(GGOS Contributions to GEOSS

- **GEOSS Benefit Areas**
- **Ten-Year Implementation Plan – Target Goals**
- **2006 Work Plan, GEO 0204-2, dated 28 Nov 2005**
    - to be approved next week in Geneva no mention of GGOS

Benefit Areas

The mission of the Group on Earth Observations (GEO) is to build the Global Earth Observation System of Systems (GEOSS), in order to:

> "…realize a future wherein decisions and actions for the benefit of human kind are informed via coordinated, comprehensive, and sustained Earth observations . . . The purpose of GEOSS is . . . to improve monitoring of the state of the Earth, increase understanding of Earth processes, and enhance prediction of the behaviour of the Earth system." *(GEOSS 10-Year Implementation Plan)*

0.1 4.1 Societal Benefit Areas

GEOSS will yield advances in the societal benefit areas defined by its purpose and scope. Each area has compelling reasons for the Earth observation advances envisioned in GEOSS.
For information needs common to many societal benefit areas, GEOSS will facilitate the provision of common products such as maps of topography, bathymetry, infrastructure, and land cover and land use***, and a geodetic reference frame for Earth observation.*** Interpretation and use of Earth observations requires information on drivers and consequences of change, including geo-referenced socio-economic data and indicators.

Ten-Year Implementation Plan Target Goals relevant to GGOS

Crosscutting, fundamental in the areas of Disasters, Climate, Water and Architecture, also key to
Health, Energy, Weather, Ecosystems, Agriculture, Biodiversity, Commonalities, Data and Users, Capacity Building, Outreach.

001 4.1.4-2.1 DISASTERS
2-Year
Advocate strengthening of the International Charter on Space and Major Disasters and similar support activities to enable better response to and documentation of effects of disasters, such as floods, earthquakes and oil spills. Its scope may be expanded to allow for pre-event tasking where forecasting is adequate to justify the effort (wildland fires, some floods and coastal disasters, volcanic eruptions). An expanded scope may also encompass Earth Observation training and capacity building of local users in affected areas, particularly in developing countries.

003 4.1.4-2.3 DISASTERS
2-Year

Advocate expansion of seismic monitoring networks, plus expansion of the present network of ocean-bottom pressure
sensors, and upgrade existing global networks (e.g. the GSN) so that all critical instruments relay data in real time, in support of better tsunami warning worldwide.

007 4.1.4-2.7 DISASTERS
2-Year
Advocate integration of InSAR technology into disaster warning and prediction systems, in particular related to floods, earthquakes, landslides and volcanic eruptions……

009 4.1.4-2.9 DISASTERS
2-Year
Advocate further development of the Global Spatial Data Infrastructure (GSDI) and draw on GSDI components as
institutional and technical precedents.

027 4.4.4-2.1 CLIMATE
2-Year
Support GSN and GUAN networks, Global Atmosphere Watch (GAW) observatories, initial Global Ocean ObservingSystem (GOOS), river discharge, lake levels, soil moisture, permafrost, snow cover and glacier observing networks, which are recommended in the GCOS Implementation Plan.

086 4.10.4-2.4 COMMONALITIES
2-Year
Facilitate the development of basic geographic framework data.

090 5.8-2.4 ARCHITECTURE
2-Year
Advocate use of existing Spatial Data Infrastructure (SDI) components as institutional and technical precedents in areas such **as geodetic reference frames,** common geographic data, standard protocols, and interoperable system interfaces, among other components.

091 5.8-2.5 ARCHITECTURE
2-Year
Establish and maintain baseline sites for global *in situ* networks.

102 7.5-2.4 CAPACITY
BUILDING
2-Year
Facilitate, with developing countries and across all societal benefit areas, the establishment and maintenance of baseline sites for global *in situ* and remotesensing networks that cannot always be justified on national grounds alone, in cooperation with relevant global research programs and activities to ensure that synergies in observations and understanding are achieved. Examples include the inadequacy of GCOS, GTOS, GOOS**, and Global Geodetic Observing System (GGOS)** sites in developing countries and the need to establish a minimum set of oceanic, terrestrial and atmospheric reference stations for long-term observations of key variables.

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109 4.1.4-6.2 DISASTERS
6-Year
Advocate continuity and interoperability of all satellite systems providing global positioning, such as the United States Global Positioning System (GPS), European GALILEO, Russian Global Orbiting Navigation Satellite System (GLONASS) and Japanese Quasi-Zenith Satellite System (QZSS). This includes support of the global geodetic network services such as Very Long Baseline Interferometry (VLBI) and Satellite Laser Ranging (SLR), that define the orbits of the GPS satellites and thereby enable the use of GPS for precise geo-location. Applications of GPS essential to disaster response include precision topography, mapping support, and deformation monitoring, as well as geo-location for search and rescue operations.

110 4.1.4-6.3 DISASTERS

6-Year
Advocate that the international satellite community, coordinated through the Committee on Earth Observation Satellites (CEOS), plan for assured continuity of critical sensing capabilities. For example, certain research systems should become operational systems and the projected lifetimes of some systems should not result in service gaps of key satellite sensor data. Longer-term actions for monitoring of geohazards include realization of an integrated observation system of SAR interferometry and GPS.

113 4.1.4-6.5 DISASTERS
6-Year
Advocate more rapid SAR processing for interferometry to enable strain mapping over large seismically active zones and to monitor landslides and subsidence in populated areas and along transportation corridors.

148 4.4.4-6.15 CLIMATE
6-Year
Advocate precision gravity field missions for global water storage monitoring.

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190 4.1.4-10.1 DISASTERS
10-Year
Facilitate further expansion of real-time monitoring of submarine seismic and volcanic activity and of tsunami propagation by use of surface and subsurface sensors, including re-use of submarine telephone cables.

192 4.1.4-10.3 DISASTERS
10-Year
Advocate meeting various unmet needs for classes of satellite sensors. Of particular importance for the area of hazards and disasters is the **global need for a significant increase in SAR satellites** (C-band, L-band, and X-band). The disaster management community needs an L-band system optimized for interferometry, and an expanded L-band capacity for better forest and fuel characterization. Monitoring the range of smoke and pollution plumes in the atmosphere around the globe requires expanded hyper-spectral capability, which is currently limited to airborne sensors. A passive microwave capability would help in determining soil moisture repeatedly over broad areas.

212 4.4.4-10.7 CLIMATE
10-Year
Promote implementation of an integrated observing system for atmospheric composition monitoring in support of climate policy through an optimal combination of ground-based networks, low Earth orbit and geostationary satellites and models.

240 7.5-10.1 CAPACITY BUILDING
10-Year
Within 10 years, GEO will seek to have in place a sustained capacity building strategy that will have significantly strengthened the capability of all countries, and particularly of developing countries, to:
- Use Earth Observation data and products (e.g. process, integrate, model) following accepted standards.
- Contribute to, access, and retrieve data from global data systems and networks.
- Analyze and interpret data to enable development of decision-support tools.
- Integrate Earth Observation data and products with other data and products, for a more complete view and understanding of problems and derived solutions.
- Improve infrastructure development in areas of poor observational coverage.

Develop recommended priorities for new or augmented efforts in capacity building.