The effects of changes in the Earth's environment on humans have been drawing an increasing amount of attention in recent years. Of primary importance are climatic changes. According to some studies, the Earth's temperature will increase by one degree Celsius by 2010, and by two degrees by 2030. If this does indeed occur, sea levels would rise, creating severe problems for lowland regions throughout the world.

By researching what has happened in the past, we can estimate probable conditions in the future. This series of paleoenvironmental maps explores the climatic macrocycle of the past 130,000 years and exemplifies fluctuations in the climate and landscape systems. Mankind has lived through the colder ages of 35,000 to 25,000 years B.P. and 20,000 to 18,000 years B.P., as well as the warmer ages around 120,000 years B.P. and 6,000 years B.P. The atlas reconstructs Northern Hemisphere conditions during these four periods by charting average temperatures and precipitation for both February and August. Past and present conditions are compared by the use of an iso-depth line.

A total of 62 co-authors from a host of countries, including Russia, Hungary, Poland, Germany, France, the United States, and Canada, contributed to this work. The editorial board was comprised of M. Pesci in Hungary, B. Frenzel in Germany and A. A. Velichiko of INQUA. Among the numerous organizations supporting the publication of the atlas were the Hungarian Academy of Sciences, Russia's Academy of Sciences and Literature, Germany's Institute of Botany, and Germany's Institute of Sciences and Literature.

The atlas includes the following chapters:
- Last Interglacial (about 120,000 years B.P.)
- Interstadial of the Last Glaciation (about 35,000 to 25,000 years B.P.)
- Maximum Cooling of the Last Glaciation (about 20,000 to 18,000 years B.P.)
- Upper Pleniglacial of the Last Glaciation (about 24,000 to years 12,000 B.P.)
- Holocene (between 7,000 and 5,500 years B.P.)

According to the atlas, around 120,000 years ago summer temperatures were not markedly different from what they are now. However, winter temperatures were significantly higher; Scandinavia was three degrees warmer, and Siberia was six degrees warmer. During the last glacial age, 20,000 to 18,000 years ago, temperatures in tropical regions were about 10 to 20 degrees lower. As a result, sea levels decreased, and vegetation flourished in areas that had previously been under water. After 18,000 years B.P., glaciers in the Antarctic and Greenland melted rapidly, and dry areas expanded. The atlas illustrates the changes in forest regions. In Africa, the Sahara dried up during the last glacial age, making the area uninhabitable other than along the Nile River.

The most substantial chapter in the atlas pertains to the development of glaciers in the Valdai Hills of Europe, 23,000 to 17,000 years ago. Dr. Pesci researched climatic changes by observing loess outcrops, which had developed to a thickness of 50 to 100 meters in western Siberia. During this time, mammoths migrated to the Kurimya Peninsula. Meanwhile, in North America, glaciers developed in the Cordilleras and Great Lakes regions. A corridor remained uncovered between these two glaciated regions. In Asia, permafrost developed from the north to the Chinrin Mountains in China. The Huwan Highland is covered by a thick layer of loess. In Japan, the north was covered by coniferous forests, while the central part was filled with mixed forests of coniferous and broad leafed trees. The lives of the Stone Age people here were greatly influenced by eustatic movements.

The atlas reveals that maximum glaciation did not occur during the periods with coldest temperatures, as might be expected, but rather after the temperatures had begun rising. Changes during the Holocene are of great inter-
est because the human race began to thrive around 7,000 to 6,000 years ago—when average temperatures were about two degrees higher than at present. Europe was in its Stone Age during this time. In Africa, the climate differed from that of today, and precipitation in the Sahara and Nile regions was much greater. Nubia, along the Nile River, had an annual average of 300 millimeters of rain from 6,000 to 5,500 years B.P. The Pyramid Age in Egypt reached its zenith about 4,500 years ago, and we can relate the growth of civilization to improved climatic conditions.

Until now, there had never been an atlas that explored the changes in the entire Northern Hemisphere from the Pleistocene to Holocene based on accurate data. A great many experts from across the world contributed to the work. One of the book’s purposes is to help estimate climatic conditions in the near future, making it not only useful for geographers but also for scientists, planners and others.

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Living in a mountainous country, Japanese have spent lots of time, labor, and capital attempting to maximize the use of limited land as well as to reclaim land along their shores and on slopes, and many terraced slopes have been devoted to rice, the Japanese staple crop. Tanada is the Japanese term for terraced paddy fields (tana meaning shelves and da meaning paddy fields), and they are found throughout the country, constituting the original rural landscape of modern Japan.

However, farmers recently abandoned many of the traditional terraced paddy fields as rice became overproduced and farm machinery was difficult to introduce. At the same time, public interest has been growing in preserving the traditional paddy fields because they are considered to be a national asset to hand on to the following generations. Professor Nakashima, a well-known rural geographer, published a timely book. His Terraced Paddy Fields in Japan provides a geographic overview of agricultural terraces in Japan, examines their geographic features, and analyzes various attempts at preserving such fields. The book is based on Professor Nakashima’s long-time involvement in the study of rural geography and irrigation systems.

The book consists of twelve chapters. Chapter one briefly provides an explanation of the origin of, and the term, tanada. Previous studies on terraced paddy fields are summarized in chapter two. Although the terraced paddy fields were once recognized as marginal farm-land characterized by low productivity defying mechanization, scholarly and public interest in terraced paddy fields has been growing.

Chapter three presents the distribution of terraced paddy fields. Although they are found throughout Japan, important concentrations are found in western Japan which reflects the process of introducing the rice culture and local topography. The morphology of terraced paddy fields is examined in chapter four with special reference to slope and the materials for construction. Chapter five focuses on irrigation by examining irrigation methods and water rights.

The various functions of terraced paddy fields are the topic of chapter six. In addition to producing rice, the terraced paddy fields play other important roles: environmental preservation including water storage, flood control, and the prevention of soil erosion; preservation of natural habitats for amphibians, fish, insects, birds and mammals; and cultural assets sustaining the beauty of terraced landscapes. While rice has been overproduced and the terraced fields have lost their economic significance, environmental and cultural values have been becoming widely recognized. Landscape features are examined in detail through the use of topographic maps.

Abandoning terraced fields is the theme of chapter seven. The pattern of abandoning terraced paddy fields is examined at the national scale as well as at the farm household unit. The next chapter provides an overview of the pres-
ervation of terraced paddy fields. Chapter nine presents three ways that terraced paddy fields are preserved: for tourism, as projects supported by local government and citizens' groups, and for producing and marketing value-added rice. Chapter ten examines the methods of preserving terraced paddy fields, suggesting that preserving terraced fields is not easy because of many obstacles.

Chapters eleven and twelve examine the system of paddy field ownership by non-farming urban residents. Although the contract systems vary from one place to another, urban residents participate in maintaining paddy and producing rice. This ownership method is often successful in contributing to the preservation of paddy fields. Being a type of green tourism, it contributes to encouraging public concern for the traditional paddy fields.

As Professor Nakashima suggests, such public concern began to grow in the mid-1990s when the first *Tanada Samitto* (a conference to discuss terraced paddy fields) and *Tambo Shimpojiumu* (paddy field symposium) were held. Professor Nakashima's *Terraced Paddy Fields in Japan* clearly shows that insights from scholarly geographical research can provide the public and administrators with a basis for understanding the heritage of and for promoting the preservation movement. Although geography is underappreciated as an academic discipline by the general public in Japan, Professor Nakashima appears to declare that geography is important and useful by his *Terraced Paddy Fields in Japan*.

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