

Preface

Latin-America is clearly much more a historical, cultural and socio-political definition than a geographical or geological entity. Geographically, it extends from the southern tip of South America to the political border between Mexico and the USA. It encompasses the South American continent, most of Meso-America (Central America plus most of the Caribbean) and southern North America (Mexico). It also extends along several different tectonic plates. This may suggest that to put together Earth Sciences studies along this huge land-mass is somewhat subjective. Although this may be partially true, the fact that Science is basically a cultural endeavor, historical and sociological aspects that have given birth to that complex entity called Latin-America are also relevant to such apparently distant scientific investigations as paleo- and rock-magnetic studies. In fact, historical and cultural linkages among the Latin-American countries and their population played a significant role during the late sixties and early seventies when the major Latin-American paleomagnetic laboratories were established, in part due to unselfish cooperation of scientists from different countries. Cooperation and collaboration among different Latin-American paleomagnetic research groups remained active, with its ups and downs, during the following decades, amid the political and economic turmoil that frequently affected many of their countries.

During the last two decades, a significant and steady growth in the number of paleomagnetic studies in Latin-America has been verified. These have come both from active paleomagnetic groups already established in Latin America as well as from researchers working around the world but who have focused their investigations systematically or eventually in South America, Meso-America or Mexico. The subjects and objectives of these investigations have been also widely varied.

The idea for this issue comes from a special session with the same name at the New Orleans AGU Joint Assembly, held in May 2005. During that meeting several high-quality contributions were presented in relation to such different topics as Andean tectonics, paleogeographic reconstructions, paleointensity determinations or archeomagnetism. The event was well attended with an active audience and stimulating presentations.

This special volume of *Earth Planets and Space* is a collection of 21 invited and contributed works, most of them presented at the meeting. The aim of the volume is to present an updated view of present research and recent results on the tectonic evolution of different regions of Latin-America, basically based upon paleomagnetic and magnetostratigraphic studies. In addition, special attention is paid to the studies devoted to the temporal variations of the geomagnetic field on both archeological and geological time scales as well as different aspects of paleo, rock and environmental magnetism.

The volume has been subdivided into four sections on a thematic rather than geographical character. The first, and largest, section is composed of nine papers and deals with classical paleomagnetic studies devoted to tectonics and high resolution magnetic stratigraphy of different regions of Latin America, from refinement of the Late Paleozoic apparent polar wander path of South America, to the tectonic evolution of the Northern South American Andes and the tectonics and stratigraphic record of several Mexican areas, including the world famous Chicxulub Crater. The following section is related to past Geomagnetic Field behaviour including paleointensity studies and it is composed of five papers that discuss the paleosecular variation at different time scales as well as very much needed absolute and relative paleointensity results. The following section also contains five papers that are focussed mainly on the relatively recent but vigorous field of environmental magnetism, applied to the reconstruction of the past climatic changes as well as to monitoring of industrial pollution or to the detection of hydrocarbon signatures. The final section consists in just two works that concerns with archeomagnetic studies on the still understudied cultural heritage of pre-Columbian Latin America.

We hope that this volume will give a partial but significant view of the present state of paleo- and rock-magnetic investigations in Latin-America, and, more importantly, will help Earth scientists within and outside Latin-America to realize the huge scientific potential that this “continent” still hides.

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