

NCAR



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International Monsoon Study Begins

Boulder, Colorado---Monsoons, to most of us, usually mean the torrential seasonal rains which bring life-giving moisture to India and other tropical regions. The monsoon, though, is technically the wind pattern which may, or may not, bring vital rainfall so that when the monsoons "fail," as they have in the past few years, they fail to bring rain.

The familiar Indian monsoon is a summer phenomenon which brings nearly 100 percent of India's rainfall during the months of June, July and August. Less well known is the winter monsoon which, from December through February, brings 75 percent of the rainfall to the Malay peninsula, along the South China Sea and the Indonesian Islands - a region sometimes called the "Maritime Continent."

"Both the summer and winter monsoons are crucial in providing moisture for agriculture in these heavily populated regions of the world, yet we really understand very little about how these monsoon systems operate," according to Joachim Kuettner. Kuettner, as the director of the United States Monsoon Experiment (MONEX) Project Office, has been helping to develop plans for a major field experiment designed to understand and ultimately predict the monsoons and their rainfall.

Since there are two separate monsoon systems, the MONEX project is divided into two components: the summer MONEX project which will examine the monsoons on the Indian sub-continent and the winter MONEX project, centered in Malaysia, which is scheduled to begin December 1.

The winter MONEX project is gearing up for its observational phase to run from December through March, and Kuettner, along with colleagues from the National Center for Atmospheric Research (NCAR), the National Oceanic and Atmospheric Administration (NOAA), and university researchers, is leaving Boulder, Colorado for Kuala Lumpur, winter headquarters for the monsoon study.

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"On a global scale," Kuettner points out, "the winter monsoons are extremely important. They are the strongest disturbance of the global circulation of the atmosphere. Their effects can be traced to South America, Africa and both polar regions." And though tropical meteorologists have studied the monsoons for years, there has never been a research project with the scope of MONEX. The field project has two major objectives. One is to understand the physical mechanisms that cause monsoons in order to improve the short-range predictions of monsoons, monsoon rainfall and related events.

The second objective is to explore how the atmospheric circulation around the globe is affected by the monsoons and, conversely, what factors in the global circulation affect the development of the monsoons. Because of this second objective, MONEX is a part of an even larger-scale global atmospheric research program which will begin next year. For the winter MONEX, scientists and researchers from the Philippines, Thailand, the U.S.S.R., Indonesia, Malaysia, Hong Kong, the People's Republic of China and Australia will be involved in the cooperative gathering of data in the region of the "Maritime Continent." Their efforts will be aided by simultaneous reports from a Japanese weather satellite in geosynchronous orbit over the area.

In addition to NCAR and NOAA scientists, university researchers from around the United States will be going to Malaysia to participate in the winter phase of MONEX. The University of Utah, the University of Washington, University of Wisconsin, University of California, University of Virginia, University of Michigan, University of Hawaii, University of Maryland, University of Miami, Pennsylvania State, Colorado State, Florida State, Georgia Institute of Technology and the Naval Post Graduate School will all be represented. Much of the support for the MONEX projects is being supplied by the National Science Foundation, which also supports the National Center for Atmospheric Research. Dr. Kuettner will be serving as the scientific director of the MONEX project.

The complex observing network of meteorological instruments will include self-recording surface stations, portable radiosondes, digital radar, and drop-windsondes. Measurements will be taken from two ships supplied by Hong Kong and the U.S.S.R. and two aircraft from the United States--an NCAR Electra and a NOAA P-3--and an aircraft supplied by Hong Kong.

These intense measurements will coincide in part with the first special observing period of the upcoming First GARP Global Experiment, the world-wide atmospheric research effort to begin in January of 1979. Data obtained about the workings of the monsoons will add to the global weather experiment being planned by the World Meteorological Organization and the International Council of Scientific Unions.

"Although the MONEX project will be able to add to this global effort, the global experiment will give background data on the planetary scale. MONEX will go a long way toward improving our ability to predict the regional monsoons and make a major advance in weather prediction in southeast Asia. This area is practically devoid of basic weather data, so that predictions of even a day or two in advance would be extremely useful," Kuettner says.

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