

Preface

In 1990 the Intergovernmental Panel on Climate Change (IPCC) reported that the phenomenon of global warming may be occurring as a result of increased concentrations of greenhouse gases in the atmosphere arising from human activities. Five years later in 1995, the IPCC reported that global warming had already begun and predicted that the average global temperature could increase by 2°C within 100 years, causing a rise in sea levels of up to about 50 cm.

Investigations are now underway for the IPCC Third Assessment Report, to be released in the year 2000. The impact of global warming will be the main theme of the report, and “adaptability” and “regionality” have been selected as key words.

Already international cooperative research into climate-change induced global environmental change, such as increases of global temperatures, rises in sea level, irregular weather, and violent storms, has produced significant results in clarifying the situation, forecasting and in planning responses and countermeasures.

However, further investigation is necessary concerning the influences of environmental change on the natural environment and on human life. This work must be performed not only on the global level, but also on the regional level, because the impacts are likely to be felt differently in different regions. In order to get the results on the global level, it is necessary to accumulate the results of work in each region. This is the significance of the key word “regionality” in the IPCC report.

Among the various global environmental change concerns, this issue of *Global Environmental Research* focuses on the effects on human health of climatic change induced by global warming, as the problems concerning human health are among the most important and fundamental ones needing clarification.

Figure 1 indicates schematically the effects of climatic change on human health. Typical “direct” effects include increases in environmental temperature and/or the frequency of heat waves, which increase the incidence of hyperthermia including heat stroke. Another typical “direct” effect on human health is caused by increased UVB radiation due to the destruction of the ozone layer by chlorofluorocarbons (CFCs).

Among the various “indirect” effects of climatic changes on human health, the possibility of the increased incidence of vector-borne infectious diseases, such as malaria or dengue fever, are now being intensively studied.

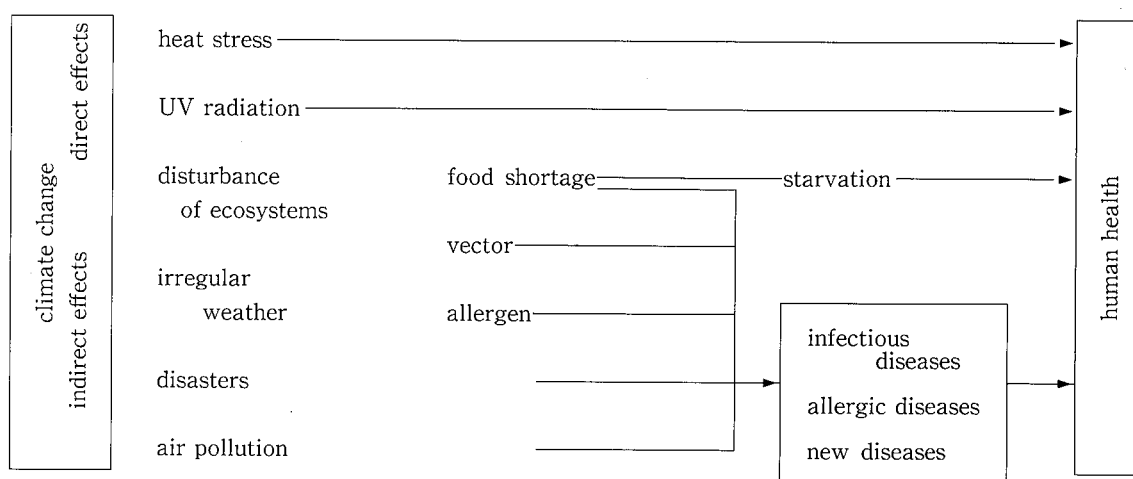


Fig. 1 Possible major impact of climatic change and stratospheric ozone depletion on human health

The activities and habitat of mosquitoes, which are vectors of these diseases, are influenced easily by environmental conditions such as air temperature and precipitation. An expansion of the dangerous area for these diseases is predicted as a result of climate change. In addition, disturbances of ecosystems, and increases in irregular weather and violent storms are predicted to cause serious food shortages, increase of infectious and allergic diseases, and cause outbreaks of new sorts of diseases.

In this context, this issue of Global Environmental Research pays attention to the following three points, which can illustrate key characteristics of Japan.

1) Effect of hot-humid summer on human health

As Japan regularly experiences hot and humid summers, the effects of environmental temperatures on health have been investigated extensively. This issue includes papers on the incidence of heat stroke by Drs. Honda and Uchiyama, and by Dr. Ando ; the incidence of cerebral circulatory damage due to heat by Dr. Nakamura ; characteristics of clothing by Dr. Nakajima ; characteristics of dwellings and indoor climate by Dr. Hirokoshi ; characteristics of the urban climate by Dr. Yamashita ; and a short history of studies on the environmental physiology in Japan by Dr. Shiraki.

2) The effects of significant seasonal variation on human health

Japan normally has four distinct seasons, with, for example, summers in typically hot and humid, and winters cold and dry. Drs. Matsuda and Kahyo review the seasonal variation of birth rates, and Dr. Tanaka the seasonal variations of diseases.

3) Natural therapies in Japan

Japanese are dependent on nature's kindness and believe in the strength of the abundant nature. Based on the trust and dependence on nature, unique cures using the power of nature arose developed Japan. Drs. Agishi and Ohtsuka describe balneotherapy, which refers to natural therapies taking advantage of subterranean products such as hot spring water, natural gases and muds. Dr. Kagami describes 'shinrinyoku' or bathing in the woods.

It is my hope that reports on studies about the effects of global environmental change on human health, especially concerning Japan, in this issue of Global Environmental Research will be useful for work on a global level.

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