



Summary of the GEO Forest Monitoring Symposium 4-7 November 2008, Foz do Iguaçu, Brazil

The current lack of globally consistent map products for forests is significantly limiting efforts to understand trends in the world's forests. Filling this gap and advancing our knowledge of the status of and trends in the world's forest resources and their long-term ability to support multiple societal benefit areas will require the coordinated development of Earth observation systems. The resulting improvement in forest observations would support the implementation of international agreements. It would also provide a scientific basis for emerging partnerships amongst non-governmental organizations and local communities.

The GEO Forest Monitoring Symposium was convened with the goals of linking existing and planned forest observation systems around the world, identifying new systems where gaps currently exist, and improving access to, and use of, in situ, aerial and satellite Earth observations.

The Symposium concluded that several existing products clearly demonstrate the ability of Earth observations to improve global forest monitoring. However, creating sustained operational systems based on these capabilities will require considerable additional efforts and major investments in capabilities and capacity. These improvements in forest monitoring will be more widely realized with the adoption of stronger open-data policies. The collection of radar data in specified areas with high cloud frequencies to compliment optical data is specifically important. For many developing countries, significantly increased efforts in capacity building are needed to derive the full benefits of the data, especially at the community level.

Current remote sensing assets now support wildland fire management for tactical and strategic purposes. Global and national estimates of burned areas are needed, and there is a critical need for sensors with better spatial, temporal and radiometric resolutions than the current assets, which are not designed specifically to detect fires. Another area where operational Earth observation capabilities could be implemented is conservation and biodiversity assessment. The effectiveness of protected areas and progress toward the Convention on Biological Diversity (CBD) 2010 targets could be monitored with remote sensing combined with ground truthing.

Remote sensing has been demonstrated to be an effective tool for mapping and monitoring changes in forest cover and extent. When combined with ground measurements, these changes can be used to estimate carbon emissions and stocks. It is important to note that existing ground measurements are often limited, particularly in developing countries. In this context, the Symposium endorses the proposed GEO Task on Forest Carbon Tracking and recommends strong links to ongoing related Tasks on forest and land cover and on capacity building.

Future enhancements in forest monitoring can be achieved through the further development of LIDAR, radar and thermal capabilities. Particularly lacking is a global LIDAR mission to

fill a critical gap in data on vegetation height, structure, biomass and biodiversity. This would lead to improvements in biomass estimation and characterization of forest degradation in support of carbon cycle studies and monitoring. Hyperspectral sensing will improve the monitoring of invasive species, forest health and ecosystem services. As always, remote sensing needs to be integrated with in-situ monitoring and will require efforts to build capacity for using Earth observation data.

The Symposium recommended improved access to and use of data sets and derived products through the adoption of standards for all spatial data sets. Recommendations will be made for GEO standards regarding data formats, meta-data standards, and data and systems interoperability. The Symposium further reinforced the need for long-term continuity for operational observation systems because effective, sustained monitoring is impossible without it. In this regard, the Symposium supports the Land Surface Imaging Virtual Constellation being developed by the Committee on Earth Observing Systems (CEOS). The full Symposium report will be completed by the end of this year.