

CHIMERE Training Course

Add a new variable to the code

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COSY	[Meteorology]	[Pollutants concentrations]	[Dust concentrations]	[Database]
[What is COSY?]	[maps]	[maps]	[maps]	[Meteo]
[Qu'est-ce que COSY?]	[time series]	[surface time series]	[size distr.]	
	[vertical profiles]		[AERONET]	

Chimere WRF/MM5 experimental daily forecast

01 November

02 2010

03

04

05

06

07 Daily Maximum

08 Daily Average

09 D-1

10 D+0

11 D+1

12 D+2

13

14

15 [GEMS] NCEP/MM5 + EMEP

16 [GEMS] IFS/ECMWF + TNO

17 [Paris 15km] NCEP/WRF + EMEP

18 [Paris 5km] NCEP/WRF + EMEP

19

20

21 Ozone ug/m3

22 NO2 ug/m3

23 CO ppb

24 SO2 ug/m3

25 PM10 ug/m3

26 PM2.5 ug/m3

27 Sulfates ug/m3

28 Nitrates ug/m3

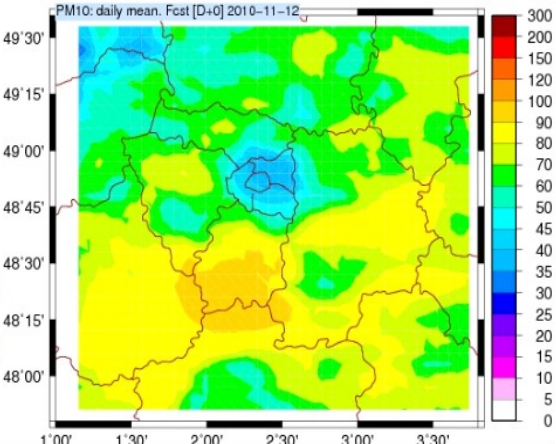
29 Ammonium ug/m3

30 Primary PM ug/m3

31 SOA ug/m3

Dust ug/m3

PM10: daily mean, Fcst [D+0] 2010-11-12



WRF Land Surface Model:

[RUC LSM]

[T_Diffusion]

[Noah LSM]

[Pleim-Xiu LSM]

Tasks

1. Add a 3D variable `tdflag` (`real(kind=8)`) to be passed from workers to the master
 - When choosing the variable make sure there is no variable with this name :

```
cd ../src; grep -ir --include=*.f90 "tdflag" .
```
 - Modify the subroutines indicated in the documentation (page 52).
 - a) Save your original src/ directory to be able to undo the changes
 - b) In addition to the 4 files mentioned in the documentation you will also need to declare `tdflag` in `worker_common.f90`.
 - c) Another tip: you don't have to declare `dbuf3` for the second time!
 - d) Make sure it compiles correctly
 - Run the Heat wave test case (be sure to change the label in `chimere.sh!!`). Verify that
 - a) The computation time is approximately the same as your previous heat wave simulation for 1 day
 - b) The concentrations in the out...nc are the same (`ncdiff` → `ncview` should give a message “all values are zero”)

Tasks (continued)

2. Change output concentrations depending on values of the tdflag variable

- In the **src/initio/outprint.f90** subroutine add a condition

where (tdflag > 10.)

<change a concentration, say multiply by 2)>

endwhere

- The concentration array is toprint(:,:,:),
- This **where** condition is to be put after the line

call master_rcv_toprint(toprint)

within the *ioutspec=1,noutspec* loop. Here 'ioutspec' is your chosen species, and ioutspec=1 corresponds to O3.

in **src/initio/outprint.f90**

- Assign some values to the tdflag variable in the worker
(**src/model/worker.f90** subroutine, just before *call worker_send_locvalues*)
- See how the concentrations in out....nc are affected by the values set for tdflag