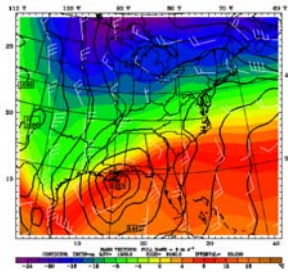
RIP: Appendix G Read/Interpolate/Plot



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Features: RIP

- Quality slides (publish quality)
- Can do shaded plots
- More than 2 overlays
- Relatively easy to use
- Not as easy as GRAPH, but one can get up to speed fast
- Makes LOTS of extra data files
- Need NCAR Graphics
- Adding diagnostic variables require code changes
- Must rerun if new images are needed

General:

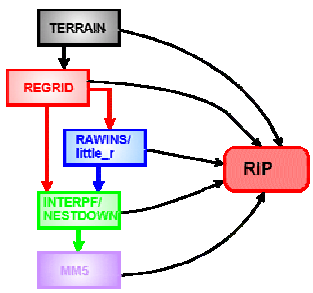
- Requires NCAR Graphics ngwww.ucar.edu
- Documentation:
  - In program tar file under the Doc/ directory
  - http://www.mmm.ucar.edu/mm5/documents/ripug.html

Purpose:

- Horizontal plots on σ, pressure, height, θ, θ_e, or PV surfaces
- Vertical cross sections
- Skew-T/log p soundings
- Forward and backward trajectories
- Generate input data for Vis5D

Input Data:

- MM4 or MM5 output, MM5 input and pre-processors



RIP on Your Machine:

- set RIP_ROOT environment variable
  - setenv RIP_ROOT /usr/$USER/RIP
- make <*machine type*> (it'll make suggestions)
  - make dec (*example*)
- RIP has 2 parts (RIPDP and RIP)

RIPDP:

- **RIPDP is RIP Data Preparation**
- **RIP does not read MM5 system data directly**
- **Pre-processor runs to put data into RIP input format**
- **RIP puts each variable at each time into a separate file – LOTS of files**

RIPDP Namelist:

```
&userin
  ptimes=0,-72,1,ptimeunites='h',tacc=90.,
          discard='LANDMASK',H2SO4',
  iexpandedout=1
&end
```

- **ptimes – times for RIPDP to process**
  - 0,1,2
  - 0,-72,1
  - 0, 3,-24,3, 48
- **ptimeunits – 'h', 'm', 's'**
- **All times? Remove ptimes and ptimeunits**

RIPDP Namelist:

```
&userin
  ptimes=0,-72,1,ptimeunites='h',tacc=90.,
          discard='LANDMASK',H2SO4',
  iexpandedout=1
&end
```

- **tacc – tolerance (s) for times defined by ptimes (time accuracy)**
- **discard – list of variables that will not be processed**
- **iexpandout – 1=expanded domain, 0=nonexpanded domain (only for TERRAIN and REGRID)**

Running RIPDP:

- **ripdp –n namelist-file **
  **<model_data_name> **
  <input_file1 input_file2>
- **Edit namelist-file (ripdp_sample.in)**
- **Make a directory for the files, use that as part of the model_data_name**
- **Example: ripdp -n ripdp_sample.in DATA/MMOUT ../MM5/Run/MMOUT_DOMAIN1**

RIP:

- **read the output generated by RIPDP**
- **read User Input File (UIF) *(rip_sample.in)***
  - First section is a list of general parameters (namelist format)
  - Second section is a series of plots in the Plot Specification Table (PST)
- **generate meta file (same as for GRAPH)**

Run RIP:

- **Edit the UIF (rip-execution-name.in)**
- **setenv NCARG_ROOT /usr/local/ncarg**
- **setenv RIP_ROOT *your-rip-directory***

Run RIP:

- rip [-f] model-data-set-name \
  rip-execution-name
- model-data-set-name is from RIPDP
- rip-execution-name is unique name, for output, metacode and namelist
- Example: rip -f DATA/MMOUT
  rip_sample.in

RIP:

- read the output generated by RIPDP
- read User Input File (UIF) *(rip_sample.in)*
  - First section is a list of general parameters (namelist format)
  - Second section is a series of plots in the Plot Specification Table (PST)
- generate meta file (same as for GRAPH)

RIP UIF:

```
&userin
   .......
&end
&trajcalc
   .......
&end
================================================
————————     Plot Specification Table     ————————
================================================
feld= .........
================================================
feld= .........
================================================
```


RIP Namelist - *userin*:

- idotitle – first part of first title line
- titlecolor – color of title lines
- ptimes, ptimeunits – times to process
- tacc – tolerance for processing data
- timezone –display of local time
- iusedaylightrule – 1 applied, 0 not applied
- iinittime – plotting of initial time
- ivalidtime – plotting of valid time
- inearsth – plot times as 2 / 4 digits
- flmin, frmax, fbmin, ftmax – frame size
- ntextq – text quality

RIP Namelist – *userin*:

- ntextcd – text font
- fcoffset – 12 means hour 12 of the MM5 forecast is considered hour 0 by you
- idotser – generate time series output
- idescriptive – more descriptive titles
- icgmsplit – split metacode into several files
- maxfld – reserve memory for RIP (10-15)
- itrajcalc – 0, 1 ONLY when doing trajectory calculations *(use also namelist trajcalc)*
- imakev5d – 0, 1 generate Vis5D data

RIP UIF:

```
&userin
   .......
&end
&trajcalc
   .......
&end
================================================
————————     Plot Specification Table     ————————
================================================
feld= .........
================================================
feld= .........
================================================
```

RIP PST:

- **PST – Plot Specification Table**

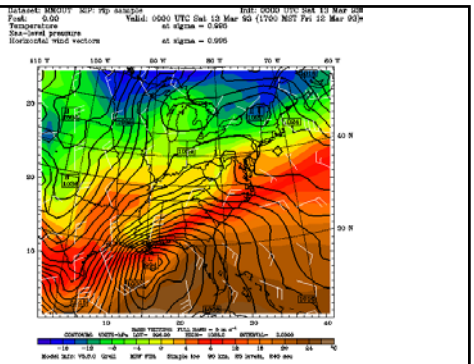
```
==========================================
----     Plot Specification Table     ----
==========================================
Frame specification groups
==========================================
Frame specification groups
==========================================
```

- **Each line within an FSG is a PSL (Plot Specification Line)**
- **An FSG with 3 PSL will have 3 plots on one frame**

RIP PST:

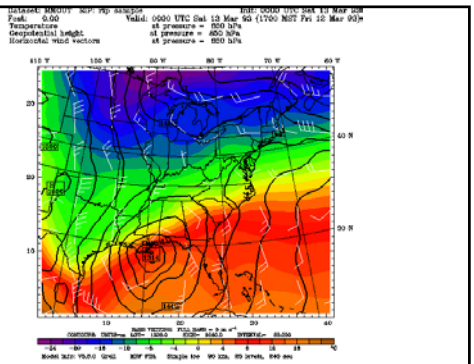
```
==========================================
feld=tmc; ptyp=hc; vcor=s; levs=b1; cint=2; >
  cmth=fill ;cosq=-32,light.violet, >
  -16,blue,0,yellow, 16,orange, 32,light.gray
feld=slp; ptyp=hc; cint=2; linw=2
feld=uuu,vvv; ptyp=hv; vcmx=-1; >
  colr=white; intv=5
feld=map; ptyp=hb
feld=tic; ptyp=hb
==========================================
```

Appendix A has a list of all of the keywords



RIP PST:

```
==========================================
feld=tmc; ptyp=hc; vcor=p;
  levs=850; cint=2; >
  cmth=fill ;cosq=-32,light.violet, >
  -16,blue,0,yellow, 16,orange, >
  32,light.gray
feld=ght; ptyp=hc; cint=30; linw=2
feld=uuu,vvv; ptyp=hv; vcmx=-1; >
  colr=white; intv=5
feld=map; ptyp=hb
feld=tic; ptyp=hb
==========================================
```

RIP PST:

```
==========================================
feld=tmc; ptyp=hc; vcor=p;
  levs=850; cint=2; >
  cmth=fill ;cosq=-32,light.violet, >
  -16,blue,0,yellow, 16,orange, >
  32,light.gray
feld=ght; ptyp=hc; cint=30; linw=2
feld=uuu,vvv; ptyp=hv; vcmx=-1; >
  colr=white; intv=5
feld=map; ptyp=hb
feld=tic; ptyp=hb
==========================================
```

RIP PST:

```
=========================================
feld=tmc; ptyp=hc; vcor=p; levs=850; cint=2; >
  cmth=fill ;cosq=-32,light.violet, >
  -16,blue,0,yellow, 16,orange, 32,light.gray
=========================================
feld=ght; ptyp=hc; cint=30; linw=2
=========================================
feld=uuu,vvv; ptyp=hv; vcmx=-1; > colr=white;
  intv=5
=========================================
feld=map; ptyp=hb
=========================================
feld=tic; ptyp=hb
=========================================
```

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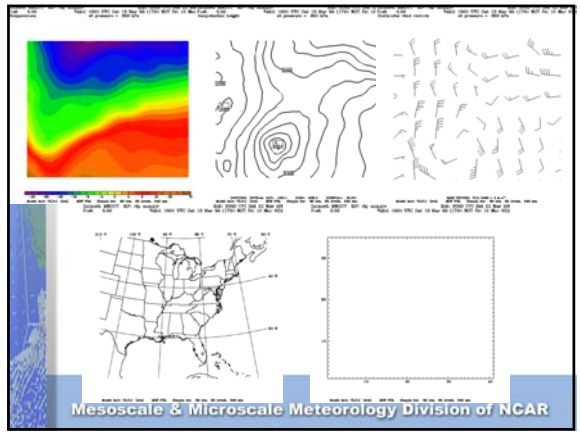

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RIP PST:

```
=========================================
feld=tmc; ptyp=hc; vcor=p; >
  levs=850,700,-300,100; cint=2; >
  cmth=fill ;cosq=-32,light.violet, >
  -16,blue,0,yellow, 16,orange, >
  32,light.gray
feld=ght; ptyp=hc; cint=30; linw=2
feld=uuu,vvv; ptyp=hv; vcmx=-1; >
  colr=white; intv=5
feld=map; ptyp=hb
feld=tic; ptyp=hb
=========================================
```

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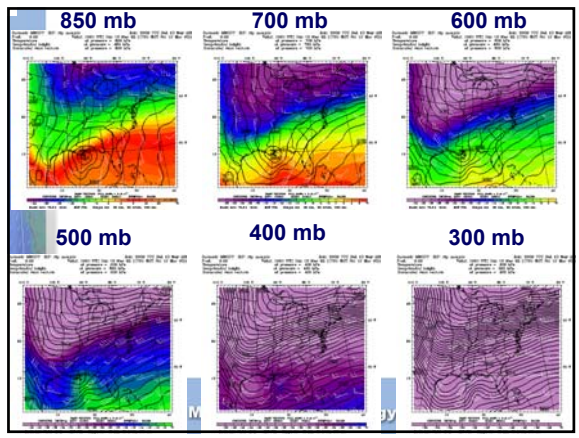

RIP PST – *different color fill*:

```
=========================================
feld=ter; ptyp=hc; cint=50; >
  cmth=fill ;cosq= -1e-5,light.blue, >
  1e-5,white, 3000, brown
feld=map; ptyp=hb
feld=tic; ptyp=hb
time=0
=========================================
```

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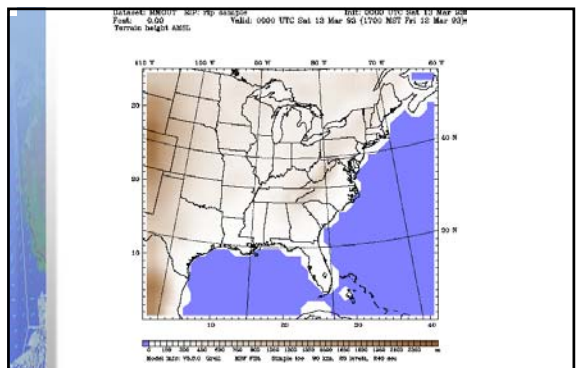

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RIP PST – *different color fill*:

```
=======================================
feld=xlus; ptyp=hh; chfl; cosq=1,dark.gray,2,light.yellow, >
  3,light.green,4,yellow,5,yellow,6,light.green,>
  7,light.yellow,8,light.green,9,light.green,>
  10,light.yellow,11,green,12,dark.green,13,green,>
  14,dark.green,15,green, 16,blue,17,green,18,green,>
  19,light.gray,20,light.gray,21,dark.green, 22,light.gray,>
  23,light.gray,24,white
feld=map; ptyp=hb
feld=tic; ptyp=hb
time=0
=======================================
```

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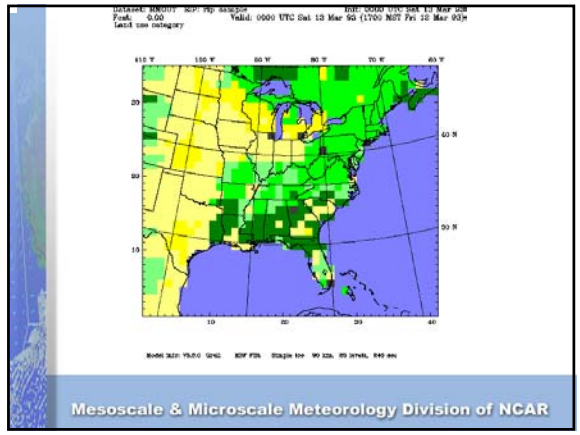

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RIP PST – *cross section*:

```
=========================================
feld=pvo; ptyp=vc; crsa=10,30; crsb=30,10;
  vcor=p; vwin=1050,200; cint=.25; >
  cmth=fill ;cosq=0,white,4,dark.gray;  >
  cbeg=0; cend=5
feld=the; ptyp=vc; cint=2; colr=red
feld=uuu,vvv,omg; ptyp=vv
feld=tic; ptyp=hb
=========================================
```

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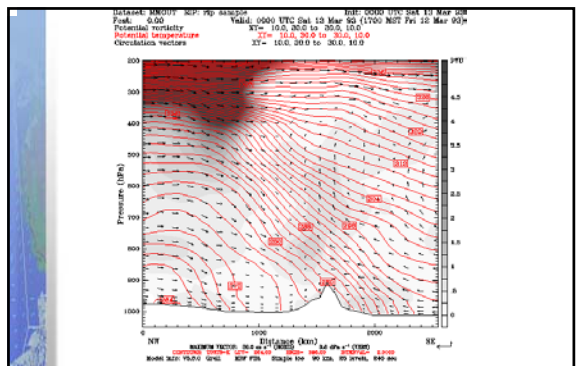

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RIP PST – *skew*-T:

```
=========================================
feld=tic; ptyp=sb; sloc=KORD; hodo; sngdg
feld=tmc; ptyp=sc; colr=red
feld=tdp; ptyp=sc; colr=blue
feld=uuu,vvv; ptyp=sv; colr=dark.green >
  hodo; sndg
=========================================
```

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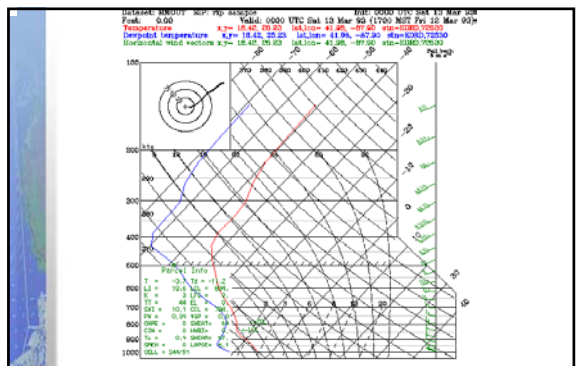

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