Once we thought that climate change was gradual... now we know that big changes occur in only 5 to 10 years.

Trade winds S. America

There are two modes of climate:
- warm & wet (like today)
- cool-dry-windy-dusty (like long drought, but worldwide)

Ordinary droughts
The two most severe U.S. drought years, 1934 and 1956.

Just on the basis of what happened in the last 20 centuries, the chances of the 21st century US suffering a long, widespread drought is one-in-four, even without global warming’s rearrangements.

An urban civilization, where 1.4% of the population lives on farms and grows the food, is prone to collapse in a way that we weren’t a century ago, when 38% farmed. Having so many people in cities, at the end of a just-in-time supply line, makes us top heavy and prone to collapse.

REALLY BIG & WORLDWIDE DROUGHTS: What happens to us if...
- The North Atlantic Current fails and
- the climate flips out of the warm-and-wet mode into the cool-dry-windy-dusty mode?
What are the chances of this happening again, even sooner via global warming? High.

North Atlantic’s tipping point: Major reductions in flushing over the last 40 years.

If Europe had a Canadian climate, how many people could it feed?
- Canada feeds itself, 28 million people. It’s about the size of Europe.
- Europe feeds a population 23 times greater than Canada (650 million people). That’s the difference that preheating makes.
- Therefore, until economists do a proper study, this back-of-the-envelope calculation suggests a major human population crash.

Self-insurance doesn’t work:
- Earthquakes and hurricanes are over in a day. The recovery period starts the next day.
- Most of the country is unaffected, and can bail out the survivors.
- Flips aren’t over in a day (usually last for centuries). Stored surpluses will be miniscule, compared to the need.
- And many regions are seriously disrupted at the same time.

It all depends on the transition time:
- Suppose the transition to a new climate took 500 years - and we knew it was coming.
- Then there are all sorts of things we could do to head off disaster.
  - Reduce population gradually
  - Change to greenhouse agriculture
  - Relocate: new roads, irrigation canals

Need to redesign our civilization:
- Need to retrofit our foundations to deal with a lurch - whether from climate abruptness, economic collapse, political incompetence famines, or epidemic disease.

It all depends on the transition time:
- Decade-long decline causes resource wars that tear apart civilizations, and leave the survivors hating neighboring groups for genocidal episodes. That promises a slow recovery, and perhaps an incomplete one.

The Good News (we’ve done it before):
- Cathedrals were an extraordinary accomplishment of the civilization of 1000 years ago. Then they retrofitted them with flying buttresses.