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REPLY:

The information in the correspondence from Ogawa et al[1] is a good illustration of the impact that changing environmental conditions and long-distance transport of allergenic organisms can have on allergic disease. Long-distance transport of organisms in the atmosphere falls under the general category of aerobiology, an area of strong interest for many allergists. Ogawa et al points to the results of long-distance transport of a basidiospore in dust that likely originated from desert areas of China or even Africa.[2,3] Due to space limitations and significance considerations, we did not include long-distance transport and increasing desertification in the climate change article.[4] Yet, these topics do deserve some attention as Ogawa et al pointed out. For example, a more familiar long-distance transport event that impacts allergy practice in large areas of the central United States is the transport of cedar pollen from the Edwards Plateau in Texas to areas as far as Kansas City, Missouri, or London, Ontario, Canada. This transport is documented during the cedar pollen season on a daily forecast at http://pollen.utulsa.edu/current.html. In areas where daily pollen levels are forecasted to be high, sensitive individuals are advised to limit outdoor activities.[5] Moreover, with increasing northern movement in the US floristic zones, these cedar trees are expanding their territory, and this pollen may see even longer-ranging disbursal on strong winter storm fronts. One caveat to long-distance transport is that response to allergens is, at least in part, dose related. So detectable amounts of allergens may have little clinical impact

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if they are not also present in sufficient quantity, whatever that may be for a given organism. Conversely, plant species that are transported and reproduce where they settle have the potential to alter their new environment and may need to be addressed more carefully because it relates to their impact on animal or plant health. Regardless, resources to deal with these issues will be limited, so those involved in maintaining the public's health will need to set priorities to guide their investigations.

Although not discussed in our report on climate change,[4] the field of long-distance transport has been part of aerobiology since its inception.[6] Microorganisms have been collected at high altitudes and in extreme climates around the globe.[7] Recently, it has been appreciated that several billion tons of soil-derived dust and accompanying microorganisms are aerosolized each year.[8] Much of this airborne microbiota originates from existing desert areas in Africa. But, with increasing desertification believed to be associated with climate change, dust activity has increased in areas of China, Australia, Central and South America, and even the United States.[9]

It is not typical that the practicing allergist in the midwestern United States would be concerned about microbes carried in dust plumes from the west coast of Africa. But, if as expected, global climate change produces increasing aerobiologic distribution of organisms, then he or she may well discover unusual fungal sensitivities that develop in some patients. More research is required to fully realize the health impact of long-distance transport of a variety of aeroallergens such as basidiomycetes and small particulate air pollutants. It is a small world after all.

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