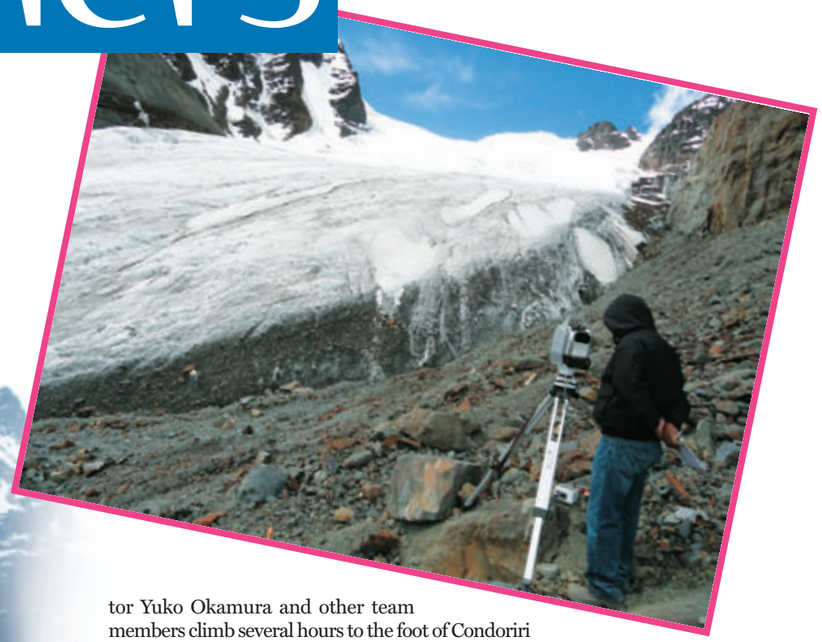
**Measuring the retreat** of the Andes glaciers

# Disappearing Glaciers



**The disappearance of glaciers has serious climate implications which will affect the lives of millions of people across the globe.**

A LITTLE MORE THAN A DECADE ago the stunningly beautiful Chacaltaya glacier near the Bolivian capital of La Paz was a popular high altitude winter sports resort.

A series of satellite images highlights the rapid shrinking of the glacier in the intervening years. Today, it is a tiny patch of white surrounded by the rugged black and brown landscape of the high Andes mountains and within a few years it is expected to disappear totally.

Dr. Edson Ramirez, one of Bolivia's leading glaciological researchers, says the fate of the Chacaltaya glacier is the most dramatic example of a worrying phenomenon, not only in his country but throughout the Andes region and stretching to other mountain ranges such as the Himalayas and the European Alps.

The disappearance of Chacaltaya represents not only an aesthetic loss and the demise of a recreational center but has serious climate implications and knock-on effects which will affect the lives of millions of people across the globe.

JICA is cooperating with Bolivian partners in a five-year project called GRANDE which will allow researchers to build up a comprehensive picture of what is happening to the glaciers and why and to predict future trends.

Such information in turn will allow government and community officials to draw up programs to minimize climate impact and reduce the negative effects on everything from surrounding eco-systems and farming activities to the potential loss of drinking water to La Paz, neighboring El Alto city and other communities.

Bolivian researchers, local JICA members and experts from Tohoku University, Fukushima University and the Tokyo Institute of Technology are currently studying three glaciers, Condoriri, Huaynapotosi and Tuni, and the surrounding terrain.

A series of 10 JICA-financed weather stations allow them to accurately plot temperature patterns, solar radiation, snow levels, wind movements, precipitation rates, humidity, soil temperatures and other activity.

Every several weeks Dr. Ramirez, JICA coordinator Yuko Okamura and other team members climb several hours to the foot of Condoriri accompanied by donkeys hauling sensitive scientific equipment to plot recent activity.

Japanese-supplied laser equipment never used before in Bolivia on glacier research allows them to create three-dimensional images of the glacier, measuring its thickness, volume and movement.

The team checks the latest readings from the various weather stations dotted around a region known as the 'tropical Andes.' Unlike other mountainous areas such as the Alps, snow and ice here are restricted to the highest elevations and a series of vital wetlands studded with lakes and a covering of sturdy dark green-brown grasses are found many thousands of feet above sea level.

Local anecdotal evidence underlines the retreat of the glaciers. Llamas and alpaca roam the mountain-sides even in winter and according to JICA's Yuko Okamura local herders have noticed that "Even within the last 10 years the Condoriri glacier has retreated from the bottom of the valley floor at least 100 yards up the side of the mountain."

The results of the project could help to protect these communities and their way of life and the supply of fresh water to the two million people of La Paz, El Alto and other communities which the glaciers currently help provide. ■