MFIX - netCDF Support

31-jan-2011

By default, MFIX does not include netCDF support when
creating the executable. You need to modify the make_mfix
file in the model folder:

All line numbers refer to the 26-jan-2011 development version of MFIX.
They might be different in later versions of make_mfix

1) search for the phrase : "netCDF - start" (line 83)

2) change (line 94)

   USE_NETCDF=0   to

   USE_NETCDF=1

3) set the NETCDF_HOME variable (line 99)

4) you will probably need to add $NETCDF_LIBS to the link command
   (see example on line 809). I only added this to the compilers
   I could test on.

5) make mfix.exe as usual

Changes to mfix.dat

1) Add a line similar to:

   bWrite_netcdf = T T F T T

   This tells MFIX which variables to write to the netCDF files.

   bWrite_netcdf(1) = T : write out EP_g
   bWrite_netcdf(2) = T : write out P_g
   bWrite_netcdf(3) = T : write out P_star
   bWrite_netcdf(4) = T : write out U_g / V_g / W_g
   bWrite_netcdf(5) = T : write out U_s / V_s / W_s
   bWrite_netcdf(6) = T : write out ROP_s
   bWrite_netcdf(7) = T : write out T_g
   bWrite_netcdf(8) = T : write out T_s
   bWrite_netcdf(9) = T : write out X_g
   bWrite_netcdf(10) = T : write out X_s
   bWrite_netcdf(11) = T : write out Theta_m
   bWrite_netCDF(12) = T : write out Scalar
   bWrite_netCDF(13) = T : write out ReactionRates
   bWrite_netCDF(14) = T : write out k_turb_g , e_turb_g

   - By default ... all are F

2) At this time, any time you write to any SPX file
   (controlled by SPX_DT in mfix.dat), a netCDF file
   will also be written ... all the variables chosen
   will be written.

   For example:

   bWrite_netcdf = T T

SPX_DT = 0.1 0.2 (etc)

Even though in the SPX files, Pressure will only be written every 0.2 seconds, both EP_g and P will be written to a netCDF file every 0.1 seconds.

There is no change to how the SPX files are written.

The naming of the netCDF files will be:

```
RUN_NAME_00000.nc
RUN_NAME_00001.nc
RUN_NAME_00002.nc

    etc.
```

There is also a RUN_NAME_mesh.nc file created. Most of the data in that file is also in the individual NC files above. I think just the FLAG array is in the mesh file but not in the other files.

You can see what it is in each file using ncdump ...

```
ncdump RUN_NAME_mesh.nc | more
```

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netCDF can be obtained at : http://www.unidata.ucar.edu/software/netcdf/