

Mesonet Variables

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>> scancdf('mesovars_2011.nc');
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1	name: Mu	Hourly averaged gross convergence s ⁻¹		dim. ID: 0	global attributes: 1
2	name: Md	Hourly averaged gross divergence s ⁻¹		dim. ID: 0	global attributes: 1
3	name: Muplus	Hourly averaged gross convergence (Conv. > 1x10 ⁻⁴) s ⁻¹		dim. ID: 0	global att
4	name: Mdplus	Hourly averaged gross divergence (Div. > 1x10 ⁻⁴) s ⁻¹		dim. ID: 0	global att
5	name: Prec	Hourly averaged precipitation rate mm d ⁻¹		dim. ID: 0	global attributes: 1
6	name: uvar	Hourly averaged zonal wind spatial variance m ² s ⁻²		dim. ID: 0	global att
7	name: vvar	Hourly averaged meridional wind spatial variance m ² s ⁻²		dim. ID: 0	global att
8	name: tempvar	Hourly averaged temperature spatial variance K ²		dim. ID: 0	global attributes:
9	name: qvvar	Hourly averaged water vapor mixing ratio spatial variance kg ² kg ⁻²		dim. ID: 0	
10	name: tricolor	Stations at triangle corners Station #		dim. ID: 1 2	global attributes:
11	name: statlat	Station latitude degrees		dim. ID: 3	global attributes: 1
12	name: statlon	Station longitude degrees		dim. ID: 3	global attributes: 1
13	name: triarea	Mesonet Triangle Area m ²		dim. ID: 1	global attributes: 1
14	name: frontstrength	Front Strength, 30 min (1/mb * delP) - (1/K * delT)		0 = FS>=3 & FS<5, 1 = FS=5+	
15	name: fronttime	Front Occurrence, 5-minute timestep nth front at station		dim. ID: 3 5	gl
16	name: fronttimelist	Front Time 5-min timestep		dim. ID: 3 4	global attributes: 1
17	name: frontdeltap	Front Delta P Max within 2hr after - Min within 30min before (in mb)			di
18	name: frontdeltat	Front Delta T Min within 2hr after - Max within 30min before (in K)			di
19	name: frontdeltaq	Front delta Qv Avg. 0-2hr after - 30 mins before (in g/kg)		dim. ID: 3 4	
20	name: ColdPool	Cold Pool Occurrence, 5-minute timestep yes/no at triangle		dim. ID: 1 5	gl
21	name: coldpoolarea	Mesonet Cold Pool Area m ²		dim. ID: 5	global attributes: 1

Mesonet Variables

```
1 || name: Mu          |      | Hourly averaged gross convergence | s^-1      |      | dim.
2 || name: Md          |      | Hourly averaged gross divergence | s^-1      |      | dim.
3 || name: Muplus      |      | Hourly averaged gross convergence (Conv. > 1x10^-4) | s^-1
4 || name: Mdplus      |      | Hourly averaged gross divergence (Div. > 1x10^-4) | s^-1
5 || name: Prec        |      | Hourly averaged precipitation rate | mm d^-1   |      | dim.
```

All 5 are averaged over entire Mesonet area.

1-9: #hours x 1 variables

```
6 || name: uvar        |      | Hourly averaged zonal wind spatial variance | m^2 s^-2   |      | d-
7 || name: vvar        |      | Hourly averaged meridional wind spatial variance | m^2 s^-2   |      | d-
8 || name: tempvar     |      | Hourly averaged temperature spatial variance | K^2        |      | dim. ID: C
9 || name: qvvar       |      | Hourly averaged water vapor mixing ratio spatial variance | kg^2 kg^-2
```

Mesonet Variables

10		name: tricolor		Stations at triangle corners	Station #	
11		name: statlat		Station latitude	degrees	dim. ID: 3
12		name: statlon		Station longitude	degrees	dim. ID: 3
13		name: triarea		Mesonet Triangle Area	m^2	dim. ID: 1

10. #stations x 3

11-12. #stations x 1

13. # triangles x 1

Mesonet Variables

```
14 || name: frontstrength      |      | Front Strength, 30 min (1/mb * delP) - (1/K * delT) | 0 = FS>=3 & FS<5, 1 = FS=5+ |
15 || name: fronttime         |      | Front Occurrence, 5-minute timestep | nth front at station |      | dim. ID: 3 5 |
16 || name: fronttimelist     |      | Front Time | 5-min timestep |      | dim. ID: 3 4 |      | global attributes: 1
```

14 & 16: # stations x max # fronts

15: # stations x 5-min timesteps in year

Front strength is a 0 or 1 value indicating front or strong front using front score thresholds. Front score being $(1/\text{mb} * \text{delP}) - (1/K * \text{delT})$ where deltas are computed over 30 minutes.

Front time marks the nth front at a station during the point in a year when it occurs. Front time list gives a list of timesteps.

Mesonet Variables

17		name: frontdeltap			Front Delta P		Max within 2hr after - Min within 30min before (in mb)		
18		name: frontdeltat			Front Delta T		Min within 2hr after - Max within 30min before (in K)		
19		name: frontdeltaq			Front delta Qv		Avg. 0-2hr after - 30 mins before (in g/kg)		dim. ID: 3 4

17-19: # stations x max # fronts

Pressure increase, temperature decrease, and qv change during a frontal passage.

Mesonet Variables

```
20 || name: ColdPool      |      | Cold Pool Occurrence, 5-minute timestep | yes/no at triangle |  
21 || name: coldpoolarea  |      | Mesonet Cold Pool Area | m^2 |      | dim. ID: 5 | glc
```

20: # triangles x 5-min timesteps in year

21: 5-min timesteps in year x 1

ColdPool marks presence of cold pools at each triangle
each timestep.

Cold pool area is the Mesonet domain area currently
experiencing a cold pool each timestep.