FVCOM restart work flow

Trying to diagnose why there might be differences between forcing file and restart files causing the jump at start of offline simulations.

So far we have eliminated most of the differences except for the wet/dry masks

offline is missing gotm option… it would only run with MY

MSR is True when on Master node….

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| File | Calls subroutine …. | Comments |
| fvcom.F | set\_startup\_type (startup\_type.F) | (cold or hotstart --- just checks that the choice is appropriate) |
|  | Open\_all (open\_all.F) | For hotstart opens restart, forcing and new\_output. The latter includes instantaneous, average, surface and restart file. |
| Fvcom.F | load\_grid | Loads grid from restart, including obc grid if OBC is on. |
|  | setup\_domain | Generates connectivity matrix, domain decomposition with metis and map for exchanges between global and local domains.  For offline simulations it would be important that we use the compilation flag PARTITION\_SPECIAL and run it on the same number of nodes. |
|  | allocate\_all |  |
|  | setup\_forcing (mod\_force.F) | This opens all forcing (surface, boundary) including the offline files …  at the moment fabm offline doesn’t consider the previous time steps for mask/dry  added initialisation of offline variables similar to sediment offline. |
|  | Startup (mod\_startup.F) | Popoulate initial values with restart file. These include all WD variables (present and previous steps) |
|  | bcond\_gcn(8,0) | Loads surface forcing as well as offline file … this is before integration has began. So the restart values of variables common to both files will be rewritten with those from the offline file. |
|  | Archive (mod\_ncdio.F) | This dumps restart file so it should be populated with the first time step in offline file… this means there should be no difference between any of the restart files (previous month or current month) |
|  | Internal\_step (internal\_step.F) | Populates variables by reading offline file … solves fabm\_update…  re-assigns previous time step values... |
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I can’t see where differences in iswetnt or iswetct are being introduced so that the restart file and offline forcing files don’t agree.

I couldn’t find where the variables read from the restart are broadcast although it could be through one of the overload functions (NC\_CONNECT…, NC\_READ\_VAR…. )

The WD variables read from the oflline are iswetn and iswetc and not the previous time step (as they should have been populated from the restart file). While iswet(n,c) are broadcasted in interal\_step iswet(n,c)t are not… but I can’t explain why the should either…. If there were differences in iswet(n,c)t but not in iswet(n,c) then I could imagine I had overlooked a bug in the code… but that is not the case is it?

My only suggestion to try next at this stage is that we include reading iswet(n,c)t from the offline file.