

Gtool5 Fortran 90/95 Library

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Gtool project, dcmodel project,
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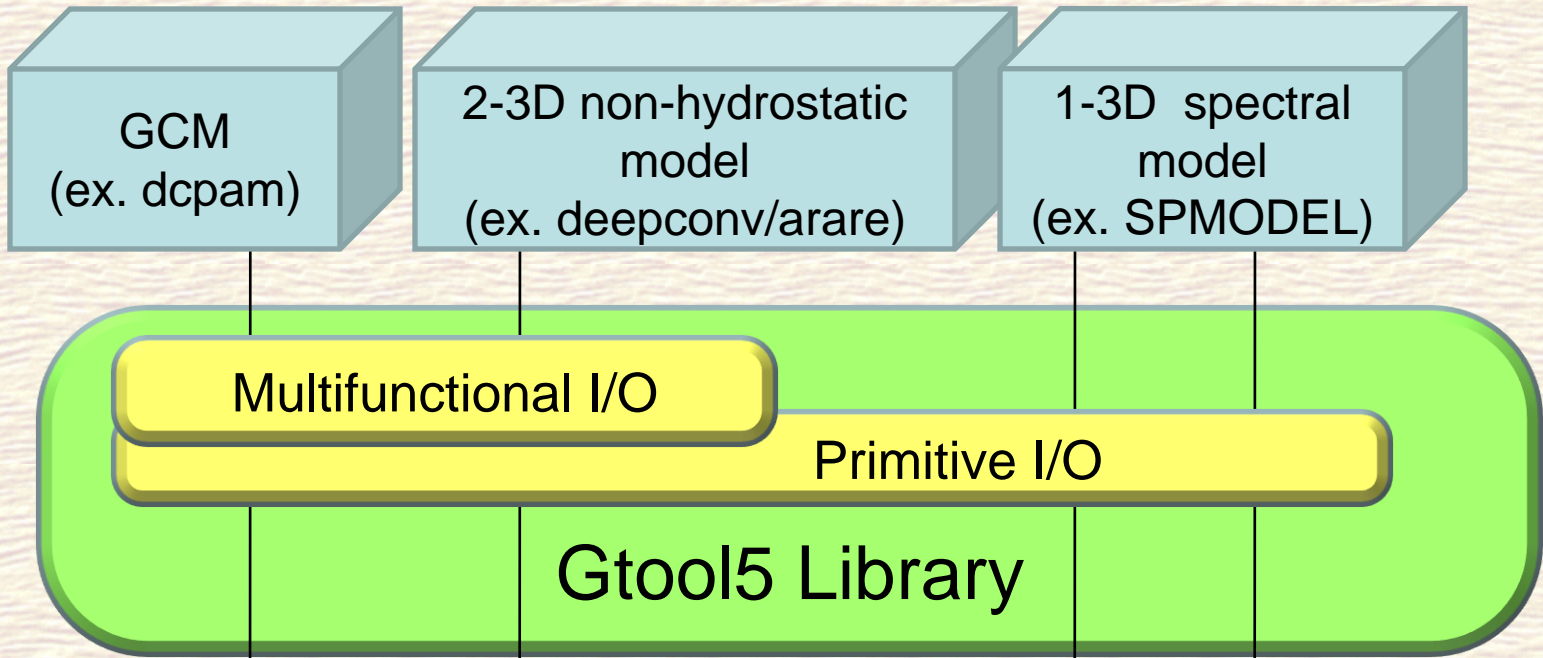


What is Gtool5 ?

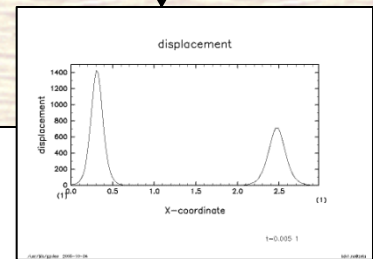
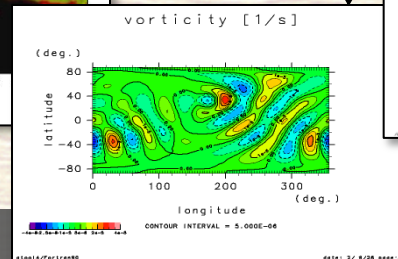
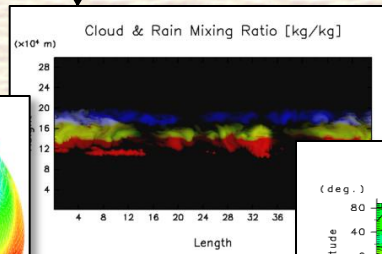
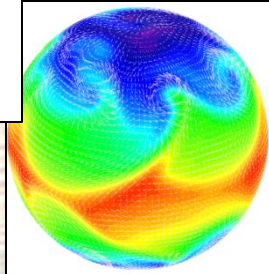
- **Data I/O Fortran 90/95 Library for various numerical models for fluid dynamics in Earth and planetary sciences.**
- **Features**
 - Data format conforms to Gtool4 NetCDF Conventions (~= CF Conventions)
 - ◆ Analysis and visualization can be performed easily
 - Respond to requests for primitive I/O and multifunctional I/O
 - ◆ Source codes for data I/O can be unified in various models (ex. simple 1D model – 3D GCM)
 - Object-oriented programming
 - ◆ Cost of development/maintenance is decreased

Role of Gtool5

- Provide similar I/O interfaces for 1 – 3 dimensional models



NetCDF Data with
Gtool4 Convention
(\approx CF Convention)



Appearances of 2 Interfaces are unified

- Respond to requests for primitive I/O and multifunctional I/O

Primitive I/O	Multifunctional I/O	
Ignore NAMELIST file, similar to Fortran intrinsic data I/O style	Parse NAMELIST file and change output on/off, output interval, averaging, etc.	Functions
HistoryXXXX(A, B, C, ...)	HistoryAutoXXXX(A, B, C, ...)	Interfaces

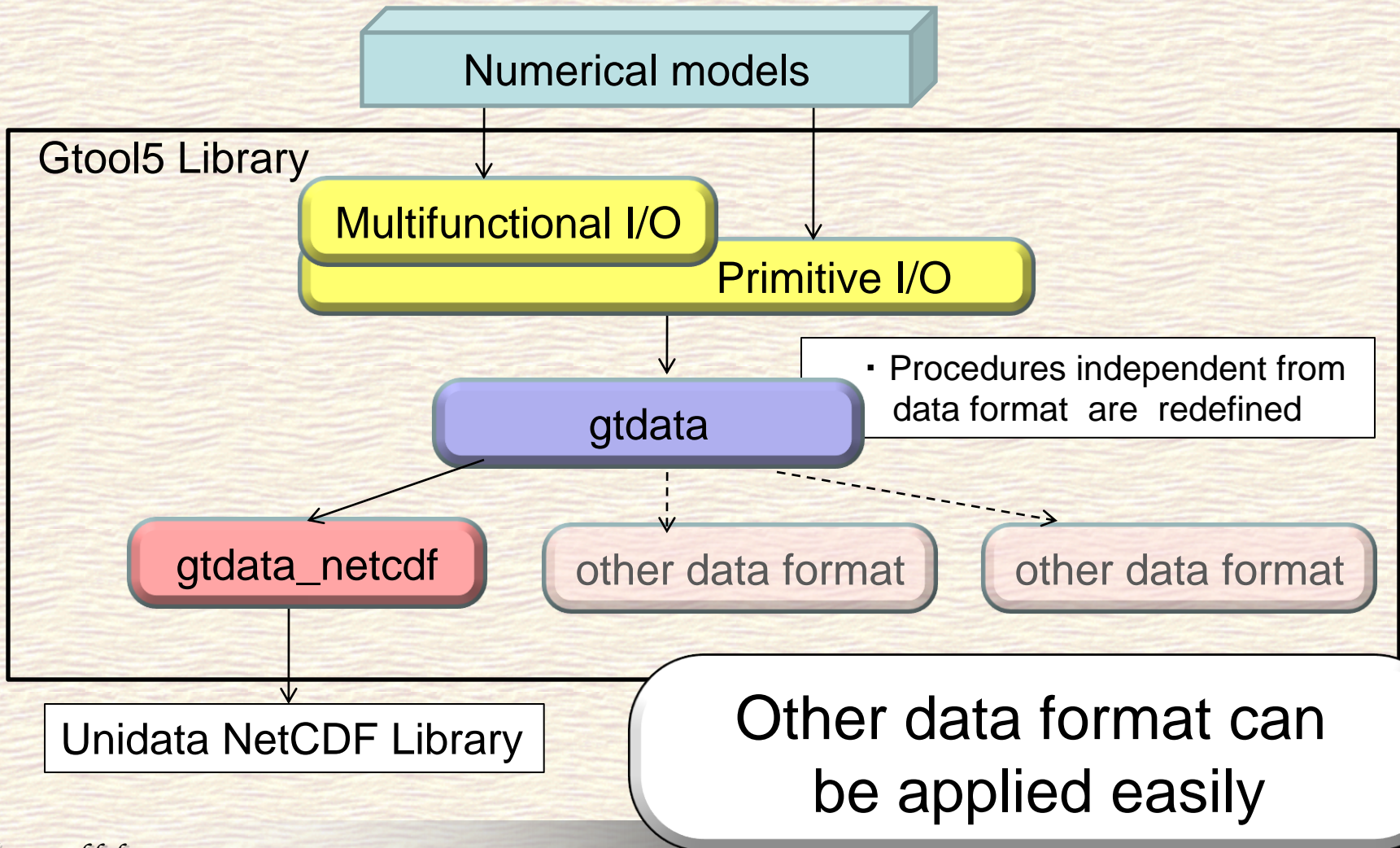


Name and arguments of subroutines are similar

Source codes for data I/O can be almost unified in various models

Gtool5 Library Structure

- Programs are structured with object-oriented programming



Appendix:

Examples of source codes for data I/O

SPMODEL

```
call HistoryAutoCreate( ... &  
  dims=(/'lon', 'lat', 'sig'../) &  
  .. )  
call HistoryAutoAddVariable( &  
  'vor', .. )  
call HistoryAutoPut('vor', xyz_vor)  
call HistoryAutoClose
```

```
call HistoryCreate( ... &  
  dims=(/'x', 't'/) &  
  .. )  
call HistoryAddVariable( &  
  'zeta', .. )  
call HistoryPut('zeta', g_Zeta)  
call HistoryClose
```

DCPAM

```
call HistoryAutoCreate( ... &  
  dims=(/'x', 'z', 's', 't'../) &  
  .. )
```

```
call HistoryAutoAddVariable(  
  'Exner', .. )
```

```
call HistoryAutoPut('Exner', xz_Exner)
```

```
call HistoryAutoClose
```

deepconv/arare

Differences of models are absorbed by arguments