

The old version of file `visfield_s.dat` is composed with 12 line of integer values.

- The first two lines allows the user to select a series of files should be converted. The first line is associated to the subdomain number and the second line to the file number which are included in the file name.
- The following line contains one integer value which defines the type of file to convert
  - 0 : instantaneous fields : `res_yyyyyy_xxxxxxx.d`
  - 1 : statistical fields : `rst_yyyyyy_xxxxxxx.d`
- The third following lines are associated to the grid indices of the computational domain. These index set allows the user to build a space box for extracting only a part of fields from the computational domain.  
If one of these index values is set to zero, the whole domain is considered regardless of the meshsize, including the ghost cells.
- The following line contains just one integer value for selecting the type of format in which the file will be converted.  
0 : tecplot format (`.plt`) - 1 : VTK format (`.vtk`).
- The following line is a peculiar data related to the vtk format conversion. An integer data defines if the vtk data must be written as a rectilinear form (value 0) or a structured-grid form (value 1).
- The three last lines are reserved to the special case of data manipulation : Please, do not consider them for your work and do not modify them.

### `visfield_s.dat`

```
00000 1 !--- 1st subdomain number and total number of subdomains for
file selection (related to the 1st number in the file name)
0 200 1 !--- 1st file number, last file number and file number-step
for file selection (related to the 2nd number in the file name)
0      !--- Type of file to convert (0 : instantaneous fields, 1:
statistical fields)
0 130   !--- Start and end indices along the I-direction | => space
box for considering only a part of fields
1 130   !--- Start and end indices along the J-direction |      a zero
value indicates the whole computational domain is considered
1 130   !--- Start and end indices along the K-direction |
1      !--- selection of the format conversion -> 0 : tecplot format
(.plt) - 1 : VTK format (.vtk)
0      ! Only for VTK format -> 0 : rectilinear form , 1: structured
grid form
rst_00000_0000001.d !--- special data. Do not modify it.
3                  !--- special data. Do not modify it.
1 3              !--- special data. Do not modify them.
EOF
```

The new version of file, `visfield_sunfluidh.dat`, allows you to use much more functionalities of VISFIELD, like slice reading. Data setup is organised with the concept of Namelist. All possibilities are described in the example provided here.

### `visfield_sunfluidh.dat`

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Data parameters for converting the SUNFLUIDH binary files to Tecplot or
VTK format
```

New data file for the new release of VISFIELD

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          Domain decomposition  (MPI simulation)
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```

Number of subdomains along each direction (I,J and K)  
for a simulation performed with a domain decomposition approach (MPI)  
If MergingData\_Enabled=.true., all subdomain fields are grouped in a  
same Tecplot or VTK file

```
&DomainDecompositionFeatures NumberOfSubdomains_Idir= 1,
                              NumberOfSubdomains_Jdir= 1,
                              NumberOfSubdomains_Kdir= 1,
                              MergingData_Enabled=.false. /
```

```
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          File parameters
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```

Define the features of the file to convert

```
TypeOfData ='snapshots'      --> instantaneous fields
: files res_XXXXX_YYYYYYY.d
TypeOfData ='block_snapshots' --> instantaneous fields on specified
blocks : files res_XXXXX_YYYYYYY.d
TypeOfData ='stastistics'     --> statistics fields
: files rst_XXXXX_YYYYYYY.d
```

```
TypeOfData ='slices'          --> fields on slices
: files slice_sn_d_xxxxx_yyyyyyy.d
```

Special data :

```
TypeOfData ='space_averaged_snapshots'      --> space averaged
snapshots along a direction : files spav_plan_d_yyyyyyy.d
```

Default parameters implicitly imposed :

MergingData\_Enabled= .false. (data already gathered in a unic file)

Any parameter related to the domain decomposition is set such as only one domain is considered

with :

```
xxxxx    : rank of subdomain (MPI process)
yyyyyyy  : number associated to the time recording of data
d        : this number indicates the orientation of the plan
(automatically considered by the VISFIELD)
sn       : rank of the plane (rank in the SUNFLUIDH data
file)
```

```
FirstSubdomainRank = xxxxx    : first subdomain rank for
files to convert
```

```
NumberOfSubdomains = xxxxx    : Number of subdomains to
consider from FirstSubdomainRank
```

```
SubdomainsStride      : Stride on subdomain ranks
```

```
FirstRecordingIndex = yyyyyyy : first time recording value
for files to convert
```

```
LastRecordingIndex  = yyyyyyy : last time recording value for
files to convert
```

```
IndexStride          : stride on time recording
value
```

```
FirstSlice_ID= sn     : Value of the first rank for 'slices'
data files to convert
```

```
LastSlice_ID = sn     : Value of the last rank for 'slices'
data files to convert
```

```
FirstBlock_ID= sn     : Value of the first rank for
'block_snapshots' data files to convert
```

```
LastBlock_ID = sn     : Value of the last rank for
'block_snapshotss' data files to convert
```

Notes : - By default SubdomainsStride and IndexStride are set to 1

- By default NumberOfSubdomains = NumberOfSubdomains\_Iidir \* NumberOfSubdomains\_Jdir \* NumberOfSubdomains\_Kdir

- When 'slices' is selected, FirstSubdomainRank must be the lowest MPI rank in which the plane is defined.

when MergingData\_Enabled= .true. :

NumberOfSubdomains is automatically updated by

VISFIELD in regard to NumberOfSubdomains\_Iidir, NumberOfSubdomains\_Jdir and NumberOfSubdomains\_Kdir

when MergingData\_Enabled= .false.  
: NumberOfSubdomains must take into account all the MPI rank covering the plane  
(NumberOfSubdomains= FirstSubdomainRank + the highest MPI rank in which the plane is defined)  
If a file selected by VISFIELD is not present in the work directory, it is ignored  
- When 'snapshots' or 'statistics' is selected, NumberOfSubdomains can be ignored if NumberOfSubdomains\_Idir, NumberOfSubdomains\_Jdir, NumberOfSubdomains\_Kdir are correctly set.  
All subdomain will be considered if FirstSubdomainRank= 0  
if the user want only convert some subdomain files, he may plays with FirstSubdomainRank, NumberOfSubdomains, SubdomainsStride  
- When 'space\_averaged\_snapshots' is selected, MergingData\_Enabled= .false. . Data are automatically regrouped in a single file  
If a file selected by VISFIELD is not present in the work directory, it is ignored

&DataFileFeatures    TypeOfData="statistics",  
                         FirstRecordingIndex=1 ,  
                         LastRecordingIndex= 1 ,  
                         IndexStride= 1 /

!DataFileFeatures    TypeOfData="snapshots",  
                         FirstRecordingIndex=1 ,  
                         LastRecordingIndex= 5,  
                         IndexStride= 1 /

!DataFileFeatures    TypeOfData="block\_snapshots",  
                         FirstRecordingIndex=1 ,  
                         LastRecordingIndex= 10,  
                         IndexStride= 1  
                         FirstBlock\_ID=1,  
                         LastBlock\_ID=1 /

!DataFileFeatures    TypeOfData="slices",  
                         FirstRecordingIndex= 1 ,  
                         LastRecordingIndex= 10,  
                         FirstSubdomainRank = 0,  
                         NumberOfSubdomains= 1,  
                         FirstSlice\_ID=1,  
                         LastSlice\_ID=1,  
                         IndexStride= 1 /

```
!DataFileFeatures  TypeOfData="space_averaged_snapshots",
                    FirstRecordingIndex=1 ,
                    LastRecordingIndex= 40 /

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                    Format conversion
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VelocityCylindricalCoordinates= .True. In cylindrical geometry, the
coordinates are converted to cartesian geometry while the velocity
components leave in cylindrical geometry
                                   else (false) they also converted
TecplotFormat_Enabled= .true.   Binary data are converted to Tecplot
data
VTKFormat_Enabled      = .true.   Binary data are converted to Legacy VTK
data

&DataFormat  VelocityCylindricalCoordinates=.False.,
              TecplotFormat_Enabled = .True. /
              !VTKFormat_Enabled= .true. /

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      Special case : Extract field fluctuations from snapshots and
statistics data
              RESTRICTED USE !!!!
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&ExtractFluctuations_Special/ ExtractFluctuations_Enabled= .false. ,
                                   NumberOfFields= 1,
StatisticsFileName='rst_00000_0000001.d' /
```

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<https://sunfluidh.lisn.upsaclay.fr/> - **Documentation du code de simulation numérique SUNFLUIDH**

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