

工程和局部地壳形变监测新技术国际学术研讨会
**IAG Workshop on Monitoring of Constructions
and Local Geodynamic Process**

Workshop Report

prepared by the Chairman

Dr. Günther Retscher

Organizers:



IAG Special Commission 4,
Working Groups WG2 and WG3



School of Geodesy and Geomatics,
Wuhan University, PR China



Department of Applied and
Engineering Geodesy,
Vienna University of Technology,
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Sponsor:



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Introduction

The IAG SC4 on “Applications of Geodesy to Engineering” is a study group which has been established in 1995. The objectives of the Special Commission are on the one hand to document the body of knowledge on rapid developments in the fields of Geodesy, Geotechnics and Engineering, and on the other hand to encourage new developments and present them in a consistent frame work. Currently there are six working groups established:

SC4 WG 1: “Real-time Mobile Multi-sensor Systems and their applications in GIS and Mapping”

SC4 WG 2: “Dynamic Monitoring of Buildings and System Analysis”

SC 4 WG 3: “Monitoring of Local Geodynamic Processes and System Analysis”

SC 4 WG 4: “Geodesy on large Construction Sites”

SC 4 WG 5: “Pseudolite Application in Engineering Geodesy”

SC 4 WG 6: “Application of Knowledge-based Systems in Engineering Geodesy”

Symposia and workshops are organised to document the current state of development in engineering applications of geodesy. The first Symposium of IAG SC4 was organised in 1998 in Eisenstadt, Austria. In this meeting on “Application of Geodesy and Geotechnics to Engineering“ the working groups had the opportunity to present their research topics and results. The second conference will be held next year in Berlin, Germany. We have the honour of inviting all experts being interested to the second conference. Further information may be obtained from the SC4 Webpage:

<http://info.tuwien.ac.at/ingeo/sc4/sc4.html>

This workshop in Wuhan is organised by two Working Groups WG2 and WG3 of IAG SC4. The goals of these working groups are to study dynamic monitoring methods, sensor systems and system analysis and models for quality control of large structures and landslides. The two working groups are represented by their chairmen, Prof. Niemeier from Germany and Dr. Mentés from Hungary.

The workshops intended to bring together experts and users from different fields, either from universities and other research institutions or from industry and engineering companies. We are happy that this workshop can be held at Wuhan University in China. Thanks to all of you who are involved in the organisation of this meeting and/or have submitted a contribution for this workshop.

Workshop Objectives

Monitoring and system analysis of landslides, mudflows and rockslides has become of great importance, since the population of the world is increasing dramatically and, as in many cases, housing estates and industrial sites were erected without taking into consideration these geodynamic processes. In mountainous areas, for instance, as in the Alps in Europe, it is assessed that about 6 % of the country is affected by landslides. Along the Yangtze River, in the surrounding of the Three Gorges Dam Reservoir in China, e.g. about 120 landslides have to be monitored.

On the other hand, also continuous deformation monitoring of buildings and constructions is an important task for engineers. In the 20th century alone, the record height for a building or bridge span has increased by a factor of around 4. Quality control of these structures is a challenging task. The goals of the monitoring methods are the assessment of the structural behaviour (safety inspection), on the one hand, and improvement of maintenance (optimization of repair, early detection of damages), on the other. Instruments, used to monitor the motions, are often fixed to the object under motion. That means, their dynamic parameters change depending on the frequencies of the motions.

The goal of the two Working Groups WG2 and WG3 of IAG SC4 is to study dynamic monitoring methods, sensor systems and system analysis and models for quality control of large structures and landslides. Therefore also interdisciplinary collaboration will be necessary. The workshops intend to bring together experts and users from different fields, either from universities and other research institutions or from industry and engineering companies. The workshop will also provide the opportunity that researchers and experts from Europe can meet their colleagues from Asia in their related field. Therefore the workshop theme is

“EUROPE meets ASIA”

at the Wuhan University in China in May 2001.



Welcome to Wuhan 2001 !

Workshop Program

The workshop was held on 3 consecutive days at Wuhan University. A total number of 35 papers were presented in 6 technical sessions. After the welcome addresses delivered by

Prof. Zhenglu ZHANG, Workshop Chair, School of Geodesy and Geomatics, Wuhan University, China

Dr. Günther RETSCHER, Workshop Chair, Department of Applied and Engineering Geodesy, Vienna University of Technology, Austria, Secretary of IAG SC4

Prof. Jingnan LIU, Vice President of Wuhan University, China

Prof. Shenglian GUO, Vice dean of Science and Technology Commission of Hubei Province, China

Mr. Jiwu LI, Vice chief of Wuhan Municipal Commission of Science and Technology, China

the following keynote speeches were given by

Prof. Junyong CHEN, Member of Chinese Academy of Science, State Bureau of Surveying & Mapping, Beijing, 100830, China:

On Crustal Movement in Mt. Everest Area

Prof. Jingnan LIU, Member of Chinese Academy of Science, President Office, Wuhan University, China:

The Determination of the Velocity Field of the Continental Blocks in China

Mr. Zhengquan CUI, Design Master of China, Yangtze River Water Resource Commission, China:

Landslide in Three Gorges Reservoir

Prof. Wolfgang NIEMEIER, Institute of Geodesy and Photogrammetry, Technical University Braunschweig, Germany:

Some Modern Aspects of Measuring Techniques and Analysis Concepts in Engineering Surveying.

Workshop Program (Cont.)

On the first 2 days of the workshop the following technical sessions were conducted:

22/05/2001 14:00~16:00 Session 1: Landslides, rock falls, local geodynamics and tectonic movements

Chair: Guenther RETSCHER

22/05/2001 16:15~17:45 Session 2: Engineering Project Deformation Monitoring

Chair: Guenther RETSCHER

23/05/2001 8:30~10:00 Session 3: Engineering Project Deformation Monitoring

Chair: Wolfgang NIEMEIER

23/05/2001 10:15~11:45 Session 4: Engineering Project Deformation Monitoring

Chair: Esmond MOK

23/05/2001 14:00~16:00 Session 5: Engineering Project Deformation Monitoring

Chair: Zhenglu ZHANG

23/05/2001 16:15~17:45 Session 6: Engineering Project Deformation Monitoring

Chair: Wolfgang NIEMEIER

23/05/2001 17:45 Closing Session

On the third day of the workshop, the conference delegates got the opportunity to visit the following laboratories of the School of Geodesy and Geomatics of the Wuhan University in the morning:

Laboratory of Precise Engineering Surveying and Georobot (精密工程测量与测量机器人实验室)

GPS Research Center(GPS 研究中心)

National Laboratory for Information Engineering in Surveying, Mapping and Remote Sensing (测绘遥感信息工程国家重点实验室)

In the afternoon the delegates could visit some beautiful scenic spots of the city of Wuhan, e.g. the Yellow Crane Tower (参观黄鹤楼) and the beautiful East Lake (游览东湖).

List of Workshop Attendees

In total 68 delegates from seven different countries have attended the Workshop.



Fig. Group Picture in front of the Main Building of the School of Geodesy and Geomatics, Wuhan University, PR China (22.05.2001)

Wuhan Technical University of *Surveying and Mapping*

1. Alexander V Ksendzuk, *Kharkov Aviation Institute, Chair 501, Kharkov, Ukraine, 310070,*
2. Alireza A. Ardalan, *Department of Surveying and Geomatics Engineering, Tehran University, P.O. Box 11365-4563, Tehran/Iran*
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5. CHEN Xuefeng, *School of Geodesy and Geomatics, Wuhan University, 129 Luoyu Road, Wuhan, China, 430079*
6. CUI Zhengquan, *Yangtze River Water Resource Commission, China*
7. Dante SALVINI, *Swiss Federal Institute of Technology Zurich, Swiss*
8. FANG Huibing, *Bridge Bureau of Railway Ministry, Hanyang, China, 430000.*

9. FANG Yuanmin, *Department of Geomatics, Kunming University of Science and Technology, Kunming 650093 P.R.China*
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