

IAG Sub-Commission 3.2: Crustal Deformation

Report for the period 2003 – 2007

Members of the directing board:

Markku Poutanen (Chair), Jim Davis, Kosuke Heki, John Manning, Janusz Sledzinski, Susanna Zerbini

General objectives of the Sub-Commission 3.2

- to study tectonic motions, including plate deformation;
- to study postglacial rebound, but also glacial dynamics and glacial isostatic adjustment in the currently glaciated area of the Earth, as well as the water and ice mass balance;
- to study local crustal movements, some of which could be potentially hazardous
- to study sea-level fluctuations and changes in relation to vertical tectonics along many parts of the coastlines and in relation to environmental fluctuations/changes affecting the geodetic observations;
- to promote, develop and coordinate international programs related to observations, analysis and data interpretation for the three fields of investigation mentioned above;
- to promote the development of appropriate models.

The SC3.2 comprises sub-entities or working groups corresponding either to different geographical regions or different important and actual topics involved in the field of the SC studies. Currently, there exists the Permanent Working Group on ‘Geodynamics of the Central Europe’.

The steering committee had a meeting during the IAG Dynamic Planet assembly in Cairns, August 2005. Participants were Markku Poutanen, Susanna Zerbini, Janusz Sledzinski, John Manning and Luisa Bastos (WEGENER). Topics included future plans of the group, and connections to the WEGENER group.

Web pages of the IAG SC3.2 are in <http://IAGSC32.fgi.fi>.

Permanent working group Geodynamics of the Central Europe

Permanent Working Group on ‘*Geodynamics of the Central Europe*’, (reported by Janusz Sledzinski, Poland) has continued studies on geotectonic regions of Central Europe. The formal membership list of the WG includes 29 scientists from 12 European countries. The programme of the WG (Plan of Action for 2003-2006) includes the following subjects:

- Geodetic and geodynamic programmes (CERGOP = Central Europe Regional Geodynamics Project, CEGRN = Central European GPS Reference Network Consortium, Post-UNIGRACE action = Unification of gravity system in Central and Eastern Europe, and several local geodynamics projects. These include monitoring of recent crustal movements in Eastern Alps and the North and Eastern Adriatic, geodynamics of the Pannonian Basin, Tatra Mountains, Northern Carpathians and the Balkan Peninsula.);

- Working Group on University Education Standards;
- Working Group on Satellite Navigation Systems;
- Cooperation CEI Section C “Geodesy”– European Geophysical Society (EGS) / European Geosciences Union (EGU).

The results of the CERGOP and other CEI projects are released for the IAG scientific groups dealing with geodynamic investigations. The reports of the group can be found on SC3.2 web page (<http://IAGSC32.fgi.fi>).

Connections to other groups, memberships

Contacts between SC3.2 and WEGENER (Working group of European Geoscientists for the Establishment of Networks for Earth science Research, chaired by L. Bastos) continued. Zerbini is a member of the WEGENER governing board. Zerbini and Poutanen participated in the board meeting of WEGENER in Vienna in April 2005 and were members of the Program Committee for the WEGENER Assembly in Morocco 09/2004 and Zerbini for the Assembly in Nice 9/2006.

Markku Poutanen is the representative of the Commission 3 in the GGOS (IAG Project Global Geodetic Observing System) Steering Committee, and Susanna Zerbini is the GEO Committee representative. GGOS will be the most important single effort in geodesy in the coming decades, thus contributing also on the crustal deformation studies.

Presidium of the Nordic Geodetic Commission has established a task force to prepare the plan for the NGOS – Nordic Geodetic Observing System. The plan will follow the guidelines and principles of the GGOS (Global Geodetic Observing System) of IAG. NGOS will be a regional implementation of GGOS. Markku Poutanen is the chairman of the Task Force.

Markku Poutanen participates on the IPY (International Polar Year) geodynamics plan POLENET: Polar Earth Observing Network. It is an international plan, chaired by Terry Wilson of OSU, and accepted as an IPY project. One of the goals is to study present-day motions on Antarctica.

Future plans

A joint symposium of SC3.1, 3.2 and 3.3 is planned to be held in September 2008 in Jena. Chairman of the SC3.1, Gerhard Jentzsch is the chairman of the organizing committee.

A proposal was prepared for the International Lithosphere Program (ILP). The ILP was established in 1980 by the International Council of Scientific Unions (ICSU) at the request of the International Union of Geological Sciences (IUGS) and the International Union of Geodesy and Geophysics (IUGG). The proposal, DynaQlim (*Upper Mantle Dynamics and Quaternary Climate in Cratonic Areas*) was submitted to the ILP in 2007 and will be discussed in the IUGG Perugia. If accepted, it will become a task force of the ILP, and it will be a multi-disciplinary project connecting both IUGS and IUGG. Markku Poutanen is coordinating the proposal, and there are more than 30 scientists from ten countries in the proposal. DynaQlim will be an inter-disciplinary project for studying the relationship between glacial isostatic adjustment (GIA), upper mantle structure, dynamics and Quaternary climate.