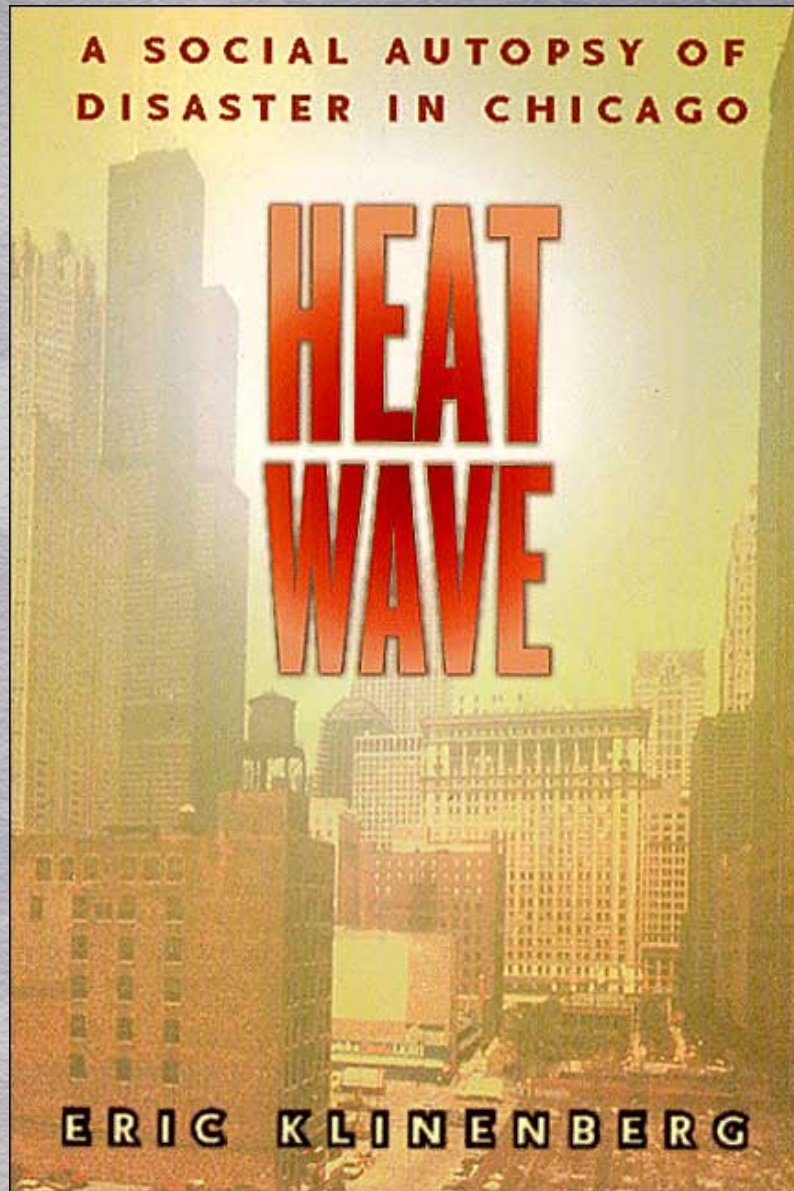


The 1995 Chicago Heat Wave



1000 fatalities

> 700 fatalities in Chicago alone

- elderly (single males)
- poor, no functioning A/C
- black neighborhoods

overtaxed emergency services

Enhancing Factors:

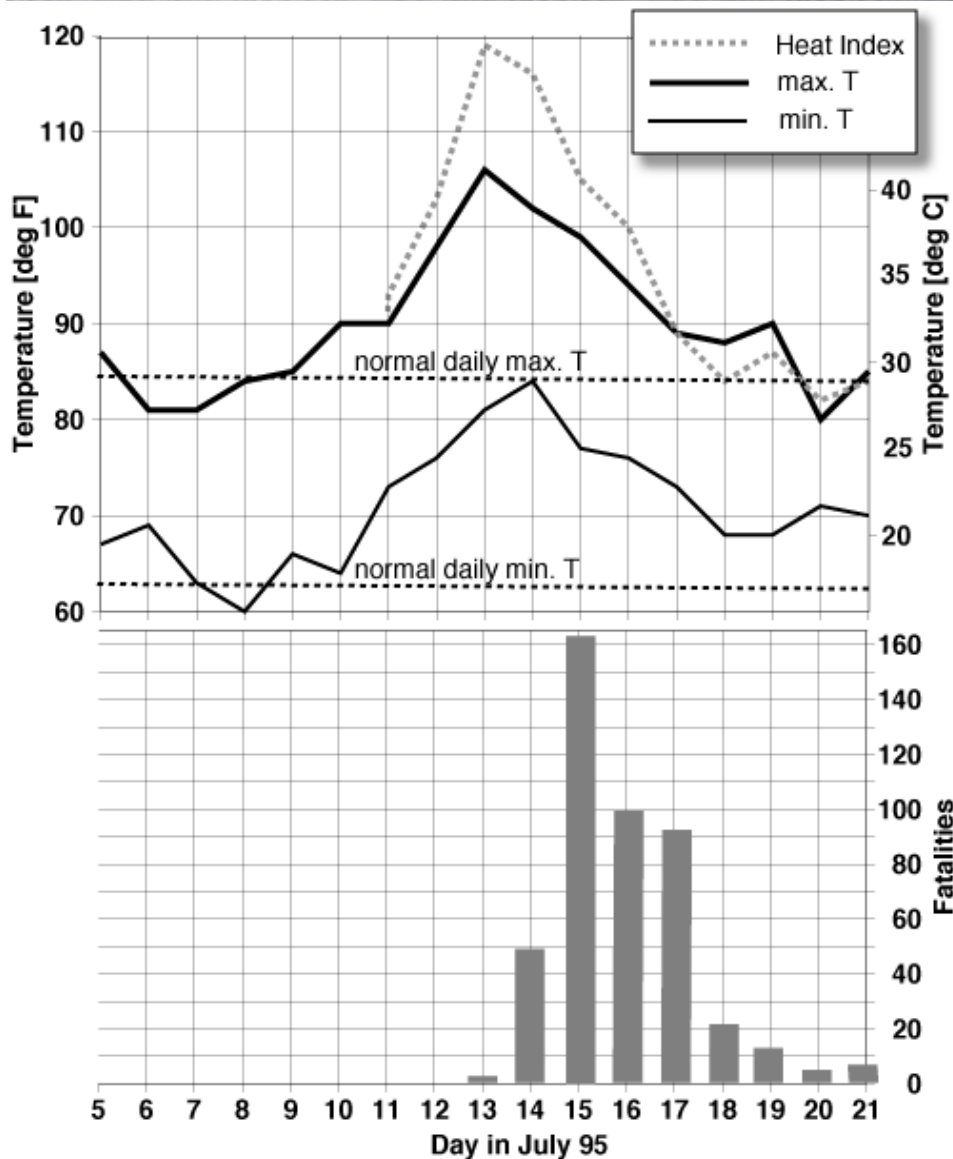
- power outages
- urban heat islands
- temperature inversion -> smog
- closed doors/windows

high crime rate

-> people afraid of opening windows

The July 12-17, 1995 Chicago Heat Wave

Fig 13.33



① prolonged

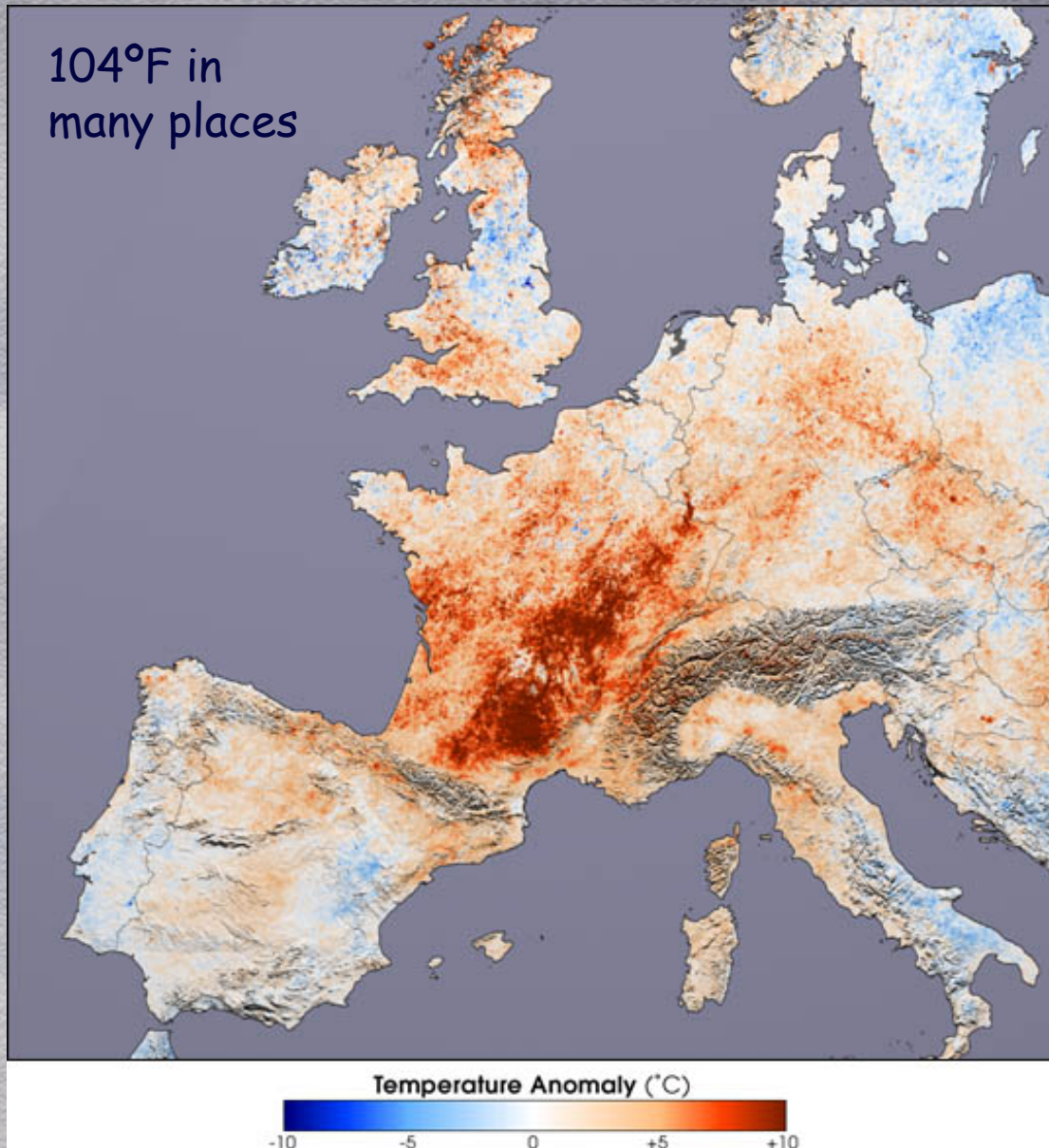
② $T > 100^{\circ}\text{F}$

humidity $> 50\%$ \Rightarrow HI 120°F

③ daily low above 80°F !

Sharp increase in fatalities after daily low exceeded 80°F , even though daily highs had dropped.

2003 Heat Wave in Europe



source: Wikipedia

“hottest summer in 500 years”
(last record heat: 1757)

“London hotter than Cairo”

“WWII vessel in Danube”

“record wine!”

Fatalities

35,000

France: 14,000

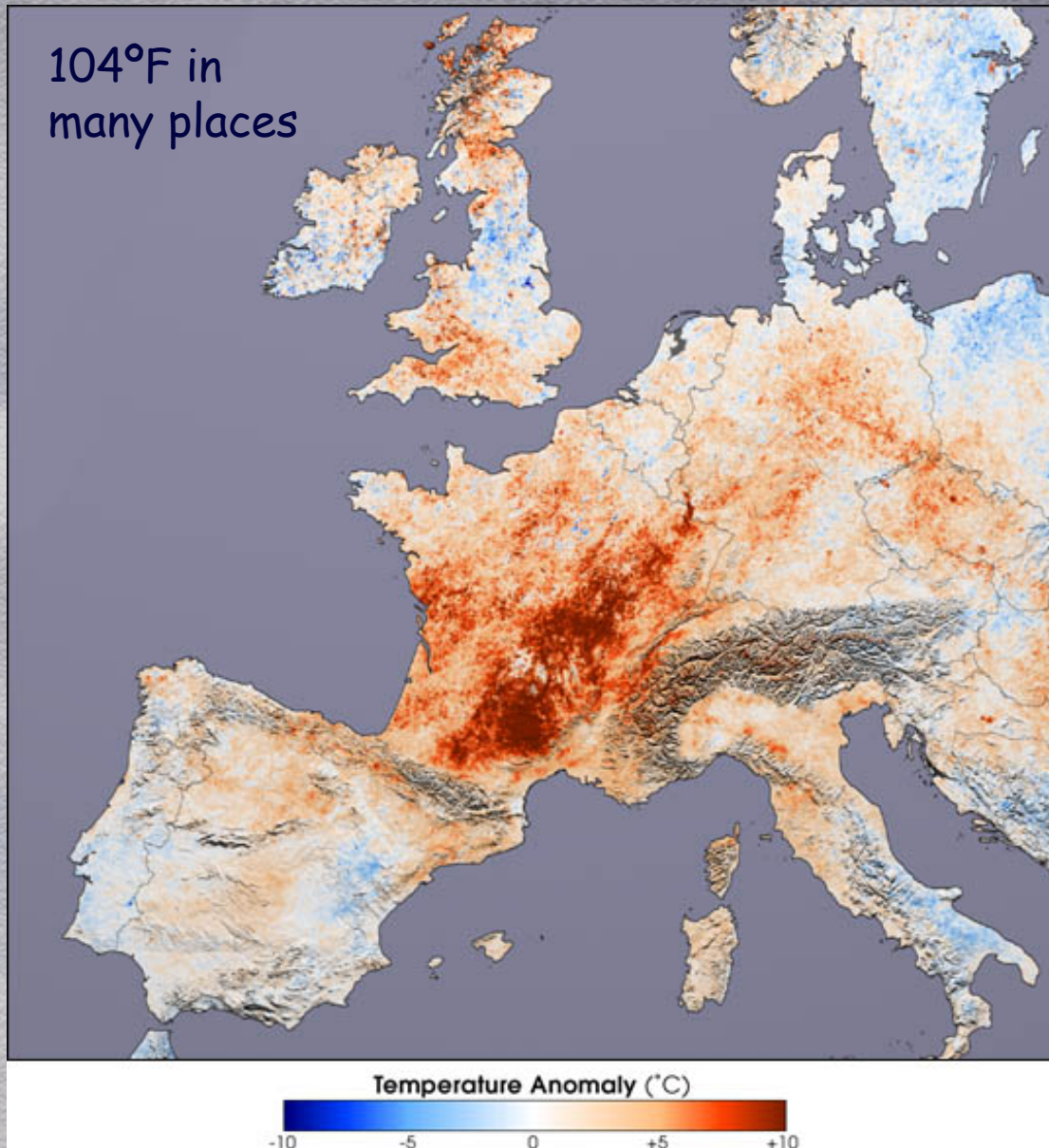
Germany: 7,000

Spain: 4230

Italy: 4175

UK: 2045

2003 Heat Wave in Europe



Consequences

- * Forest fires in France, Spain, Portugal
- * Low ground water table
- * Low rivers, lakes, dams
-> red. transportation, power generation
- * 10% loss in wheat

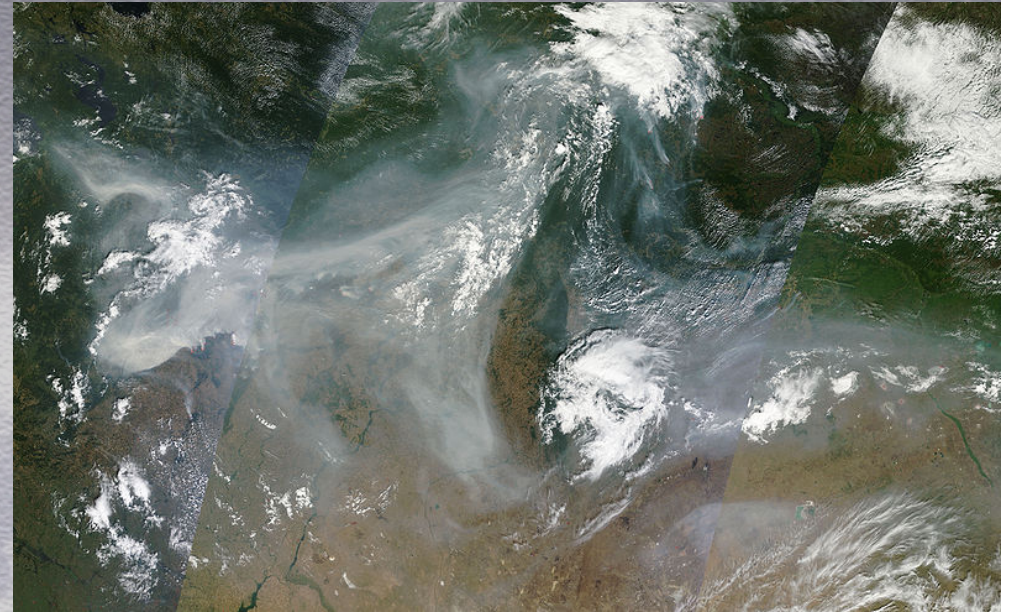
“Human impact on Global warming doubles likelihood of such events”

2010 Russia Heat Wave and Wildfires

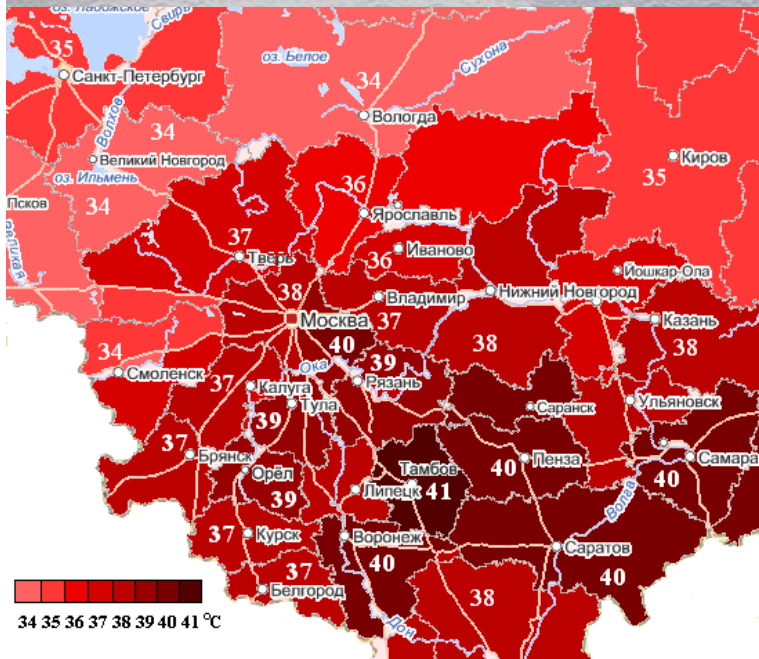
Moscow in June and August



source: Wikipedia



source: NASA Earth Observatory



40°C = 104°F

- heat waves early June – end of July
- controversial previous drainage of wetlands
- dried peat bog on fire for > month
- SMOG!!! CO 4x normal
- 56,000 fatalities
- \$15 billion damages

storms

The Dust Bowl in 1930s

- most intense heat wave in U.S.:
summer of 1936 (July-Aug);
absolute T record in 15 states (records still stand as of 2011)
(some surpassed in 2012??)
121°F in North Dakota!

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- Massive dust storms
- Aggressive Agriculture
- Soil Erosion (across Atlantic)

**In U.S., it takes 30 year to
Grow 1 inch of topsoil**

Shortgrass Prairies of the Llano Estacado, TX



source: Wikipedia

Field Windbreaks in North Dakota



source: Wikipedia

2011 Texas Drought

Oct 2011:

- * prolonged drought conditions
- strong winds
- 8000 ft high haboob
- driven by leading edge of cold front



2011 Texas Drought

Sep 2011 (> 2 fatalities):

- * prolonged drought conditions
- strong winds
- driven by remnants of hurricane
- 100s homes destroyed
-aggressive development into wildland (just like S.D.) !

