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Updated CEOS WGEdu Strategy & Plan of Action for Earth Observation Education, Training and Capacity building

SUMMARY AND PURPOSE

The 17th CEOS Plenary requested the Working Group on Education, Training and Capacity Building to review its Terms of Reference in view of its new status as a permanent Working Group and to propose necessary revisions to the 18th CEOS Plenary. Rather than Terms of Reference, as an ad hoc Working Group, the WGEdu was asked to carry out the CEOS Strategy for Earth Observation Education and Training. The WGEdu has updated that Strategy and is submitting it to CEOS Plenary for consideration and approval. The WGEdu proposes to carry out the Strategy through plans of action presented to Plenary for approval.

ACTION/DECISION PROPOSED

The 18th Plenary participants are invited to:

(a) Comment on and approve the information contained in the following documents:

- (i) WGEdu Revised Education Strategy
- (ii) WGEdu Plan of Action for 2005

(b) Provide a mandate for the work of the WGEdu in 2005.

**CEOS STRATEGY FOR EARTH OBSERVATION
TRAINING AND EDUCATION AND CAPACITY BUILDING:
With Specific Emphasis on the Developing World**

**Working Group on Earth Observation Education, Training and Capacity Building
(WGEdu)**

RATIONALE FOR THE STRATEGY

Space-based, Earth observations of the atmosphere-ocean-land system have evolved substantially since the early 1960's when the first operational weather satellite systems were launched. Over the last decade, satellites have proven their observational capabilities to accurately monitor the total Earth system on a global basis. These observations are extensively used in real-time decision-making and the strategic planning and management of industrial, economic and natural resources.

Many space agencies are presently managing or planning advanced Earth observation satellites. These come at a time when an increasing number of local, national, regional, and global environmental issues are emerging as international concerns.

Concurrent with this evolution of Earth observational capability is a growing geospatial industry. While it is important to orient global Earth observational programmes toward answering key scientific questions, it is equally important to deliver the requisite data, analysis, information products and applications to operational managers, policy- and decision-makers and other non-traditional users of these products. However, these benefits are not realized in a large number of countries due to the lack of trained research and applications personnel.

Education holds the key to future Earth observation technology development and its applications. Earth observation education and training is an essential element in today's competitive world. Several countries have recognized the lack of specialists, scientists, technologists and engineers as a major impediment in the successful implementation of applications programmes. Education and human resource development is imperative to building capacities with far reaching impacts on the utilisation of space assets and data. Moreover, Earth observation data and applications are an important tool for promoting general sciences and for attracting students to scientific fields of study.

Education is a tool for wider outreach to the world community, capacity building and the effective management of natural resources for sustainable development. The primary target audience consists of students at all levels, teachers, professionals, policy- and decision-makers, the media, the public at large and non-traditional users of Earth observation data and information. "Training" focuses primarily on the professional and scientific community. The target audience consists of the potential professional users of Earth observation and GIS technologies.

Efforts are already being made in many arenas to address Earth observation education and training issues:

- CEOS Members currently enhance their national and international capabilities in Earth observation education through the development of educational materials and the organisation of various workshops, conferences and short-term training programmes.
- CEOS Associates and inter-governmental agencies have also initiated active programmes in education and training in Earth observation and applications.
- Specific education and training programmes are available through various international organisations such as the International Institute of Aerospace Research and Earth Sciences (ITC), European Association for the International Space Year (EURISY), the International Space University (ISU), the Asian Institute of Technology and a number of regional institutions in different countries.
- The United Nations (UN) has led the effort to establish Regional Centres for Space Science and Technology Education affiliated to the United Nations in Asia and Pacific (India), Africa (Morocco for French language countries; Nigeria for English language countries), Latin America and Caribbean (Brazil/Mexico), Middle East (Jordan) and a Network of Space Science and Technology Education and Research Institutions for Central Eastern and South-Eastern Europe. The emphasis of these Centres is capacity building in space-related sciences and technology in developing countries. These Centres provide opportunities for developing country scholars to undertake postgraduate courses in remote sensing and GIS, apart from courses in satellite communications, satellite meteorology and space sciences. The Centres also conduct short duration training programmes for professionals.
- CEOS Associates, such as the World Meteorology Organisation (WMO) and others, have training programmes in satellite meteorology. Satellite data on global processes, climate change and severe weather systems are now of prime importance – not only for meteorological applications but also toward supporting sustainable development activities. Therefore, CEOS agencies could enhance educational efforts of satmet, particularly with regards to the space component.

With Earth observation technology rapidly developing in various fields, it is in the best interest of CEOS to have an effective outreach mechanism to facilitate the integration of user defined products and services into the larger international community. One way of achieving this is through effective coordination with these and other education and training institutions. Such coordination would also benefit the education and training institutions by providing them with much-needed assistance. Thus, education and training programmes can be improved through CEOS involvement, and, in return, these programmes will assist CEOS and other Earth observation data providers and users by

turning out the next generation of Earth observation engineers, scientists and applications specialists and increasing the usage of Earth observation data.

Therefore, education-related activities are important for CEOS to coordinate within the community at large. Doing so will prove fundamental in the realisation of one of CEOS's ultimate goals: maximizing the use of, and benefit from, Earth observation data and the various practical applications of this information. With regard to improvements in Earth observation education and training, it is recognised that particular emphasis should be placed on developing countries.

CEOS STRATEGY

The CEOS strategy for Earth observation education and training is to establish an effective coordination and partnership mechanism among CEOS agencies and institutions offering education and training around the world. The key objective of the strategy is to facilitate activities that substantially enhance international education and training in Earth System Science and the observation techniques, data analysis and interpretation required for its use and application to societal needs.

The strategy will:

- Allow space agencies, education and training providers, UN agencies and other entities to coordinate activities for specific education and training programmes and to exchange experiences and information;
- Provide opportunities for CEOS agencies, as they find appropriate, to network with educational and training institutions;
- Provide for the timely integration and refresh of Earth observation data, information and techniques into education and training programmes;
- Provide an opportunity to CEOS agencies to disseminate materials, data, information, experts and guidance, as appropriate, for improving Earth observation training and education around the world;
- Promote a growing cadre of specialists in Earth observation who will address the growing environmental questions facing the world and who will develop expanded practical applications of Earth observation data and information world wide;
- Enable better and more far-reaching outreach to the larger international community and general public;
- Underscore the relevance of Earth observation for formulating policy and for addressing environmental and development issues at local, national, regional and global levels as well as for addressing scientific questions of relevance.

Working Group on Education, Training and Capacity Building

Plan of Action for 2005

In 2005, the Working Group on Education, Training and Capacity Building (WGEdu) proposes to carry out the following activities.

1. Increase the amount of education, training and capacity building materials of the CEOS Education Portal. The WGEdu would pursue a double-pronged approach: (i) to request CEOS Chair to invite Members and Associates to coordinate with the WGEdu regarding their materials to be included in the Portal, and (ii) to invite its membership to populate the database with materials existing at their institutions.
2. To revise, on the basis of comments provided by the 18th CEOS Plenary, the draft Plan of Implementation of the CEOS Data Principles adopted at the 17th CEOS Plenary for education purposes.
3. Carry out a pilot project as a practical test of the revised draft Plan of Implementation of the CEOS Data Principles for education purposes. The target groups in the pilot project would be (a) the regional centres for space science and technology education, affiliated to the United Nations; (b) the Universities of Beijing and Wuhan as well as the Harbin Institute of Technology in China; and institutions represented in the African Advisory Group.
4. To continue to coordinate and cooperate with Module 1 of the CEOS World Summit on Sustainable Development Follow up Programme in capacity building activities, particularly in support to the work of other Modules of the WSSD Follow up Programme.
5. To maintain WGEdu linkages, and contribute as possible, to the broader EO education, training and capacity building community, in particular to the capacity building efforts of the Global Earth Observation System of Systems.
6. To pursue through workshops organized by its membership and participation in workshops organized by others the following objectives:
 - a. Promote the implementation of the recommendation of the CEOS ad hoc Team on Utilization that wherever possible, capacity building be integrated within specific projects and in particular in ones where sustained funding will be available following the success of the prototype phase;
 - b. Aid potential satellite data users to understand how data products and space-derived services can benefit them;
 - c. Promote capacity building in areas related to the IGOS Themes.
7. Coordinate with the African Advisory Group on ways through which the WGEdu can support capacity building in African institutions.
8. To contribute, as appropriate and possible, to the capacity building efforts of the Global Earth Observation System of Systems.