

XIOS - Ecriture des données (1/2)

```
<context id="atmosphere">
```

```
- <field_definition enabled=".true." freq_op="1ts" operation="average" ts_enabled=".true.">
```

```
<field id="temp" name="temp" long_name="Air temperature" unit="K" grid_ref="grid_atm_3D" />
```

```
<field id="rhum" name="rhum" long_name="Relative humidity" grid_ref="grid_atm_3D" />
```

```
<field id="flat" name="flat" long_name="Latent heat flux" grid_ref="grid_atm_2D" />
```

```
<field id="tsol" name="tsol" long_name="Surface Temperature" grid_ref="grid_atm_2D" />
```

```
<field id="slp" name="slp" long_name="Sea Level Pressure" grid_ref="grid_atm_2D" />
```

```
<field id="tempC_max" field_ref="tempC" operation="maximum" />
```

```
<field id="tsol_recv" name="tsol" long_name="Surface Temperature" grid_ref="grid_atm_2D" />
```

```
<field id="tsol_send" name="tsol" long_name="Surface Temperature" grid_ref="grid_atm_2D" />
```

```
</field_definition>
```

```
- <file_definition type="one_file" par_access="collective" sync_freq="6h" enabled=".true.">
```

```
- <file id="output_atmosphere_3D" name="output_atmosphere_3D" output_freq="5d" compression_level="2">
```

```
<field field_ref="temp" />
```

```
<field id="tempC" field_ref="temp" name="tempC" long_name="Air temperature en degC" unit="degC">temp - 273.15</field>
```

```
<field field_ref="tempC" name="tempC_ave_max" operation="average" freq_op="1d">@tempC_max</field>
```

```
<field field_ref="rhum" />
```

```
</file>
```

```
= <file id="output_atmosphere_2D" name="output_atmosphere_2D" output_freq="1ts" enabled=".true." timeseries="both" ts_prefix="TS">
```

```
<field field_ref="flat" ts_split_freq="2d" />
```

```
<field field_ref="tsol" />
```

```
<field field_ref="slp" />
```

```
</file>
```

```
= <file id="tsol_recv" name="TS_tsol_saved" output_freq="1ts" mode="read" enabled=".true.">
```

```
<field id="tsol_recv" name="tsol" grid_ref="grid_atm_2D" operation="instant" freq_offset="1ts" />
```

```
</file>
```

```
= <file id="tsol_send" name="tsol_send" output_freq="1ts" enabled=".true.">
```

```
<field field_ref="tsol_send" />
```

```
</file>
```

```
= <file id="output_atmosphere_2D_compressed" name="output_atmosphere_2D_compressed" enabled=".false.">
```

```
<field field_ref="tsol" />
```

```
</file>
```

```
</file_definition>
```

```
=
```

XIOS - Ecriture des données (2/2)

```
<context id="atmosphere">
```

```
- ...
```

```
= <file id="tsol_recv" name="TS_tsol_saved" output_freq="1ts" mode="read" enabled=".true.">  
  <field id="tsol_recv" name="tsol" grid_ref="grid_atm_2D" operation="instant" freq_offset="1ts" />  
</file>
```

```
= <file id="tsol_send" name="tsol_send" output_freq="1ts" enabled=".true.">  
  <field field_ref="tsol_send" />  
</file>
```

```
</file_definition>
```

```
...
```

```
- <axis_definition>  
  <axis id="axis_atm" />  
</axis_definition>
```

```
- <domain_definition>  
  <domain id="domain_atm" />  
</domain_definition>
```

```
- <grid_definition>
```

```
= <grid id="grid_atm_2D">  
  <domain domain_ref="domain_atm" />  
</grid>
```

```
= <grid id="grid_atm_3D">  
  <domain domain_ref="domain_atm" />  
  <axis axis_ref="axis_atm" />  
</grid>
```

```
</grid_definition>
```

```
=
```

XIOS - Compression

```
- <context id="atmosphere">  
  
  - <field_definition freq_op="1ts" default_value="9.96921e+36" operation="average" grid_ref="grid_atm_2D"  
    enabled=".TRUE.">  
    <field id="tsol" name="tsol" long_name="Surface Temperature" unit="K" />  
    <field id="flat" name="flat" long_name="Latent heat flux" unit="W/m2" />  
    <field id="slp" name="slp" long_name="Sea Level Pressure" unit="Pa" />  
  </field_definition>  
  
  - <file_definition type="one_file" par_access="collective" output_freq="1d" enabled=".TRUE.">  
  - <file id="output_atmosphere_2D" name="output_atmosphere_2D" compression_level="2">  
    <field field_ref="tsol" />  
    <field field_ref="flat" />  
    <field field_ref="slp" />  
  </file>  
  - <file id="output_atmosphere_2D_compressed" name="output_atmosphere_2D_compressed">  
    <field field_ref="tsol" indexed_output=".true." />  
  </file>  
  </file_definition>  
  
  - <domain_definition>  
  - <domain id="domain_atm" />  
  </domain_definition>  
  
  - <grid_definition>  
  - <grid id="grid_atm_2D">  
    <domain domain_ref="domain_atm" />  
  </grid>  
  </grid_definition>  
  
</context>
```

XIOS – Performances (1/2)

8CPUs clients, mode attaché, multiple file

-> report : Performance report : total time spent for XIOS : 51.0672 s
-> report : Performance report : time spent for waiting free buffer : 0.0107556 s
-> report : Performance report : Ratio : 0.0210616 %

Temps simu : 72s

8CPUs clients, mode attaché, one file

-> report : Performance report : total time spent for XIOS : **95.7561 s**
-> report : Performance report : waiting free buffer : 0.0112681 s
-> report : Performance report : **Ratio : 0.0117675 %**

Temps simu : 117s

8CPUs clients, mode server, 1 serveur

Client

-> report : Performance report : total time spent for XIOS : **113.378 s**
-> report : Performance report : time spent for waiting free buffer : 82.5667 s
-> report : Performance report : Ratio : **72.824 %**

Server

-> report : Performance report : Time spent for XIOS : **132.031**
-> report : Performance report : Time spent in processing events : 125.174
-> report : Performance report : Ratio : **94.8063%**

Temps simu 135s

8CPUs clients, mode server, 2 servers

Client

-> report : Performance report : total time spent for XIOS : **69.6914 s**
-> report : Performance report : waiting free buffer : 38.7014 s
-> report : Performance report : **Ratio : 55.5325 %**

Server

-> report : Performance report : Time spent for XIOS : **88.21**
-> report : Performance report : Time spent in processing events : 84.825
-> report : Performance report : **Ratio : 96.1625%**

Temps simu : 91s

8CPUs clients, mode server, 4 servers

Client

-> report : Performance report : total time spent for XIOS : **45.9415 s**
-> report : Performance report : time spent for waiting free buffer : 14.9638 s
-> report : Performance report : Ratio : **32.5714 %**

Server

-> report : Performance report : Time spent for XIOS : **64.667**
-> report : Performance report : Time spent in processing events : 61.5969
-> report : Performance report : Ratio : **95.2524%**

Temps simu : 68s

8CPUs clients, mode server, 8 servers

Client

-> report : Performance report : total time spent for XIOS : **41.7019 s**
-> report : Performance report : waiting free buffer : 10.7232 s
-> report : Performance report : Ratio : **25.7139 %**

Server

-> report : Performance report : Time spent for XIOS : **60.3472**
-> report : Performance report : Time spent in processing events : 57.606
-> report : Performance report : Ratio : 95.4577%

Temps simu 64s

XIOS – Performances (2/2)

8CPUs clients, mode server, 4 servers

Client

-> report : Performance report : total time spent for XIOS : **45.9415 s**
-> report : Performance report : time spent for waiting free buffer : 14.9638 s
-> report : Performance report : Ratio : **32.5714 %**

Server

-> report : Performance report : Time spent for XIOS : **64.667**
-> report : Performance report : Time spent in processing events : 61.5969
-> report : Performance report : Ratio : **95.2524%**

Temps simu : 68s



8CPUs clients, mode server, 8 servers

Client

-> report : Performance report : total time spent for XIOS : **41.7019 s**
-> report : Performance report : waiting free buffer : 10.7232 s
-> report : Performance report : Ratio : **25.7139 %**

Server

-> report : Performance report : Time spent for XIOS : **60.3472**
-> report : Performance report : Time spent in processing events : 57.606
-> report : Performance report : Ratio : 95.4577%

Temps simu 64s



8CPUs clients, mode server, 12 servers

Client

-> report : Performance report : total time spent for XIOS : **40.2722 s**
-> report : Performance report : time spent for waiting free buffer : 9.08554 s
-> report : Performance report : Ratio : **22.5603 %**

Server

-> report : Performance report : Time spent for XIOS : 58.931
-> report : Performance report : Time spent in processing events : 55.8504
-> report : Performance report : Ratio : 94.7724%

Temps simu 62s



8CPUs clients, mode server, 14 servers

Client

-> report : Performance report : total time spent for XIOS : **34.7165 s**
-> report : Performance report : waiting free buffer : 3.45102 s
-> report : Performance report : Ratio : **9.94057 %**

Server

-> report : Performance report : Time spent for XIOS : 53.5081
-> report : Performance report : Time spent in processing events : 50.5509
-> report : Performance report : Ratio : 94.4734%

Temps simu : 58s



8CPUs clients, mode server 16 servers

Client

-> report : Performance report : total time spent for XIOS : **48.8472 s**
-> report : Performance report : time spent for waiting free buffer : **17.5731 s**
-> report : Performance report : Ratio : **35.9756 %**

Server

-> report : Performance report : Time spent for XIOS : 67.6282
-> report : Performance report : Time spent in processing events : 64.7053
-> report : Performance report : Ratio : 95.678%

Temps simu 72s



8CPUs clients, mode server 16 servers, multiple_file

Client

-> report : Performance report : total time spent for XIOS : **32.0338 s**
-> report : Performance report : waiting free buffer : 0.819322 s
-> report : Performance report : Ratio : **2.55768 %**

Server

-> report : Performance report : Time spent for XIOS : **50.6573**
-> report : Performance report : Time spent in processing events : 20.1324
-> report : Performance report : **Ratio : 39.7423%**

Temps simu : 55s

XIOS – Mémoire

optimal_buffer_size = “performance” (iodef.xml)

```
[rces061@ada338: TP2]$ cat xios_client_00.out
```

```
-> report : Memory report : Context <atmosphere> : client side : total memory used for buffer 2931784 bytes
```

```
-> report : Memory report : Context <atmosphere> : server side : total memory used for buffer 359493 bytes
```

```
[rces061@ada338: TP2]$ cat xios_server_00.out
```

```
-> report : Memory report : Context <atmosphere_server> : client side : total memory used for buffer 359493 bytes
```

```
-> report : Memory report : Context <atmosphere_server> : server side : total memory used for buffer 2931784 bytes
```

optimal_buffer_size = “memory” (iodef.xml)

```
[rces061@ada338: TP2]$ cat xios_client_00.out
```

```
-> report : Memory report : Context <atmosphere> : client side : total memory used for buffer 359498 bytes
```

```
-> report : Memory report : Context <atmosphere> : server side : total memory used for buffer 359493 bytes
```

```
[rces061@ada338: TP2]$ cat xios_server_00.out
```

```
-> report : Memory report : Context <atmosphere_server> : client side : total memory used for buffer 359493 bytes
```

```
-> report : Memory report : Context <atmosphere_server> : server side : total memory used for buffer 359498 bytes
```

- « **memory** » : optimisation mémoire : la taille des buffers permet de traiter un seul champ à la fois.
- « **performance** » : optimisation performance = gain temps de restitution : la taille des buffers permet de traiter l'ensemble des champs d'un pas de temps d'écriture.

XIOS - Grilles

```
- <field_definition freq_op="1ts" operation="average" grid_ref="grid_atm_2D" enabled=".TRUE.">
  <field id="tsol" name="tsol" long_name="Surface Temperature" unit="K" />
</field_definition>

- <file_definition type="one_file" par_access="collective" output_freq="1d" enabled=".TRUE.">

- <file id="output_atmosphere_2D_HR" name="output_atmosphere_2D_HR">
  <field field_ref="tsol" grid_ref="grid_atm_2D_HR" />
</file>

<file id="output_atmosphere_2D_zoom" name="output_atmosphere_2D_zoom">
  <field field_ref="tsol" grid_ref="grid_atm_2D_zoom" />
</file>

</file_definition>

- <domain_definition>

- <domain id="domain_atm" />
- <domain id="domain_atm_HR" ni_glo="200" nj_glo="200" type="rectilinear">
  <generate_rectilinear_domain />
  <interpolate_domain />
</domain>

</domain_definition>

- <grid_definition>

- <grid id="grid_atm_2D">
  <domain domain_ref="domain_atm" />
</grid>
- <grid id="grid_atm_2D_HR">
  <domain domain_ref="domain_atm_HR" />
</grid>
- <grid id="grid_atm_2D_zoom">
  <domain domain_ref="domain_atm" />
  <zoom_domain id="domain_atm_zoom" ibegin="0" jbegin="0" ni="10" nj="10" />
</domain>
</grid>

</grid_definition>
```