

Preface

Josef STEMBERK, Jesús GALINDO-ZALDIVAR and Luigi PICCARDI
Guest editors

This Special Volume presents the proceedings of the International Workshop of the COST Action No. 625 “3-D monitoring of active tectonic structures”, held in Granada on May 12 - 16, 2004 and sponsored by the European Community and University of Granada. This session was organized and convened by Jesús Galindo-Zaldivar, Antonio Gil, Carlos Sanz de Galdeano and was intended to present activities of the COST Action as well as stimulate researches and collaborations in different aspects of the analysis and monitoring of active faults. The in-door session was followed by a two-day field trip in Southern Spain (Almeria region) where fault zones are nicely exposed.

COST is an intergovernmental framework for EUROPEAN CO-OPERATION IN THE FIELD OF SCIENTIFIC AND TECHNICAL RESEARCH, allowing the co-ordination of nationally funded research on a European level. Founded in 1971, COST is the oldest and widest European intergovernmental network for cooperation in research, and COST Actions cover basic and pre-competitive research as well as activities of public utility. COST has a geographical scope beyond the EU. The most of the Central and Eastern European countries are members, but also participation of institutions from non-COST member states is welcome. From 2004 it is the European Science Foundation (ESF) who provides the administrative and scientific management for COST.

FIRST STEPS FOR MONITORING ON POSSIBLY ACTIVE FAULT ZONE IN EAST RHODOPES, BULGARIA

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Abstract

A large impressive landslide occurred in 2001 at the General Geshevo Village area, East Rhodopes, SE Bulgaria. After the sliding, a system of preserved faults was observed in the area. The present paper relates the detailed study, mapping, selection and installation of movement monitoring site. Preliminary results establish displacements that could be related to slow tectonic movements.

KEYWORDS: landslide, crack gauge, Balkan region

MONITORING OF STRAIN ACCUMULATION ALONG ACTIVE FAULTS IN THE EASTERN GULF OF CORINTH: INSTRUMENTS AND NETWORK SETUP

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Abstract

The eastern Gulf of Corinth contains several active fault segments that accommodate N-S extensional strain. In 1981 three large earthquakes ruptured faults onshore including the south-dipping Kaparelli fault. Earthquake ruptures resulted in metric-scale ground displacements which were well mapped and supply an excellent dataset for fault slip directions and strain patterns. In addition, recent geological data showed that the Kaparelli area forms the boundary between fast-slipping normal faults in Corinth-Perachora regions and slow-slipping faults in Viotia, Attica. In order to measure the kinematics of deformation in 3-D our group has installed a dense GPS network and two extensometers. This paper reports details of this research effort along with some first results.

KEYWORDS: Active faults, Gulf of Corinth, strain, GPS

**GEODETIC DEFORMATION MONITORING
IN ZAFARRAYA FAULT AND SIERRA TEJEDA ANTIFORM (SPAIN):
STATUS REPORT**

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Abstract

The NW-SE to NNW-SSE convergence between the African and Eurasian plates in the western Mediterranean has developed the recent relief of the Betic-Rif Cordilleras. The central part of the Internal Zones of the Betic Cordilleras is deformed by large open folds and faults, mainly with normal character. The Zafarraya fault, located to the N of the Sierra Tejada antiform, was active during the 1884 Andalusia earthquake of 6.7 estimated magnitude. In the framework of an interdisciplinary research project a non-permanent GPS-network has been designed at Zafarraya Fault and Sierra Tejada antiform to monitor deformations related to these active tectonic structures.

KEYWORDS: Active Tectonics, GPS Network, Zafarraya Fault, Sierra Tejada Antiform, Betic Cordillera

**RESEARCH OF GEODYNAMIC ACTIVITY IN THE VICINITY OF OBŘÍ HRAD,
ŠUMAVA MTS.**

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Abstract

Following article deals with the research of recent and historical activity of geodynamic processes in vicinity of a famous archaeological site at Obří Hrad in Šumava Mts. The geomorphological mapping, structural measurements and dilatometric monitoring were the chief investigation methods. Though the research is not completed yet, certain clues suggest persistent activity of geodynamic processes in the studied area.

KEYWORDS: Geomorphological mapping, exodynamics, dilatometric measurement, landslides, Obří Hrad, Šumava Mts.

**CURRENT RESULTS FROM 3-D MONITORING OF ACTIVE FAULTS
IN THE WESTERN CARPATHIANS**
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Abstract

3-D monitoring of movements on tectonic structures was initiated in four selected sites in the Western Carpathians. Crack-gauge TM-71 has been used for monitoring of micro-deformations. Clear tectonic activity out of monitoring results is confirmed at Košický Klečenov, Slanské Vrchy Mts., only. Ipel' pilot gallery site shows a trend in vertical movement that coincides with local GPS results. Other sites need a longer observation period to be interpreted.

KEYWORDS: Western Carpathians, active faults, 3-D monitoring, TM-71 crack-gauge

**ACTIVE TECTONIC STRUCTURES IN THE W PART OF SLOVENIA – SETTING
OF MICRO-DEFORMATION MONITORING NET**

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Abstract

Basic information is given about the installation of monitoring instrumentation in W part of Slovenia where measurements started at the beginning of 2004. The measurement is carried out with the use of a verified, very stable and sensitive deformer TM71. Four instruments were installed either directly in or in the close vicinity of major Dinaric faults in karst cave or on the surface. The place for the fifth instrument is selected on the Kneža fault, south of the Ravne fault, where the measurements will start in 2005. Introductory monitoring shows displacements within 0,04 mm. Both devices in Postojna cave system recorded the same reaction on the July 12, 2004 earthquake. These were movements changing the trend in strike slip (y-axis) with magnitude around 0,03 mm and angular deviation in horizontal plane xy within 0,02 $\pi/200$ that occurred before or during the earthquake.

KEYWORDS: tectonic movements, monitoring, Dinaric fault system, Slovenia

**SELECTED ANALYSES OF THE MORPHOSTRUCTURE OF THE NE PART
OF THE RYCHLEBSKÉ HORY MTS. (CZECH REPUBLIC)**

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Abstract

The Rychlebské hory Mts. are situated in the northeastern spur of the Bohemian Massif. The morphologically distinct Marginal Sudetic Fault, which borders the Sudetic mountain range both on the Polish and Czech sides, runs through the studied area in the direction NW SE, dividing the Sokolský hřbet Ridge, the centre of the area of interest, from other parts of the Rychlebské hory Mts. Morphostructural analysis within the studied area, as a part of ongoing morphotectonic research, comprising analyses of joint and fault system, drainage pattern, and morpholineaments, was performed in order to determine the correlation between the structural conditions and landforms. The direction NW SE, parallel to the Marginal Sudetic Fault, represents very significant direction in the entire studied area. The other distinct structural directions are NE SW and N S. The faults and joints of these directions have influenced development of landforms in the area, as it is clearly seen from the arrangement of morpholineaments.

KEYWORDS: morphotectonics, joint analysis, fault analysis, Marginal Sudetic Fault, Fore-Sudetic block (Bohemian Massif)