

## INTERPB

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### 11.1 Purpose

Generally performs  $\sigma$  to pressure interpolations

- REGRID input
  - FILE\_MMOUTP:YYYY-MM-DD\_HH
  - For projection change
- $r$  / RAWINS, INTERPF (bare bones) input
  - REGRID\_DOMAIN $n$
  - For re-analysis or directly back into INTERPF
- Interpolated model output (all variables)
  - MMOUTP\_DOMAIN $n$
  - For user-level diagnostics
  - GRAPH, INTERPF, little\_r

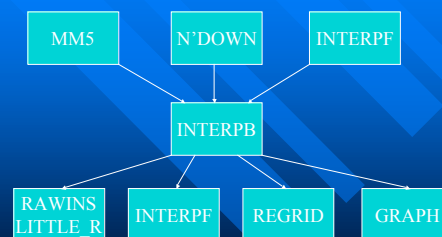
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### 11.2 Procedure

- 🔧 Input data from  $\sigma$ -level source
- 🔧 Diagnose 3d fields: pressure, RH, Z
- 🔧 Diagnose 2d fields: Psfc, SLP, lat/lon
- 🔧 Extrapolate above top  $\sigma$  to ptop, and below ground (options in ./hidden/namelist.input)
- 🔧 Interpolate to chosen p-levels (options in hidden namelist)
- 🔧 Output p-level data in two formats: MM5v3 and intermediate

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### 11.2 Purpose



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### 11.3 Sea Level Pressure Computation

The computations are nearly the inverse of the SLP to Psfc diagnostic in INTERPF.

- 🔧 Find surrounding s-levels 100 hPa above surface, compute  $T_{100\_up}$
- 🔧 Compute  $T_{surface}$  and  $T_{mean}$ , then Z 100 hPa up, then  $T_{slv}$  with standard lapse rate
- 🔧 Pslv using same eqn from INTERPF  
([head to interpf if they look suspicious](#))

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### 11.4 Vertical Interpolation/Extrapolation

Because of the definition of  $\sigma$  as normalized between the ground surface and the model top pressure, the half  $\sigma$ -levels never require extrapolation. To compute the pressure levels from  $\sigma$  data ALWAYS require extrapolation.

From namelist options, users choose interpolation and extrapolation options (hidden, accept the defaults, PLEASE)

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## 11.6 FORTRAN Namelist Input File

### RECORD0

- **INPUT\_FILE** – CHARACTER string, file name + optional directory structure for input  $\sigma$ -level data

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## 11.6 FORTRAN Namelist Input File

### RECORD1

- **start\_year**: 4-digit integer
- **start\_month**: int, 2-digit month (01 to 12)
- **start\_day**: int, 2-digit day (01 to 31)
- **start\_hour**: int, 2-digit UTC hour (00 to 23)
- **interval**: integer time in seconds between analysis periods

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## 11.6 FORTRAN Namelist Input File

### RECORD2

- **pressure\_bu\_no\_sfc\_Pa** – array of real, pressure in Pa (NO SFC), from the bottom-up – be careful how you choose ptop
- No surface means the first level is 100000 Pa, the last level is typically PTOP (in Pa), the flag value 100100 should never appear

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## 11.6 FORTRAN Namelist Input File

### RECORD3

- **print\_info** – logical, T=turn on lots of print out that would normally be boring

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## 11.6 FORTRAN Namelist Input File - hidden

### RECORD4

- **uv\_interp\_method** = 'linear in p'
- **t\_interp\_method** = 'linear in log p'
- **moist\_interp\_method** = 'linear in p'
- **height\_interp\_method** = 'linear in log p'
- **p\_interp\_method** = 'linear in p'
- **else\_interp\_method** = 'linear in p'

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## 11.6 FORTRAN Namelist Input File - hidden

### RECORD4

- **uv\_extrap\_up** = 'constant'
- **t\_extrap\_up** = 'constant'
- **moist\_extrap\_up** = 'constant'
- **height\_extrap\_up** = 'extrapolate'
- **p\_extrap\_up** = 'extrapolate'
- **else\_extrap\_up** = 'constant'

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## 11.6 FORTRAN Namelist Input File - hidden

RECORD4

```
■ uv_extrap_low      = 'constant '  
■ t_extrap_low       = 'extrapolate '  
■ moist_extrap_low   = 'constant '  
■ height_extrap_low  = 'extrapolate '  
■ p_extrap_low       = 'extrapolate '  
■ else_extrap_low    = 'constant '
```

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## 11.7 How to Run INTERPB

-  You need an input  $\sigma$ -level data set
-  Get the source code from the mesouser anonymous ftp site:  
<ftp://ftp.ucar.edu/mesouser/MMSV3/INTERPB.TAR.gz>
-  gunzip and untar the file, type “make”  
(remember, “make intel” for ifort) on the supported architectures ...
-  ... and you’re ready to go with “interp”

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