

Summary of reports/recommendations by the Working Groups:

1) The Working Group on “Surveying, Mapping and Earth Sciences” reports the following:

- The working group reviewed the survey report and the earlier recommendations made by the Expert Meeting in 2002. After rearrangements, reformulations and additions the WG agreed upon the following:

- The support of the following projects and actions are recommended:

1. Projects:

- Establish a permanent continental reference system for Africa, AFREF, consistent with ITRF to achieve a unified spatial reference frame, including geoid determination, for Africa, to aid the implementation of national and regional socio-economic development programmes under the NEPAD initiative;
- Develop integrated DGNSS “full scale accuracy, multifunctional” infrastructures with well-defined unified standards on regional levels and establish the European Position Determination System’s (EUPOS) active reference stations;
- Densify the Continuous Operating Reference Stations (CORS) for the SIRGAS area (the Americas); and
- Ensure all countries in the Asia Pacific region participate in the Asia Pacific Regional Geodetic Project (APRGP) under the Permanent Committee for GIS Infrastructure for Asia and the Pacific (PCGIAP).

2. Standards

- a. Develop and use co-ordinate systems consistent with the International Terrestrial Reference Frame (ITRF);
- b. Ensure Spatial Data Infrastructures (SDI) supported by consistent geodetic reference frames enabled by GNSS;
- c. Protect GNSS frequency bands, monitor and report harmful interference; and
- d. Support regional collaborations and projects on precise geoid determination and unification of levelling networks using GPS technology.

3. General policy

- a. Establish coordinating bodies on GNSS applications on regional/national levels.
- b. Establish regional/national plans for GNSS infrastructure and applications.
- c. Coordinate national plans with regional and global GNSS initiatives and projects. Participate in regional GPS networks and developments.

- d. Governments should take the responsibility for and support the design, development and operation of the ground based GNSS infrastructure on national levels.

This Working Group also identified a set of recommendations for actions for OOSA in relation with the AFREF, EUPOS, SIRGAS CORS and APRGP projects. It also recommends the establishment of an international Working Group on site quality, integrity and interference monitoring. The Working Group also recommends the establishment of working relations with IAG, FIG and ICA, as well as with Spatial Data Infrastructure Organizations in order to promote the same basic standards in this very broad and perspective area.

2) **The Working Group on “Agriculture and Management of Natural Resources”** reports the following:

- Delegates and institutions related to the use of GNSS in agriculture and management of natural resources, at present, has weak representation within the GNSS groups established for the UN/USA workshops. The group worked throughout the Workshop, basically with four members conducting discussions related to the best way of implementing activities that would cover as many countries as possible, from the four regions related to the Workshops and focusing on awareness and information exchange. All the members agree that agriculture and management of natural resources, together, is believed to be one of the biggest clients of GNSS products and services, based on the number of potential users around the world, and on the progress demonstrated, especially in agriculture. Based on that and evolving from the recommendations made at the four regional UN/USA workshops and the experts meeting (2001-2002), a single and straightforward proposal was placed related to the establishment of a global information exchange network on GNSS applications in agriculture and management of natural resources. It has to start from UN/OOSA nominating a specific board in the applications of GNSS in agriculture and natural resources that will conduct a meeting of the board to define the conceptual framework of the network and organize four regional workshops (Malaysia, Romania, Nigeria, and Brazil) to identify institutions and people with experience and data to share and interested in contributing to the network implementation, as well as users interested in information exchange. A meeting of the board and invited experts will put into coherence all identified data as input to the global information exchange network that has to be implemented.

3) **The Working Group on “Management of Environment and Natural Disasters”** reports on the proposed project:

- Project title: “Applications of GNSS in the Management of Environment and Natural Disasters”. The objective of this project is to enhance the application of GNSS in the management of environment and natural disasters as a contribution to sustainable development and disaster reduction.

1. Introduction and Justification

- The management of environment and natural disasters is a major concern of the entire global community. The environment is the life supporting system for all living organisms including humankind. Its sustainable use is essential for the current and future generations. At the same time, natural disasters continue to lead to losses of life and property, enhanced poverty and vulnerability affecting any efforts towards achieving sustainable development.
- The GNSS has an enormous potential to contribute to the management of environment and natural disasters by utilizing: the positioning, signal delay and signal reflection amongst many other concepts.
- This Working Group also reports on specific actions and objectives to promote the use of GNSS, for example, in the monitoring meteorological elements (GPS-Meteorology).
- The objectives of the Project would be, inter alia, to promote the use of GNSS in: disaster management, in the monitoring and detection of climate change and in mapping water resources.
- The Working Group also identified potential beneficiaries and partners that could be involved with the Project, as well as the core activities that would be needed to carry it out.

4) The Working Group on Training, Education and Awareness Increase reports the following:

- This Working Group had its first meeting on 9 December 2003, under the chairmanship of Prof. F. Walter (Brazil) with the participation of 15 persons from 13 countries representing four regions. After hearing and thoroughly discussing all participants' proposals, suggestions and comments, the vice-chairperson Ms. B. Mwape (Zambia) proposed to form subgroups on a regional basis and make definite proposals. Following a thorough discussion and taking into consideration the suggestions given during the presentation to the plenary meeting, the Working Group selected some specific recommendations that included, inter alia:
- To celebrate a GNSS Workshop for the Latin American region in Colombia with emphasis on transportation fields. The Workshop will be held in 2004 in the framework of the IV CEA, American Space Conference activities;
- To organise a GNSS Workshop for Europe, dealing with the problems of GNSS applications in the new EU accession countries. The conference will be held in 2004 in Hungary under the auspices of EURISY Association;
- To organise a workshop on Modern technologies, education and professional practice in geodesy and related fields. The workshop will be held in 2004 in Bulgaria, under the auspices of FIG, ISPRS, ICA. The workshop will dedicate a special session for young scientists and students;
- To organise a special session on GNSS applications in the coming Latin America Remote Sensing Symposium to be held in Santiago, Chile, in November 2004;
- To organise summer schools on GNSS for graduate students and young professionals, with the topics of GNSS applications in everyday life and GNSS augmentations – principles and practices, in 2005 and in 2006, respectively, in

Warsaw and in Olsztyn. The duration of the summer schools is planned for 2 weeks.

- To organise a workshop on GNSS integration with various systems for various applications. The workshop will be held in 2007 in cooperation between Warsaw University of Technology and Czech Technical University in Prague with support of UN.

The Working Group on “Training, Education and Awareness Increase” concluded that such workshops could be used as examples for other regions and that the UN OOSA should find financial background and administrative means of supporting the participation of GNSS experts in various international conferences, workshops and other meetings.

5) The **Working Group on Transportation** reports the following: (report from Mr. Ahmed-Rufai to be inserted):