Scientists generally refuse to say much about that, citing a data deficit. But recently, renowned Department of Defense planner Andrew Marshall sponsored a groundbreaking effort to come to grips with the question. A Pentagon legend, Marshall, 82, is known as the Defense Department's "Yoda"—a balding, bespectacled sage whose pronouncements on looming risks have long had an outsized influence on defense policy. Since 1973 he has headed a secretive think tank whose role is to envision future threats to national security. The Department of Defense's push on ballistic-missile defense is known as his brainchild. Three years ago Defense Secretary Donald Rumsfeld picked him to lead a sweeping review on military "transformation," the shift toward nimble forces and smart weapons.

When scientists' work on abrupt climate change popped onto his radar screen, Marshall tapped another eminent visionary, Peter Schwartz, to write a report on the national-security implications of the threat. Schwartz formerly headed planning at Royal Dutch/Shell Group and has since consulted with organizations ranging from the CIA to DreamWorks—he helped create futuristic scenarios for Steven Spielberg's film Minority Report. Schwartz and co-author Doug Randall at the Monitor Group's Global Business Network, a scenario-planning think tank in Emeryville, Calif., contacted top climate experts and pushed them to talk about what-ifs that they usually shy away from—at least in public.

The result is an unclassified report, completed late last year, that the Pentagon has agreed to share with FORTUNE. It doesn't pretend to be a forecast. Rather, it sketches a dramatic but plausible scenario to help planners think about coping strategies. Here is an abridged version:

A total shutdown of the ocean conveyor might lead to a big chill like the Younger Dryas, when icebergs appeared as far south as the coast of Portugal. Or the conveyor might only temporarily slow down, potentially causing an era like the "Little Ice Age," a time of hard winters, violent storms, and droughts between 1300 and 1850. That period's weather extremes caused horrific famines, but it was mild compared with the Younger Dryas.

For planning purposes, it makes sense to focus on a midrange case of abrupt change. A century of cold, dry, windy weather across the Northern Hemisphere that suddenly came on 8,200 years ago fits the bill—its severity fell between that of the Younger Dryas and the Little Ice Age. The event is thought to have been triggered by a conveyor collapse after a time of rising temperatures not unlike today's global warming. Suppose it recurred, beginning in 2010. Here are some of the things that might happen by 2020:

At first the changes are easily mistaken for normal weather variation—allowing skeptics to dismiss them as a "blip" of little importance and leaving policymakers and the public paralyzed with uncertainty. But by 2020 there is little doubt that something drastic is happening. The average temperature has fallen by up to five degrees Fahrenheit in some regions of North America and Asia and up to six degrees in parts of Europe. (By comparison, the average temperature over the North Atlantic during the last ice age was ten to 15 degrees lower than it is today.) Massive droughts have begun in key agricultural regions. The average annual rainfall has dropped by nearly 30% in northern Europe, and its climate has become more like Siberia's.

Violent storms are increasingly common as the conveyor becomes wobbly on its way to collapse. A particularly severe storm causes the ocean to break through levees in the Netherlands, making coastal cities such as the Hague unlivable. In California the delta island levees in the Sacramento River area are breached, disrupting the aqueduct system transporting water from north to south.

Megadroughts afflict the U.S., especially in the southern states, along with winds that are 15% stronger on average than they are now, causing widespread dust storms and soil loss. The U.S. is better positioned to cope than most nations, however, thanks to its diverse growing climates, wealth, technology, and abundant resources. That has a downside, though: It magnifies the haves-vs.-have-nots gap and fosters bellicose finger-pointing at America.

Turning inward, the U.S. effectively seeks to build a fortress around itself to preserve resources. Borders are strengthened to hold back starving immigrants from Mexico, South America, and the Caribbean islands—waves of boat people pose especially grim problems. Tension between the U.S. and Mexico rises as the U.S. reneges on a 1944 treaty that guarantees water flow from the Colorado River into Mexico. America is forced to meet its rising energy demand with options that are costly both economically and politically, including nuclear power and onerous Middle Eastern contracts. Yet it survives without catastrophic losses…