

# DCPAM Reference Manual

GFD Dennou Club

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# 1 Module `dycore_dynamics_mod`

- Developers: Morikawa Yasuhiro
- Version: \$Id: dycore\_dynamics.f90,v 1.8 2005/01/20 12:07:07 morikawa Exp \$
- Tag Name: \$Name: \$
- Change History:

## 1.1 Overview

Call `dynamics_mod`

## 1.2 Error Handling

## 1.3 Known Bugs

## 1.4 Note

## 1.5 Future Plans

## 1.6 Dependency

```
use type_mod,      only : STRING
```

## 1.7 Public Interface

```
private
public :: dycore_dynamics_init      ! subroutines
public :: dycore_dynamics_prediction ! subroutines
public :: dycore_dynamics_diagnostic ! subroutines
public :: dycore_dynamics_diffusion ! subroutines
public :: dycore_dynamics_end      ! subroutines
```

## 1.8 Procedure Interface

### 1.8.1 Initialize module and

`dynamics_mod` を初期化し、`Vars_a` 変数を allocate する。

```
subroutine dycore_dynamics_init( Dims, Vars_a )
```

### Dependency

```
use dycore_type_mod, only: DYCORE_VARS, DYCORE_DIMS, &
    &                        STRING, DBKIND, INTKIND
use dycore_grid_mod, only: im, jm, km
use dynamics_mod,      only: dynamics_init
use spml_mod,          only: spml_init
use dc_trace,          only: BeginSub, EndSub, DbgMessage
```

### Input

```
type(DYCORE_DIMS), intent(in) :: Dims    ! 次元データ全種
```

### Output

```
type(DYCORE_VARS), intent(out):: Vars_a ! 格子点データ全種 (t+
t)
```

## 1.8.2 Calculate Predictional Values

予報変数を計算し、Vars\_a に返す。

```
subroutine dycore_dynamics_prediction( Dims, Vars_b, Vars_n, Vars_a )
```

### Dependency

```
use dycore_type_mod, only: DYCORE_VARS, DYCORE_DIMS, &
    &                        STRING, DBKIND, INTKIND
use dynamics_mod,      only: dynamics_leapfrog
use dc_trace,          only: BeginSub, EndSub, DbgMessage
```

### Input

```
type(DYCORE_DIMS), intent(in)  :: Dims    ! 次元データ全種
type(DYCORE_VARS), intent(in)  :: Vars_b ! 格子点データ全種
type(DYCORE_VARS), intent(in)  :: Vars_n ! 格子点データ全種
```

### Output

```
type(DYCORE_VARS), intent(inout):: Vars_a ! 格子点データ全種 (t+
t)
```

### 1.8.3 Calculate Diagnostic Values

渦度発散から、風速 (経度成分、緯度成分) を得る。

```
subroutine dycore_dynamics_diagnostic( Dims, Vars_a )
```

#### Dependency

```
use dycore_type_mod, only: DYCORE_VARS, DYCORE_DIMS, &
    &                      STRING, DBKIND, INTKIND
use dynamics_mod,      only: dynamics_diagnostic
use dc_trace,          only: BeginSub, EndSub, DbgMessage
```

#### Input

```
type(DYCORE_DIMS), intent(in)  :: Dims  ! 次元データ全種
```

#### In/Out

```
type(DYCORE_VARS), intent(inout):: Vars_a ! 格子点データ全種 (t+
t)
```

### 1.8.4 Calculate Diffusion Terms

水平拡散項の計算。

```
subroutine dycore_dynamics_diffusion( Vars_b, Vars_a )
```

#### Dependency

```
use dycore_type_mod, only: DYCORE_VARS, DYCORE_DIMS, &
    &                      STRING, DBKIND, INTKIND
use dynamics_mod,      only: dynamics_diffusion
use dc_trace,          only: BeginSub, EndSub, DbgMessage
```

#### Input

```
type(DYCORE_VARS), intent(in)  :: Vars_b ! 格子点データ全種 (t-
t)
```

#### In/Out

```
type(DYCORE_VARS), intent(inout):: Vars_a ! 格子点データ全種 (t+
t)
```

### 1.8.5 Terminate module

dynamics\_mod の終了処理を行なう。

```
subroutine dycore_dynamics_end
```

#### Dependency

```
use dycore_type_mod, only: STRING, DBKIND, INTKIND
use dynamics_mod,    only: dynamics_end
use dc_trace,        only: BeginSub, EndSub, DbgMessage
```