

## PREFACE

*Professor Kenitiro Suguio, the well-known sea level specialist, together with co-workers at the University of São Paulo, organized an international and interdisciplinary symposium on "Global Changes in South America during the Quaternary" in São Paulo on May 8-12, 1989. The symposium was sponsored by ABEQUA and INQUA with co-sponsoring by several national (ACIESP, SBG, USP) and international (IUGS, ORSTOM, INQUA) commissions and subcommissions.*

*Why "Global Changes"? In the whole philosophy of the main international Global Change project, and its special "International Geosphere Biosphere Program" (IGBP), the central theme is that we urgently need to know where we, and the environment Man unfortunately have come to affect most drastically, are heading in the future. But to know this, we must know the past, its sequence of changes and especially its sensitivity and susceptibility of changing.*

*Why "South America"? Well, South America occupies a quite unique position in the global system. It is a continent of enormous geodynamic variability. It is located with major oceans on both sides, a fact which makes the ocean-atmosphere-continent interaction especially clear and unbiased. In the west, we have a highly active continental margin with the high cordillera. In the east, we have a passive continental margin with high geological variability but still fairly constant sea level history. The atmospheric circulation is dominated by the strong contrasts between the warm equatorial climatic conditions in the north and the influence of the cold Antarctic conditions in the south, and between the differences from west to east - all creating strong contrasts in temperature, precipitation and winds. The Amazonian forest system is unique and of the greatest significance in the geo-biophere system of the whole globe. We may well call it "the lungs of mother Earth". The El Niño events are characteristic multidisciplinary features of the western coast. We know, however, that these events had drastic global effects (circulation, biological productivity, ocean/atmosphere interaction, etc.). We start to see that the ENSO-El Niño mechanism also operates over longer time units, giving rise to "Super-El Niño/ENSO" events. The ocean circulation system - we may call it "the blood system of mother Earth" - with the Humboldt current and the equatorial current system in the Pacific, the N/S diverging equatorial current system in the Atlantic, and the cold coastal current in SE, both with related wind patterns, and the tremendous abyssal current of*

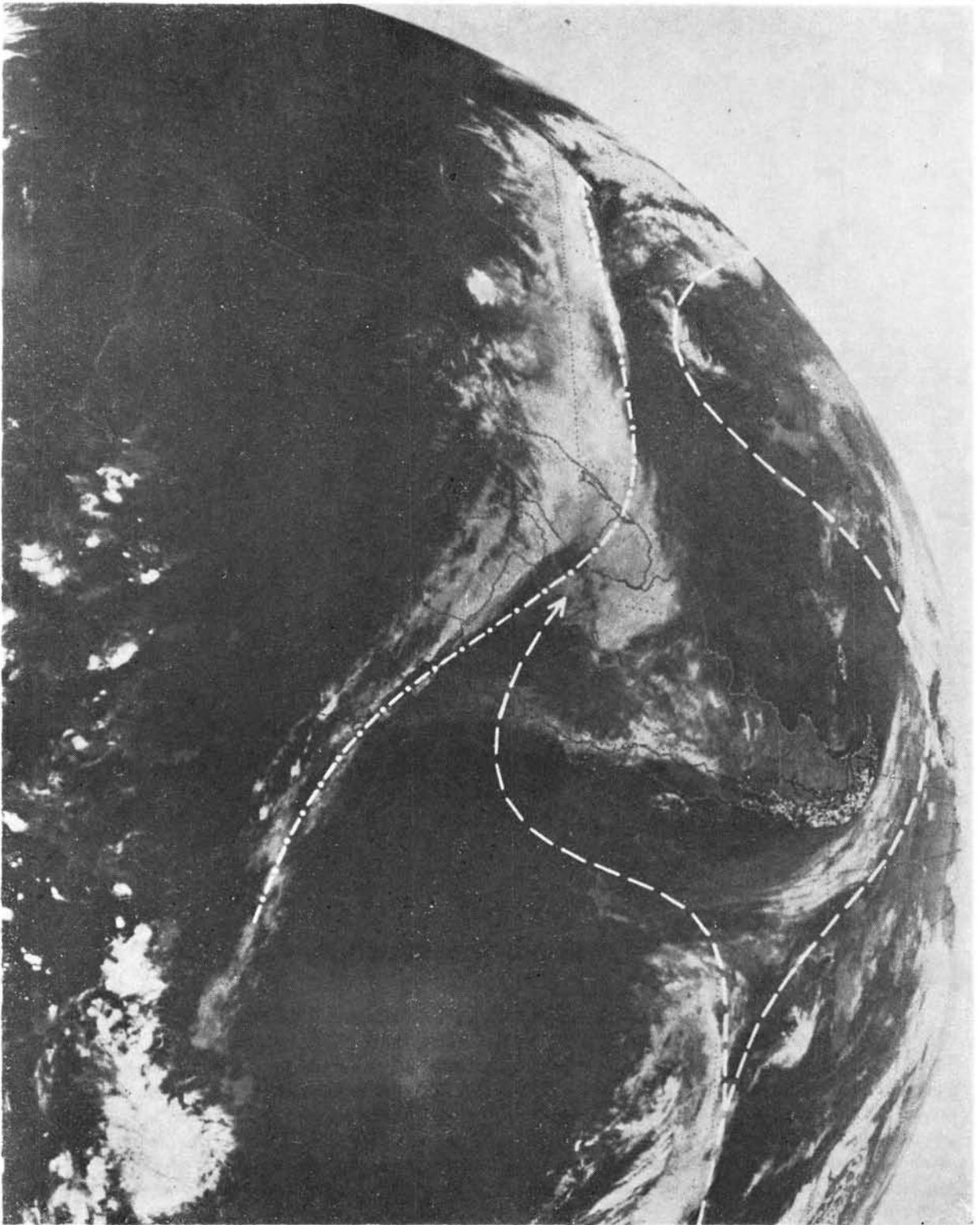
*the east coast are all fundamental systems for our knowledge about the variability susceptibility and "Global Changes".*

*Why "Quaternary"? Quaternary scientists (there are many different disciplines) occupy a very special position in the fact that they are the only ones that have good enough resolution and time cover to investigate the type of changes that are of greatest significance for the understanding of the natural processes in our near future. Longer term records usually provide mean values without direct geodynamical implication. Present day instrumental records are usually biased by noise where it is difficult to define correct tendencies. The main problem, however, is the interaction and confusion between natural and Man-made changes. Therefore, the short-term, high-resolution changes during the Holocene and upper Pleistocene are of special significance.*

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### LEGEND OF THE PHOTOGRAPH

It represents an image received by the "Instituto de Pesquisas Espaciais" (INPE) in São José dos Campos (São Paulo State, Brazil), at 12:17 h (GMT) on June 12th, 1983, from the meteorological satellite "GOES". The undulating white band, with east-westward orientation, represents the cold front which was stationary over the State of Santa Catarina and which provoked heavy rainfall (45% above the mean value) during 1983. The white spot in the upper left corner of the photograph, on the Equator, is agglomerated cumulus-nimbus clouds associated with abnormally warm water of the 1983 "El Niño". The broken lines in the south represent the polar jet bifurcation and the east-west oriented broken line with points gives the position of the tropical jet. At the junction point near the Brazil-Uruguay frontier, wind speeds reached 250 km/h at a height of about 10 km.