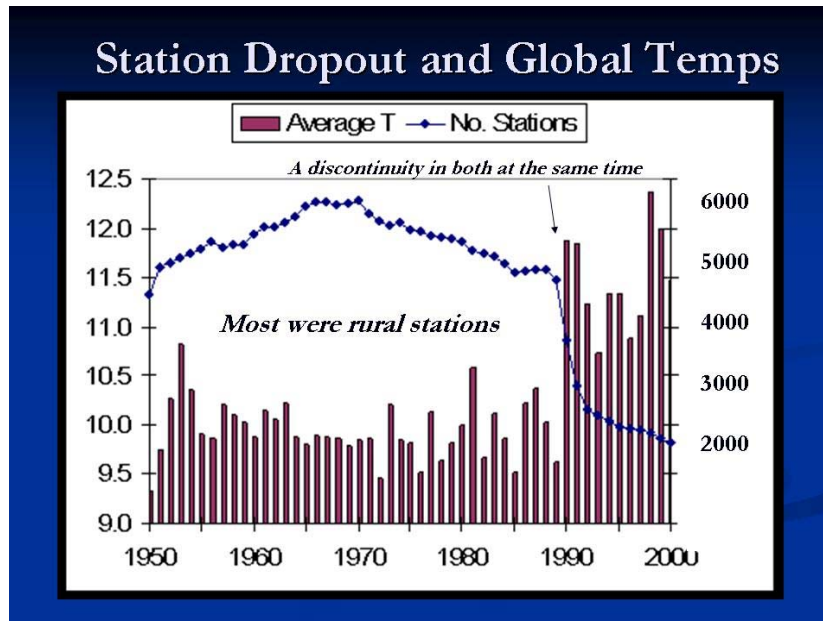


How Bad is the Global Data

By Joseph D'Aleo, AMS Fellow, CCM

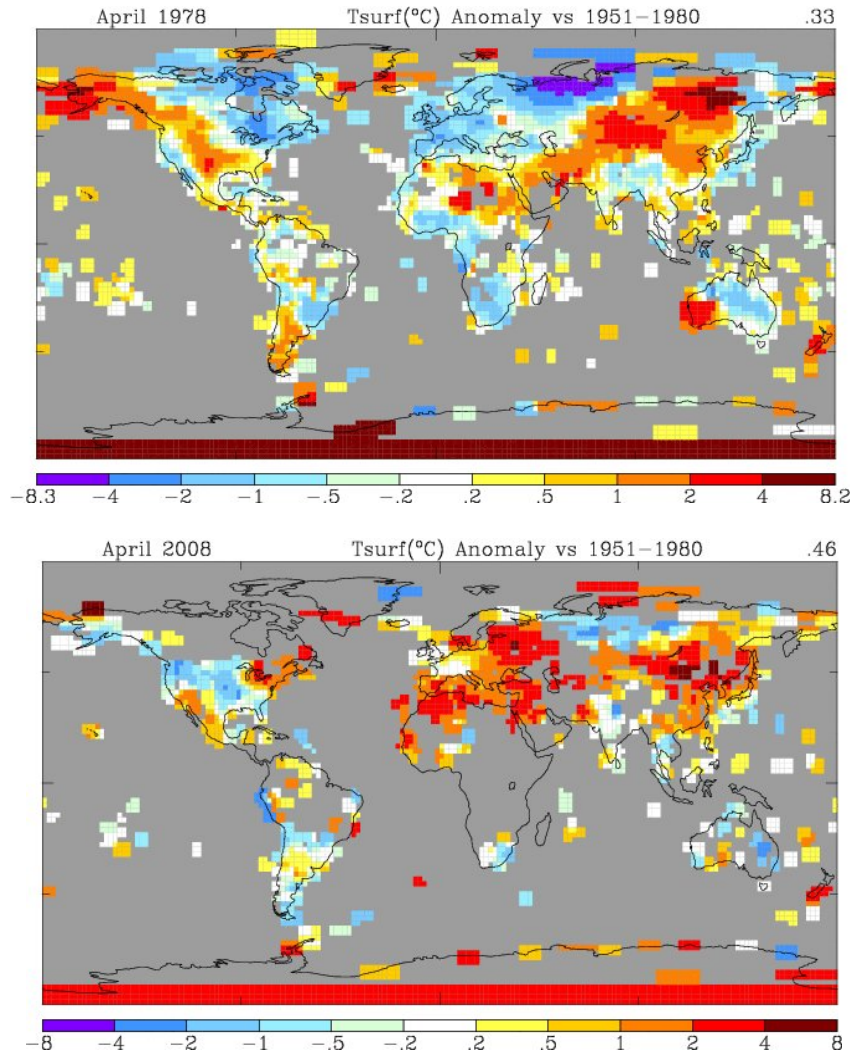
October 12, 2009

In [this recent post](#), we discussed the problems with global data which will be used to make critical economic decisions affecting all of the world's people in the months ahead. The world's climate data has become increasingly sparse with a big dropoff around 1990.



There was also a tenfold increase in missing months around the same time especially in the former FSU and Africa. Instruments (90% in the United States which has the Cadillac data system) are poor to very poorly sited and not properly adjusted for urbanization.

Instruments designed for aviation purposes with large error tolerances (1F) have been used along with instruments (HO-83 hygrometers) with known warm biases. With numerous peer review papers suggest an exaggeration of the warming by 30%, 50% or even more. The station dropout can be clearly seen in the two maps below with the number of station going from over 6000 to just 1079 from April 1978 to April 2008.



See the big gaps in the recent data in Canada, Greenland, Africa, South America, parts of western Asia, parts of Australia.

Take this test yourself to show how bad a shape the global data base is, look for yourself following these directions. We will use the window into the NOAA GHCN data provided by NASA GISS [here](#).

Point to any location on the map. You will see a list of stations and approximate populations. Locations with less than 10,000 are assumed to be rural (even though Oke has shown that even a town of 1,000 can have an urban warming of 2.2C).

You will see that the stations have a highly variable range of data.

Try and find a few stations with data that extends to 2009. To see how complete the data set is for that station, click in the bottom left of the graph **Download monthly data as text**.

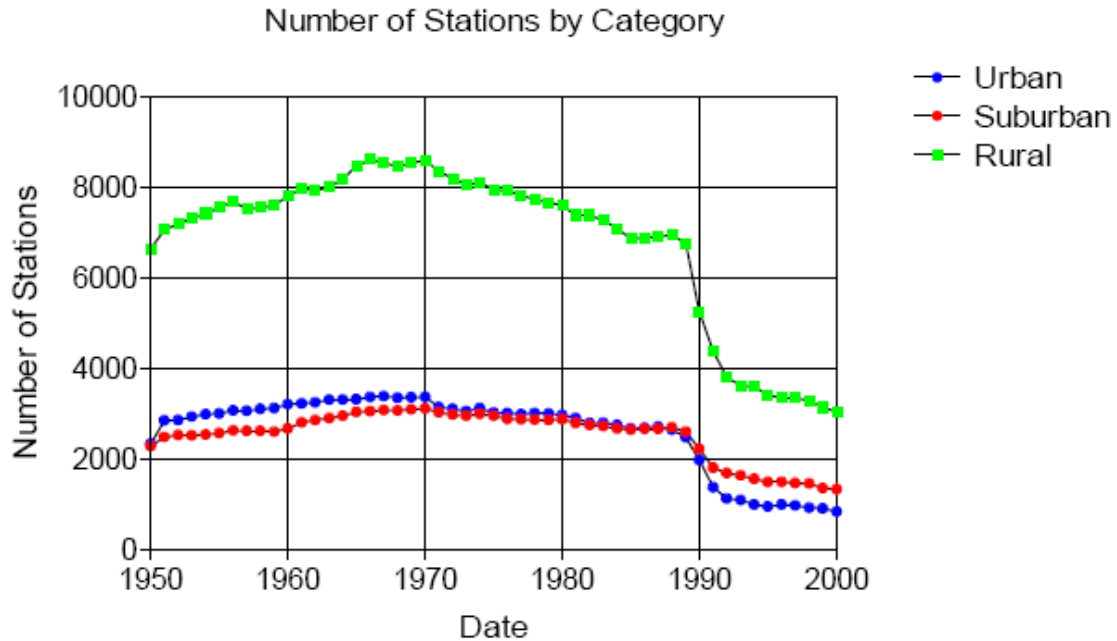
For many, many stations, you will see the data set in a monthly tabular form had many missing data months mostly after 1990 (designated by 999.9).

SVERDLOVSK, RUSSIA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1987	-18.6	-8.3	-5.5	0.9	14.9	20	19.3	16.2	8.6	2.1	-11.2	-11.5
1988	-12.7	-9.6	-2.6	4.8	10.3	19.5	22.6	18.3	9.7	3.9	-7	-9.9
1989	-15.1	-9.6	-0.3	1.5	11.9	21.4	22.8	14.2	10.2	2.8	-4.2	-10.2
1990	-14.2	-6.8	0.1	5.3	9.6	999.9	19	16.4	999.9	1.2	-5	-8.3
1991	999.9	-12.6	-7.1	9.2	15.5	999.9	17.6	13.6	10.6	7.2	-3.6	-13.6
1992	-12	-9.2	-4.1	1.8	10.1	14	16.3	13.8	10.9	2.1	-5.3	999.9
1993	-8.9	-11.8	-6	3.2	10.8	17.9	18.6	16.5	5.8	2.4	-13.2	-9.9
1994	-10.2	-17.2	999.9	999.9	11.4	999.9	999.9	14.9	11	6.6	-7	-14
1995	-10.2	-4.2	-0.6	10.7	13	17	999.9	16.9	999.9	3.9	-3.7	-12.7
1996	-14.1	-11.2	-3.9	0.6	12.2	19.1	19.2	999.9	7.1	1.9	-2.3	-10.2
1997	-18.4	-9.4	-2.1	6.2	12	16.7	15.9	14	11.2	5.9	-7.3	-14.7
1998	-11	-14.8	-3.3	-1.4	11.8	18.5	21.6	17.6	8.3	3.5	-12.7	-7.1
1999	-12.6	-7.8	-8.6	4.8	9	15.1	20.2	15.6	9.3	7	-10.4	-6.4
2000	-12.9	-6.9	-1.7	7.2	8.3	19.1	20.5	999.9	8.9	2.3	-6.5	-12.2
2001	-12.1	-14.9	-3.4	6.8	13	14.6	17.9	999.9	10.7	0.6	-4.6	-12.3
2002	-9.2	-4.2	-1	3	9.3	14	19	13.1	11.1	2.1	-3.7	-18.5

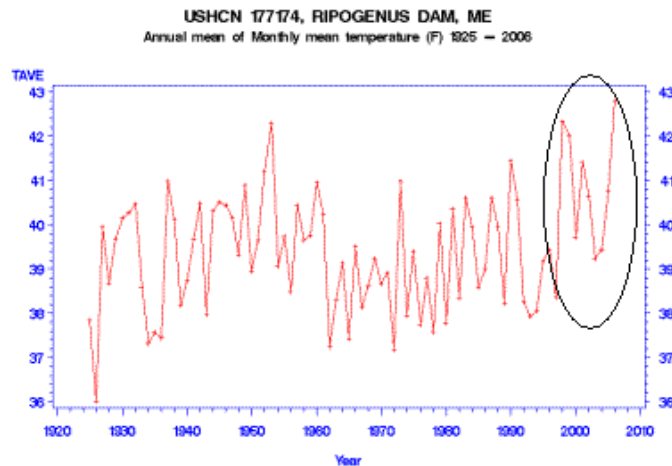
This required the data centers to estimate data for the grid box for that location with other stations nearby (homogenization). In the 2008 plot above only 1079 stations were used. NASA went to locations within 250 km (155 miles) to find data for the grid boxes. For grid boxes without stations within 250 km, they are left blank, thus the large gaps.

Most of the stations that dropped out were rural. More of the missing data points are having there missing months filled in with more urban data in the grid boxes.



One example of how good or bad this works is from Maine. Last summer, volunteers completed surveys of the United States Historic Climate Network (USHCN) temperature stations in Maine for Anthony Watts surface station evaluation project. The survey determined that every one of the stations in Maine was subject to microclimate or urbanization biases. One station especially surprised the surveyors, Ripogenus Dam, a station that was officially closed in 1995.

Despite being closed in 1995, USHCN data for this station is publicly available until 2006!



Source: CN Williams Jr, MJ Menne, RS Vose, DR Easterling, NOAA, National Climatic Data Center, Asheville, NC

Part of the USHCN data is created by a computer program called “filnet” which estimates missing values. According to the NOAA, filnet works by using a weighted average of values from neighboring stations. In this example, data was created for a no longer

existing station from surrounding stations, which in this case as we noted were all subject to microclimate and urban bias, no longer adjusted for. Note the rise in temperatures after this, perhaps before the best sited truly rural station in Maine was closed.

How can we trust NOAA/NASA/Hadley assessment of global changes given these and the other data integrity issues? Given that Hadley has destroyed old original data because they were running out of room in their data cabinet, can we ever hope to reconstruct the real truth?

Read much more about the data issues [here](#).