 /
!
! Model timing parameters
!
 &timeparam
 dt     =    25.,    ! time step in seconds
 dtrad  =    30.,    ! time interval solar radiation calculated (minutes)
 dtabem =    18.,    ! time interval absorption-emission calculated (hours)
 dtsrf  =   600.,    ! time interval at which land model is called (seconds)
 /
!
! Model Output control
!
 &outparam
 ifsave  = .false. ,           ! Create SAV files for restart
 savfrq  =    48.,             ! Frequency in hours to create them
 ifatm   = .true. ,            ! Output ATM ?
 atmfrq  =     6.,             ! Frequency in hours to write to ATM
 ifrad   = .true. ,            ! Output RAD ?
 radfrq  =     6.,             ! Frequency in hours to write to RAD
 ifsts   = .true. ,            ! Output STS (frequence is daily) ?
```

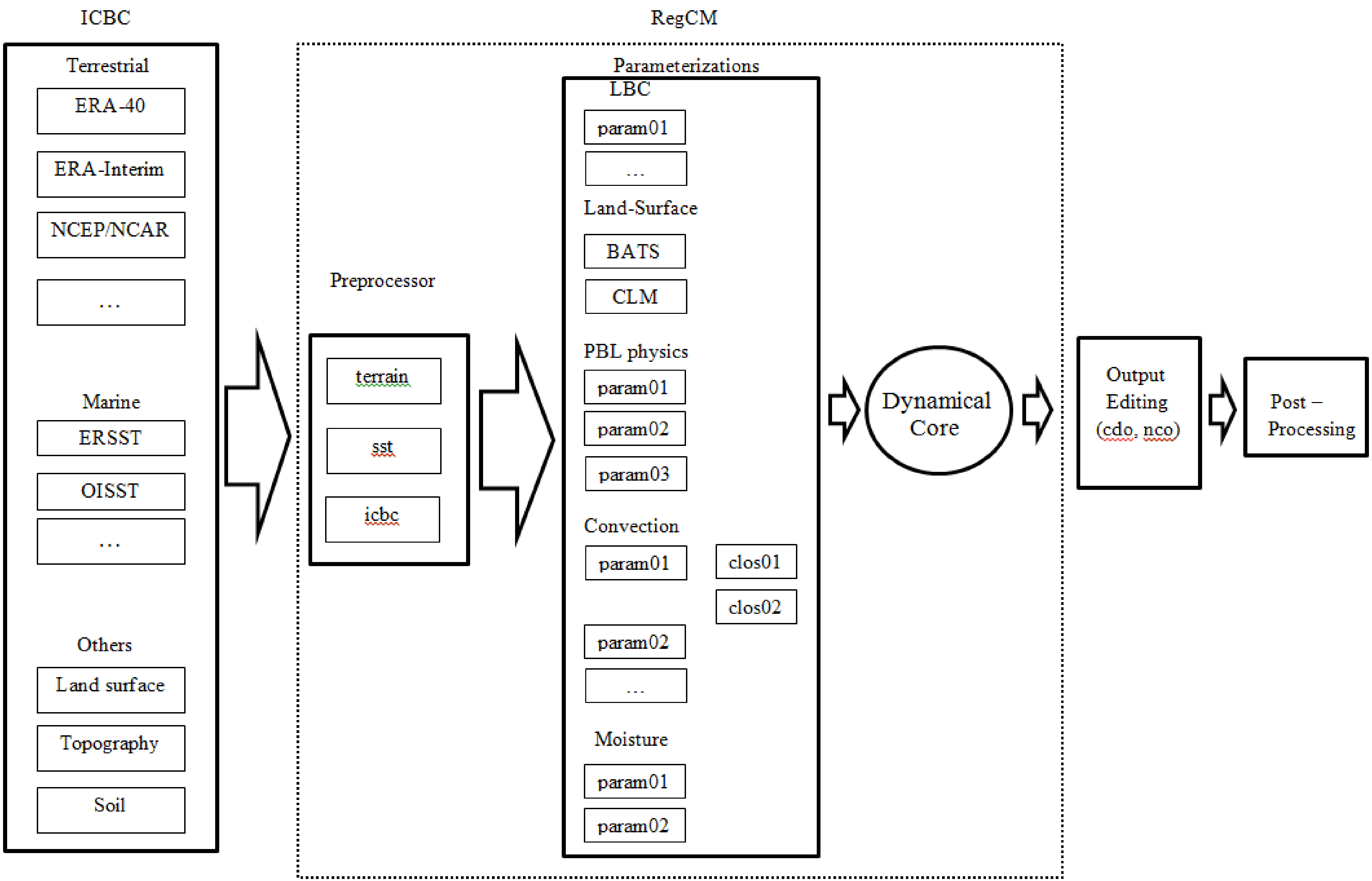
```
 ifsrf   = .true. ,           ! Output SRF ?
 srffrq  =     6.,            ! Frequency in hours to write to SRF
 ifsub   = .false. ,          ! Output SUB ?
 subfrq  =     6.,            ! Frequency in hours to write to SUB
 iflak   = .false.,           ! Output LAK ?
 lakfrq  =     6.,            ! Frequency in hours to write to LAK
 ifchem  = .false.,           ! Output CHE ?
 ifopt   = .false.,           ! Output OPT ?
 chemfrq =     6.,            ! Frequency in hours to write to CHE
 enable_atm_vars = 64*.true., ! Mask to eventually disable variables ATM
 enable_srf_vars = 30*.true., ! Mask to eventually disable variables SRF
 enable_rad_vars = 23*.true., ! Mask to eventually disable variables RAD
 enable_sub_vars = 17*.true., ! Mask to eventually disable variables SUB
 enable_sts_vars = 17*.true., ! Mask to eventually disable variables STS
 enable_lak_vars = 18*.true., ! Mask to eventually disable variables LAK
 enable_opt_vars = 13*.true., ! Mask to eventually disable variables OPT
 enable_che_vars = 24*.true., ! Mask to eventually disable variables CHE
 dirout  = '/xxxxx/xxxx/RegCM/output',        ! Path where all output will be placed
 lsync   = .false.,           ! If sync of output files at every timestep is
                              ! requested. Note, it has a performance impact.
                              ! Enabled by default if debug_level > 2
 idiag = 0,                   ! Enable tendency diagnostic output in the ATM
                              ! file. NOTE: output file gets HUGE.
 do_parallel_netcdf_in  = .false., ! This enables paralell input
                                   ! Each processors reads its slice in the
                                   ! input file. Enable ONLY in case of
                                   ! HUGE input bandwidth,
 do_parallel_netcdf_out = .false., ! This enables paralell output if the
                                   ! hdf5/netcdf libraries support it and
                                   ! the model is compiled with :
                                   !    --enable-nc4-parallel
 /
!
```

The last given section for this main example is the different model physics options which you can use. After this section there are a lot of options and controls which you can use and to setup for better performance of the model for your domain, but this is on your risk.

```
! Model Physics
!
 &physicsparam
 iboudy  =          5,  ! Lateral Boundary conditions scheme
                        !   0 => Fixed
                        !   1 => Relaxation, linear technique.
                        !   2 => Time-dependent
                        !   3 => Time and inflow/outflow dependent.
                        !   4 => Sponge (Perkey & Kreitzberg, MWR 1976)
                        !   5 => Relaxation, exponential technique.
 isladvec =         0,  ! Semilagrangian advection scheme for tracers and
                        ! humidity
                        !   0 => Disabled
                        !   1 => Enable Semi Lagrangian Scheme
 ibltyp  =          1,  ! Boundary layer scheme
                        !   0 => Frictionless
                        !   1 => Holtslag PBL (Holtslag, 1990)
                        !   2 => UW PBL (Bretherton and McCaa, 2004)
 icup_lnd =          6, ! Cumulus convection scheme Over Land
 icup_ocn =          6, ! Cumulus convection scheme Over Icean
                        !   1 => Kuo
                        !   2 => Grell
                        !   3 => Betts-Miller (1986) DOES NOT WORK !!!
                        !   4 => Emanuel (1991)
                        !   5 => Tiedtke (1996)
                        !   6 => Kain-Fritsch (1990), Kain (2004)
   igcc  =          1,  ! Grell Scheme Cumulus closure scheme
                        !   1 => Arakawa & Schubert (1974)
                        !   2 => Fritsch & Chappell (1980)
 ipptls  =          2,  ! Moisture scheme
                        !   1 => Explicit moisture (SUBEX; Pal et al 2000)
                        !   2 => Explicit moisture Nogherotto/Tompkins
 iocnflx =          2,  ! Ocean Flux scheme
                        !   1 => Use BATS1e Monin-Obukhov
                        !   2 => Zeng et al (1998)
```

```
                         !   3 => Coare bulk flux algorithm (snowice),
                         !        only activated with coupling
 icumcloud =        2,   ! Use different models for cumulus clouds
 iocncpl =          0,   ! Activates RegCM-ROMS coupled model
                         !   0 => no coupling
                         !   1 => coupling activated
   iocnrough =      1,   ! Zeng Ocean model roughness formula to use.
                         !   1 => (0.0065*ustar*ustar)/egrav
                         !   2 => (0.013*ustar*ustar)/egrav + 0.11*visa/ustar
 ipgf    =          0,   ! Pressure gradient force scheme
                         !   0 => Use full fields
                         !   1 => Hydrostatic deduction with pert. temperature
 iemiss  =          0,   ! Use computed long wave emissivity
 lakemod =          0,   ! Use lake model
 ichem   =          0,   ! Use active aerosol chemical model
 scenario =      'A1B',  ! IPCC Scenario to use in A1B,A2,B1,B2
                         ! RCP Scenario in RCP3PD,RCP4.5,RCP6,RCP8.5
 idcsst   =          0,  ! Use diurnal cycle sst scheme
 iseaice  =          0,  ! Model seaice effects
 idesseas =          0,  ! Model desert seasonal albedo variability
 iconvlwp =          0,  ! Use convective liquid water path as the large-scale
                         ! liquid water path
 irrtm    =          0,  ! Use RRTM radiation scheme instead of CCSM
 iclimao3 =          0,  ! Use O3 climatic dataset from SPARC CMIP5
 isolconst =         1,  ! Use a constant 1367 W/m^2 instead of the prescribed
                         ! TSI recommended CMIP5 solar forcing data.
 islab_ocean =       0,  ! Activate the SLAB ocean model
 itweak =            0,  ! Tweak parameter. Enables modifications in tweakparam.
 /
!
```

On the flowchart below are shown the ICBC, the RegCM preprocessing, parametrizations, and the postprocessing steps.


ICBC
Terrestrial
ERA-40
ERA-Interim
NCEP/NCAR
...
Marine
ERSST
OISST
...
Others
Land surface
Topography
Soil
RegCM
Preprocessor
terrain
sst
icbc
Parameterizations
LBC
param01
...
Land-Surface
BATS
CLM
PBL physics
param01
param02
param03
Convection
param01
clos01
clos02
param02
...
Moisture
param01
param02
Dynamical Core
Output Editing (cdo, nco)
Post – Processing