Preface

Problems in predicting or forecasting human health conditions or diseases have been a topic of discussion for many years. It is known that there are many in depth descriptions on the relationship between weather/climate and human health dating from the time of the ancient Grecians as well as the ancient Chinese. Such knowledge has also spread among peoples in the form of weather-proverbs or folklore. In some cases, weather-wise persons could predict changes in health conditions not only in the short-term, say a half day to one day, but also over the long-term, say about a week to a month, based on their knowledge and experiences. This knowledge was often held by persons with a religious background in the local communities. It was maintained through the medieval period, and continues uninterrupted even today.

In the age of modern sciences, problems still remain to be solved, even though the relationship between weather/climate and human health has been analyzed statistically and physiologically. Aided by modern hygiene, bioclimatology and biometeorology, studies are developing very rapidly. They clarify the relationship step by step. In other words, statistical analyses find many significant relationships while on the other hand, the physiological analyses clarify the processes of atmospheric changes as causes of changes in human behavior, both physically and mentally.

In Germany, so-called “bio-weather forecasting” has a history of more than a half century, but other countries have attempted it for only a few decades. In daily newspapers, broadcasting such as TV and radio and IT media, they have become one of the main subjects of interest to audiences of a wide range of ages, occupations and purposes. The time scales of their interest may be from several hours to one week or more.

The results of scientific studies in hygiene, bioclimatology and biometeorology, however, cannot be always used directly for prediction or forecasting. This is similar to the fact that the results of meteorological or climatological studies cannot always be used in weather and climate prediction or forecasting if they are too theoretical or strongly oriented toward analysis of physical-processes. On the other hand, the so-called IT period has started in recent years and forecasting/prediction programs related to weather-health have been addressed more frequently. The increase in the frequency of addressing this topic may be the result of one person seeking it more times because he is interested in changes over shorter time periods, or from a larger number of persons distributed locally or regionally in various environments over a broad area.

For presenting predictions and forecasts to these persons, we should establish more advanced techniques. The present special issue intends to solve these problems: we report examples in several countries other than Germany and discuss some specific diseases in Japan. We hope that the results shown in this issue will be further systematically discussed at the International Biometeorological Congress to be held in Tokyo in September, 2008.

Information on weather and climate is also used in day-to-day decision-making for marketing and merchandizing these days. These are indirectly valuable to the preservation of human health through provision of amenities. Among the various relationships between growth in beer consumption and the weather index, the daily maximum air temperature has the highest correlation. When the maximum temperature is 1ºC above normal on a fine day in summer, beer sales that day increase by 2,470,000 large-size bottles based on the standards in Japan in the middle of the 1980s. This is equivalent to an increase of about 8% over the average daily consumption. It is not easy, however, to plan beer production based on weather forecasts, because beer cannot be stocked for a long time. It is said that in the planning process, we should produce a product less sensitive to weather and climate to minimize the risk.

Another example, which occurred in the intense summer heat of 1978, is as follows. The sales of beer were 3,150,000 units in 1978. This was 450,000 more than the 2,700,000 units anticipated. In the summer of 1982, which was cooler than usual, only 1,900,000 units were sold compared with expected sales of 2,400,000. Under the influence of global warming, we are suffering more serious conditions of higher temperatures in recent years. The relationship may of course be the same as in other years, but the absolute values may be changing due to the adaptation of human bodies as well as the economic activities of society. The paper by Tokiwa in this issue is concerned with life-weather merchandizing. We hope for future development regarding these problems.

Readers of this special issue may recognize that the steps of developing studies and forecasting techniques are not coordinated well among different countries or for different diseases. Frankly speaking, we are far from the first mile stone of our destination. We hope that the present special issue will provide an incentive to accelerate development of a system and contribute to dissolving the differences country-to-country and disease-to-disease under international cooperation.

The present special issue has been planned by the Editorial Working Group of the BioClima Research Committee (BCRC) in Japan. I would like to express our sincere thanks to the Editorial Committee of Global Environmental Research for accepting this as a special issue and editing.

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