



Preface

Mid-Holocene Paleoenvironments and human occupation in Southern South America

During recent years, increasing attention has been devoted to the role of past climatic changes as driving forces for human responses. Consequently the collaboration between earth scientists and archaeologists has grown significantly with the goal of analyzing the connections between climate and culture. Worldwide, among the different time intervals examined, the mid-Holocene period from circa 8000–3000 BP was characterized by a profound cultural transition and a highly variable climate (Sandweiss et al., 1999). This is also registered at distant and diverse areas of southern South America that show significant changes of cultural patterns, indicated by either a decrease of human occupation, or the advent of new strategies to obtain natural resources. Simultaneously, diverse paleoclimate archives including, among others, ice cores, lake cores, fluvial sequences and eolian deposits, were studied documenting high variable environmental responses across southern South America.

The multiproxy records studied indicate significant fluctuations of lake levels in the central Andes, eolian activity in the Pampas, intervals of soil erosion or landscape instability, and changes of vegetation covers which point to generally dried conditions during the mid-Holocene, particularly at numerous desert, semi-desert or semiarid/subhumid areas of southern South America. This is illustrated by the Altiplano and surrounding regions, where generally dried conditions dominated from ca 8000 to 3500 cal years BP (Seltzer et al., 2003). In central Chile and the western Patagonian coastal marine records (Lamy et al., 1999, 2001) indicate dry conditions from 7700 to 4000 cal years BP which in general is supported by pollen analysis (Jenny et al., 2002). Across the extensive Pampean plains, the marginal western and southern fringe bordering the humid eastern Pampas recorded eolian activity between ca 5000 and 4000 ^{14}C years BP which in conjunction with other indicators (pollen and vertebrate fossils) suggest dominance of arid conditions (Muhs and Zárate, 2001). Another model, however,

proposed humid and warm conditions during the mid-Holocene (Iriando, 1997).

A paradigmatic area to test the culture and climate connection is the Atacama Desert of northern Chile, where the mid-Holocene collapse of human occupation is associated with drying of the lakes under very arid conditions (Nuñez et al., 2002). Therefore the question arose if climatic conditions might have played a major role on the human behavior of mid-Holocene societies in other areas of southern South America.

The theme was selected to organize a symposium on *Human occupation and climatic conditions during the mid-Holocene*, held 23–26 September 2001, within the framework of the XIV Congreso Arqueológico Argentino, at the University of Rosario, Argentina, and convened by Gustavo Neme and Adolfo Gil. The meeting was conceived to stimulate and draw attention to the topic and create an interdisciplinary forum of discussion which could provide a regional perspective of human responses and climate during that time interval. The meeting was attended by about 40 participants and 13 presentations were given, discussing archaeological and paleoenvironmental records of Chile, Argentina, Uruguay and southern Brazil.

This special volume of *Quaternary International* is a selection of 10 papers arising from the symposium that cover a wide spectrum of environments of southern South America. They embrace the Andes Cordillera of Argentina and the adjacent regions at three different latitudinal settings between 23° and 36°S, the southern pampean plain of Buenos Aires Province, the eastern central hilly plain of Uruguay, the southern Paraná fluvial basin, Patagonia, and Tierra del Fuego (Fig. 1). The environmental heterogeneity of the studied areas is evident in the diverse paleoclimatic records obtained and the different human responses inferred as well as in the resulting interpretations of the possible cultural-climatic connections. It is revealing how exiguous the paleoclimatic archives of high resolution are, with very detailed chronological calibration. The still insufficient

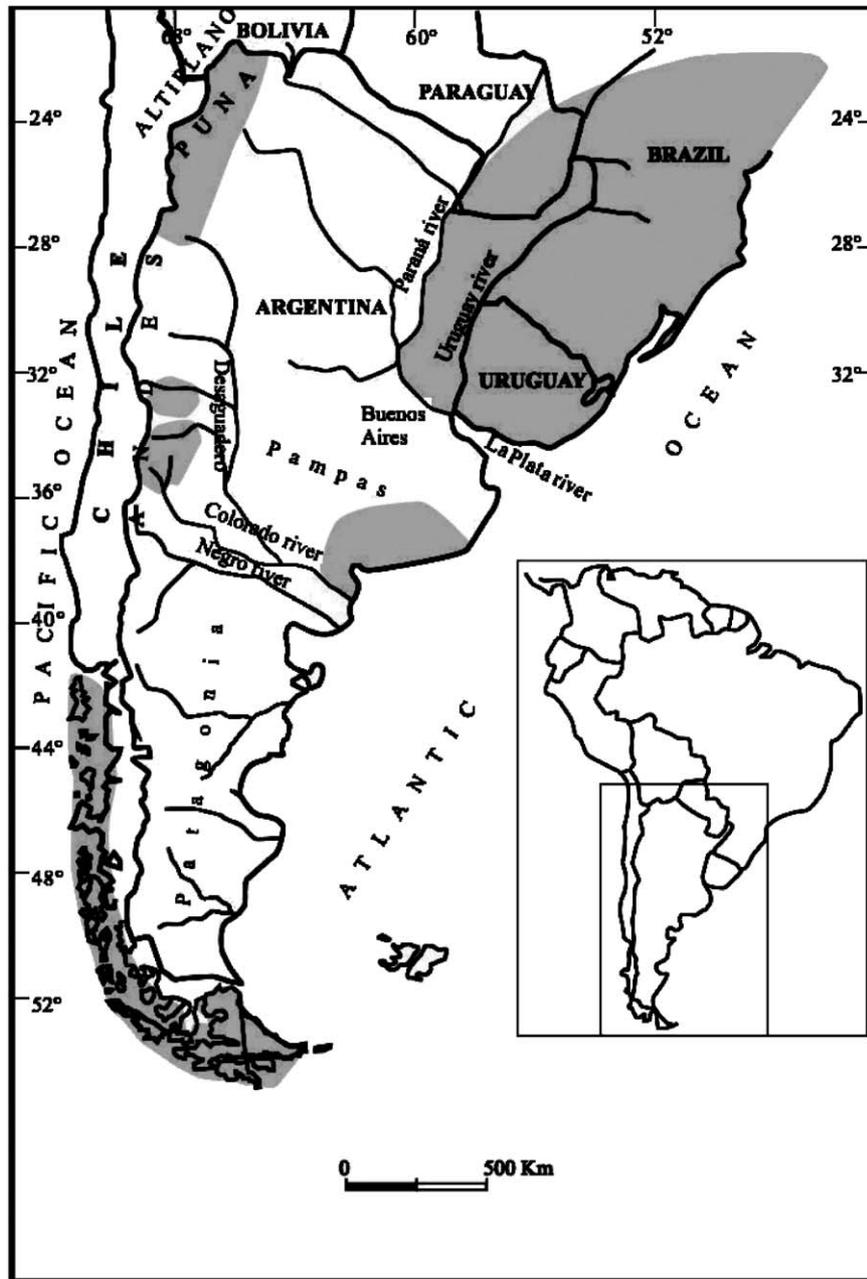


Fig. 1.

amount of numerical ages from different materials, without corrections, adds some uncertainties when micro- and meso-scale paleoclimatic trends are correlated.

Mancini et al. provide a macro-scale paleoenvironmental reconstruction during the 8000–4000 years BP of the arid–semiarid region of Argentina between 32° and 52°S. The analysis is based on the comparison of fossil pollen records from different depositional environments and shows an eastward displacement of their limits during this time interval, suggesting drier conditions.

In the Puna de Atacama of northwestern Argentina (23°–26°S) *Yacobaccio and Perez* focus attention on the diatom analysis from Vegas of the Susques area (Jujuy Province). Periods of higher humidity are inferred, indicating that these settings were used by hunter-gatherer populations during the mid-Holocene while other areas further west (Arid Atacama desert of Chile) were apparently abandoned. Southward, *M. Rodriguez* primarily examined archaeobotanical information from archaeological sites of Antofagasta de la Sierra (Cataramarca, Argentina) located within the domain of the Salty Argentine Puna. A continuous human occupation

is apparent between 8000–4000 BP at some sites, which might represent “ecological refuges”.

Three contributions deal with the Central Andes of Mendoza, Argentina (32°–37°S) and the adjacent regions. *Cortegoso* discusses the mid-Holocene archaeological record of the mountainous environment at 32°S inferring a decrease of human occupation during this time interval, and more intensive occupation during the late Holocene, probably related to a general amelioration of the climate. *García* offers a different interpretation of the archaeological record of the mountain area and the eastern plains between 32° and 34°S. After reviewing the available archaeological and paleoclimatic evidences, he concluded that the area was continuously occupied by human groups during the mid-Holocene. Low visibility of archaeological sites and no systematic surveys are possible explanations of the reduced number of occupations found. *Gil et al.* discuss the mid-Holocene archaeological and paleoclimatic records of the heterogeneous region of southern Mendoza (34°–37°S). Climatic conditions and site formation processes are analyzed to explain the significant decrease of human occupations registered during this time interval.

The central eastern region of Argentina, Uruguay and southernmost Brazil is covered by three papers. *J. Rodríguez* provides a regional overview of climatic and cultural processes at a large spatial scale that involves a great part of the Paraná and Uruguay fluvial basins. In his conception the increasing cultural complexity of the mid-Holocene was influenced by the climatic and environmental changes of this time interval. *Bracco et al.* review the prehistoric mounds, dating from 5000 years BP to the 17th century, situated in the east of Uruguay. They show a correspondence between intervals of mound building and dry conditions during the late mid-Holocene and the late Holocene. *Barrientos and Perez*, based on radiocarbon and craniofacial morphological evidence of burial sites in the southeastern Pampas of Buenos Aires Province, Argentina, inferred the occurrence of population replacement sometime between 6000 and 3500 years BP. This is explained in terms of a climatic induced demographic and range contraction of critical mammalian resources (e.g., guanaco: *Lama guanicoe*).

Orquera examines in particular the role of the environment of southern Chile and Argentina (~53°–54°S) and the mid-Holocene specialisation in the exploitation of coastal resources. He states the impossibility of identifying the factor which determined the starting of this adaptation process.

With this volume, we hope to stimulate the discussion about climate and human occupation in a time interval few known, the mid-Holocene.

Acknowledgements

We want to thank Norm Catto for accepting this collection of papers and general help while editing this volume. We are most grateful to the following colleagues for their helpful reviews of the papers: Mark Aldenderfer, Cristina Bayón, Juan Belardi, Robert Bettinger, Luis Borrero, Robert Elston, Thomas Dillehay, Victor Durán, Nora Flegenheimer, Martín Giesso, Donald Grayson, Martín Grosjean, Christine Hastorf, Vance Holliday, Marta Lahr, Vera Markgraf, María Lelia Pochettino, Gustavo Politis, Hector Pucciarelli, Mónica Salemme, Cristina Scattolin, Robert Tykot, and Ricardo Villalba.

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