C-Station Climate Issues

Meteorology Branch Forecast Section
RO-DA-F

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15th Addition

Averages are for 1980-2004

Extremes also include 2005-2007

Data by month, by year and by day

Links to Excel spreadsheets with more data

Still to be published
Climate Highlights Covered

Average Wind Speed
The raw data
Issues
The Corrected Values

Rain & Snow
The raw data
Climate shift
Was it real?

Climatologist’s Bane
Figure 13: Annual Winds in Knots

- Average
- Max Gust
Lull from 1983-1993 represents tremendous climate shift IF REAL.

Sensor was moved from roof to less exposed site north of the building in 1982.

Wind measurements changed from 2 to 10 meter height in 1994.

BIG OOPS!
Correction Factor


Calculate a correction factor to apply; 1.57.
- Test result close for 1992, 1993
- Test result about half knot off for 1991
- Provided a means of comparing the 2 time periods.

After correction factor applied-
1983-1993 average wind speed: 6.2 knots
1994-2004 average wind speed: 6.2 knots

There went the apparent climate shift!
CORRECTED WIND SPEED

Figure 14: Annual Average Winds after Correction

Unadjusted
Adjusted
Annual Rain and Snow

Annual Precipitation and Snow in Inches

Precip | Snow


0.00 | 5.00 | 10.00 | 15.00 | 20.00 | 25.00 | 30.00 | 35.00 | 40.00 | 45.00

Rain & Snow Climate Shift?

Annual averages; rain: 11.2 inches snow: 7.9 inches
Drier after 1992 is obvious!

- Average annual rain 1980-1992: 13.2 inches
- Average annual rain 1993-2004: 9.1 inches
- Average annual snow 1980-1992: 13.0 inches
- Average annual snow 1993-2004: 2.5 inches

Not one year in the later period reached even the average snowfall for the first period and every year of the first period exceeded the average of the later period!

No snow in 2004/5 or 2005/6 winters
2006/7 winter more like overall average.
2006 wettest year on record after an extremely dry start.
Are we shifting back?
Was the shift real?

Consider Station Manning
March 1993 station hours reduced from 24/7 to, 04-17L week days & 08-16L weekends with all federal holidays off.
No official observations after July 1998.
Weekends dropped late May 2005 (too late to be an issue)
→ Less chance to directly observe rain or snow.

Rain gauge catches the rain anyway.
Observation practice for snow is to generously infer it.

So was the original shift real?
Yes (as best I can tell)

Begs the question, which is the ‘real’ or ‘normal’ climate precipitation regime?
Climatologist’s Bane

Site moves.
Instrument moves.
Instrument change without ensuring new instrument gives same measurement in same condition.
Measurement errors and spurious readings.
Limited time of record.
Losing formal observations.
Site closes.
Site urbanization.

----The last one listed is the only one that did not impact C-Station climatology analysis!
The End

Questions/Comments?