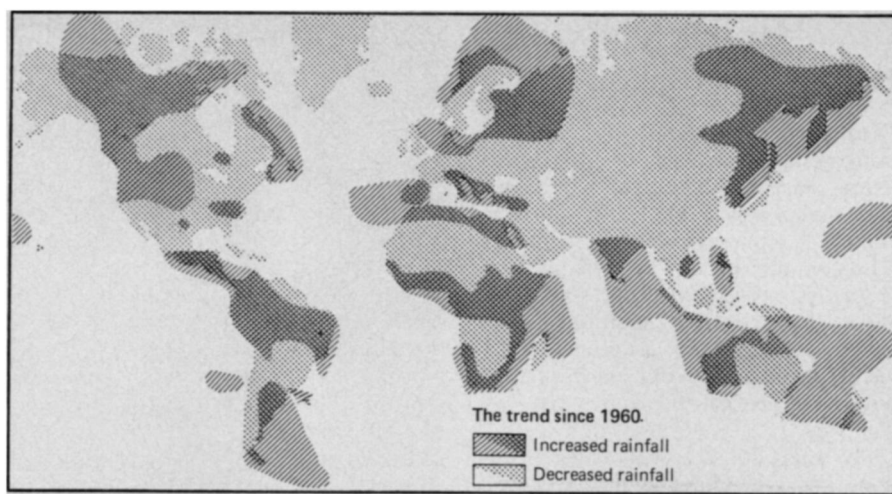


manned mission

Living in space has indeed become routine. Oddly enough, if one believes what NASA has been saying, that is precisely what NASA hoped Skylab would prove: that living and working in space could be useful and as commonplace as working in an office. That, after all, is the gospel of the space shuttle. If the Skylab 2 astronauts readapt to living in gravity as easily as the first Skylab crew did, NASA will have come a long way toward proving that living in space is feasible.

But this second successful Skylab mission—twice as long as the first—poses again an even greater challenge to NASA. Now that it can be done and done with lots of science, is it necessary? NASA thinks it is. So do many who have a long-range concept of the future of man in this solar system. But these questions, posed now, have social and economic implications. What NASA has done—and will do one more time with Skylab 3—is to provide a challenging option for the nation. □



Drought: A southward shift of world climate

Ndarairwa, nyamwaka musrasha makoto

"I have been told," goes the song, from the Shona people of Rhodesia, "this year do not throw away the chaff." The message: Save even your poorest food, for the famine is coming. Curt Wittig, recording the traditional music of Africa, heard the warning song this summer, surrounded by the parched desolation of a four-year-long drought.

Yet not all of southern Africa is so afflicted—even as the song was heard, drenching rains were falling within frustrated eyesight across the mountains of Mozambique to the east. Hardest hit is a vast band across the center of the continent, from Mauritania on the west coast through Mali, Niger, Chad, Sudan, and extending all the way to India. This is the monsoon belt, where from October to May torrential rains have in the past soaked the land enough to make up for the rest of the year's drought.

In recent years, however, the monsoons seem to have moved down toward the equator, leaving 12 dusty months a year in their stead. In fact, a British meteorologist believes, much of the rainfall pattern of the world appears to be moving mysteriously southward.

In much of Europe, according to Derek Winstanley, formerly of the Anti-Locust Research Centre in London, rainfall has been decreasing for years. In the subtropical zone to the south, including northern Africa and the Middle East, measurements from 10 widely spaced meteorological stations all show that it has been getting wetter.

Still farther south, however, is the great band of drought, and the moisture that used to come with the monsoons is yet below that. Where the



Spectrum

Seeking water in dry Indian riverbed.

mighty rains used to fall, the death toll from drought has been estimated in the millions, and the Sahara Desert is reportedly advancing southward in places as much as 30 miles a year. Rainfall from Mauritania to India in 1970 was barely half what it was in 1957. An experimental cloud-seeding project in Niger this month, the first in the country's history, has showed some promise, but the future still looks bleak.

For four years running, the monsoon's deluge has simply failed to occur. The spreading drought, according to H. H. Lamb, director of the Climatic Research Unit at the University of East Anglia, is part of a pattern of changes shaping the biggest shift in the world's climate in almost 300 years.

Whatever the explanation, the symptoms extend all the way to the north polar cap, where the southward movement of the ice border is paralleling the shifts of the circulatory wind patterns and climatic zones, and temperatures are setting new record lows. It appears, all in all, that while the world's total rainfall varies little from year to year, more of it is now falling in the Southern Hemisphere, away from the major areas of the continents of man. □

C-14 Date	Range or Mid-Point for Corrected Date	C-14 Date	Range or Mid-Point for Corrected Date
2960 BC	3610 BC	3260 BC	3820-3850 BC
2970 BC	3620 BC	3270 BC	3850-3880 BC
2980 BC	3620 BC	3280 BC	3880 BC
2990 BC	3630 BC	3290 BC	3890 BC
3000 BC	3640 BC	3300 BC	3900 BC
3010 BC	3650 BC	3310 BC	3900-3920 BC

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Graph, table give corrected dates.

mountains of California, have been shown to be about 8,000 years old.

By comparing 631 radiocarbon dates obtained from samples of bristlecone pine with the wood's true age, they have established correction factors for 85 percent of the radiocarbon dates falling between 1849 A.D. and 5383 B.C. Going back in time prior to 700 B.C., the corrected dates become increasingly older than the C¹⁴ dates—by as much as 600 years. Since 700 B.C. the trend of the correction is mixed—sometimes older, sometimes younger. The corrections are in close agreement with similar work done at the University of Arizona and the University of California at La Jolla.