

# Preface

The symposia on High Mountain Remote Sensing Cartography are held biannually. This unique series started in Schladming, Austria, in 1990 and was subsequently held in Beijing and Lhasa (China), Mendoza (Argentina), Karlstad (Sweden), Arcata (California, U.S.A.), Addis Abeba, Nairobi, Mt. Kilimanjaro (Ethiopia, Kenya, Tanzania), and Bishkek (Kyrgyzstan) in 2002. At the Bishkek meeting it was proposed to have the next symposium once again in South America. Dr. Saturnino Leguizamón from the Department of Scientific and Technological Research, University of Mendoza, Argentina, volunteered to assist in finding a proper venue, preferably in Bolivia. After a quite intensive preparatory phase, which also included personal visits of Dr. Leguizamón to the future venue, it was finally agreed that the 8th International Symposium on High Mountain Remote Sensing should take place in La Paz, Bolivia. However, the symposium planned for 2004 had to be postponed by one year due to organizational and also political reasons associated with the hosting country. Seen in retrospect, this has proved to be a sound decision, because there was ample time for planning the symposium. Moreover, the series is once again on its scheduled biannual track, since the subsequent 9th symposium was held only one year later, in 2006.

The hosting institution of the 8th Symposium on High Mountain Remote Sensing Cartography was the Institute of Engineering Geology and Environment of the Faculty of Geological Sciences of the Mayor de San Andrés University (Carrera de Ingeniería Geológica y del Medio Ambiente, Facultad de Ciencias Geológicas, Universidad Mayor de San Andrés/UMSA). Ing. Néstor Jiménez, geologist and professor at this institute, acted as local organizer. His great efforts in bringing HMRSC-VIII to Bolivia and in organizing this international symposium are very much appreciated. Wolfgang Sulzer, Institute of Geography and Regional Science, Karl-Franzens University of Graz, Austria, helped Néstor Jiménez in various tasks, most importantly in setting up and maintaining the homepage of the symposium.

The following national and international institutions supported the symposium in La Paz:

- Carrera de Ingeniería Geológica y del Medio Ambiente (at UMSA)
- Instituto de Investigaciones Geológicas y del Medio Ambiente (IGEMA)
- Institut de Recherche pour le Développement (IRD, France)
- Servicio Nacional de Geología y Técnico de Minas (SERGEOTECMIN)
- Comisión Nacional de Actividades Espaciales (CONAE, Argentina)
- Academia Nacional de Ciencias de Bolivia (ANCB)
- SELPER-Bolivia

Oral and poster presentations were held in the city palace of the National Academy of Sciences (Academia Nacional de Ciencias) in the center of La Paz from 21-22 March, 2005. More than 30 participants, most of them coming from countries of both Americas and from Europe, had convened in La Paz to present and discuss recent research work related to the objectives of the symposium.

It should be mentioned that several of the announced participants withdrew from participation at the last minute because of unfavorable reports in the media and travel warnings for Bolivia issued by several foreign governments. No problems were reported, however, either during the symposium itself or the post-symposium field excursion, which coincided with the Easter week.

The topics presented covered a wide field of practical and also theoretical aspects of high mountain remote sensing cartography. One focus of the oral and poster presentations was on glacier and permafrost studies. This issue is becoming more and more important due to obvious on-going global atmospheric warming. Prominent glacier retreat has also been observed in the Andes of South America. It is reported that glacier shrinkage is quite dramatic in the tropical Andes, e.g. in the Cordillera Real of Bolivia. Glacier retreat does not only change the visible appearance of the mountains and its environment, but most importantly, it also affects the supply of potable water, of water for irrigation and for hydro-electric power plants. The problems related to these issues were addressed thoroughly during the post-symposium field excursion.

The host provided excellent conference facilities, even simultaneous translation Spanish-English and vice versa was available in order to enable unrestricted communication. The organizer had compiled an abstract booklet summarizing all contributions. However, the proceedings of the HMRSC-VIII symposium could not be prepared by the organizing institute due to lack of appropriate funds at that time. It was Wolfgang Sulzer, Karl-Franzens University of Graz, and his colleague

Viktor Kaufmann, Graz University of Technology, Austria, who compiled and edited the present proceedings. The printing of proceedings was made possible by the financial support of the rectorships of the two universities. Sponsorship was granted under the NAWI Graz cooperative project, which stands for joint teaching, research and doctorate programs in the field of natural sciences. The present proceedings comprise 10 papers of high quality, and furthermore, an appendix giving some notes on the HMRSC-VIII field excursion. Unfortunately, not all presenters of the La Paz meeting were willing to submit written versions of their oral or poster presentations. Nevertheless, the content of the present proceedings is an excellent representation of the most discussed topics at the symposium in La Paz. The proceedings are also available on-line through the world-wide web. Please see <http://www.kfunigraz.ac.at/geowww/hmrsc/>.

The conference dinner offered excellent local dishes and the participants of the symposium thoroughly enjoyed typical Bolivian music and folklore dances.

The HMRSC-VIII symposium was followed by a six-day (23-28 March) post-symposium field excursion organized by Néstor Jiménez and his team. Field excursions are an integral part of all HMRSC symposia. On the first day a transect from the Altiplano (La Paz) to the tropical forests of the Northern Yungas (Coroico) was studied during a breathtaking bus ride along the North Yungas Road, which is also known as Death Road (El Camino de la Muerte). On the following day Thomas Berger (IRD) guided the excursion team to the high mountains of the nearby Cordillera Real. The participants had the opportunity to visit Chacaltaya Glacier and Zongo Glacier, both listed as study sites in the World Glacier Monitoring Service (WGMS). Long-term mass balance measurements exist for both tropical glaciers. Chacaltaya (peak at 5395 m), located some 35 km north of La Paz, is the world's highest lift-served ski area. Zongo Glacier is situated on Huayna Potosí (6088 m), which is one of the most spectacular mountains of this region. The third day was a tourist trip to Lake Titicaca (3810 m) situated north-west of La Paz at the border between Bolivia and Peru. Highlights of this day included the visit of Copacabana with its Basílica Virgen de la Candelaria, the Moon Island (Isla de la Luna) and the Sun Island (Isla del Sol). The third part of the field excursion lasted three days and was a trip to the Salar de Uyuni, the world's largest salt plains, in the south of Bolivia. On the way to Uyuni a detour in westerly direction was made to see Volcano (Vulcán) Sajama, which is the highest mountain of Bolivia at 6542 m, located in the border region of Bolivia/Chile. The crossing of the Salar de Uyuni by bus and a visit of Inkahuasi Island with its cactuses were spectacular events. The final destination of the official field excursion was the town of Uyuni (3670 m). A feeling of melancholy was created by the visit to Uyuni's railway cemetery (Cementerio de Trenes), which marked the end of a well-organized and most interesting HMRSC field excursion. A small group of participants continued their journey further on to Potosí (mining district at Cerro Rico) and Sucre (capital city of Bolivia).

The editors of the present proceedings wish to thank Néstor Jiménez and his team once again for organizing the symposium in La Paz and for the post-symposium field excursion. With these proceedings we would like to acknowledge their enormous efforts. The layout of the proceedings was done by Kasimir Szarawara, Bettina Pucher, and Maria Schnabl, from the Institute of Geography and Regional Science. Mrs. Angelika Prohammer provided English language support.

The present proceedings are also meant as a stimulus for participation in future HMRSC symposia.

**Viktor Kaufmann and Wolfgang Sulzer**

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