new model outputs

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Introduction

- **You want to code a new model output, a new diagnostic in the model physics**

- **But ...**

- **Are you sure you need to code this diagnostic in physics?**

Make the difference between post-processing fields from existing ingredients already in historical files and something inexistant in historical files

Introduction

- **First question : why...code my new output in physics part?**

- **Do you need variables only from physics ?**

- **Do you need model levels variables ?**

- **Do you want a variable calculated on our hour (less or more) ? As max, min, average, etc...**

Introduction

- **If your answers are no**

- **See Jure's lecture about « how to add new fullpos fields »**

Well that may not be sufficient …
Jure’s talk will not deal about surface fields post-processing

Tip : consider a well-known post-processing fields, track it through the code, and mimic what has been done for it.

Introduction

- **If one of your answers is yes**
- **Listen this lecture**
- **Example : visibilities code**

Decompose the job in steps
First step : define your fields

- **Which variables at the output of the model ?**

- **VISICLD: visibility due to fog**
- **VISIHYD: visibility due to rainfall**

Construct your fields (setup)

- **What constants / parameters do you need ?**

(locate where to do the setup computation)

- **Height of visibility**
- **coefficients applied to the contents of hydrometeors**

- **In what namelist ? New namelist or existing one ?**
- **Do not forget YOM and SETUP associated with NAM**

NB : YOM… usage : has changed since OOP ;-)

- **Do not forget activation keys !** *(Do not force the others to compute something they don't want)*

Construct your fields (setup)

- **Should we create a structure?**

It's fashionnable … but don't create over-complexity

- **Maybe ... to code « object » in the spirit of OOPS**

Variables belonging to an existing structure
Or new structure in an existing superstructure ?

- **You can code setup and make a first compilation**

Setup prints are there to verify the setup is OK !

Coding in Physics : « method »

- **Where to code the new output or diagnostic?**

Consider the variables interaction. Minimize complexity. Maximize modularity.

- **In An existing subroutine ?**

If small code, perhaps not … but lost of modularity

- **In A new specific subroutine ?**

If large piece of code, probably yes !

- **For visibilities, in arocldia.F90**

Coding in Physics

- **After, go up the new variables in aplpar.F90 and apl_arome.F90, then in mf_phys.F90 and cpg.F90**

Because so is the calling tree :
Cpg
mf_phys
if (arpege) call aplpar
if (arome) call apl_arome

- **You can try a new compilation**

Final calculation

- **If you want a variable calculated on our hour, as max, min, average, etc** *Can't be calculated from 1 historical file !*

- **You have to code this calculation in cpxfu.F90 and co or cpcfu.F90 and co**

- **You have to provide variables to cpg_dia.F90 from cpg.F90**

- **Do not forget activation keys !**

- **You are ready to add your variables in the post-processing**

Final calculation

- **Sure your new model fields go to historical files ?**

Can you post-process offline ?

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