CONCLUSION

Natural Disasters

The current (IOC) Open Skies EO capability has some limited use in the Prevention and Preparedness (i.e., Mitigation) phase of natural disasters risk management and a somewhat greater use in the Response and Recovery phases, but none for the purposes of early warning. In the latter context, the Open Skies regime simply cannot come anywhere near to the required levels of timeliness and reliability. In terms of mitigation, the Open Skies EO capability could be useful, particularly in case of smaller, developing nations, for base-mapping of emergency relief logistics and estimation of settlement/structure vulnerability (i.e., soundness of building design) and exposure (i.e., direct physical proximity to risk areas). In the response phase, the potential of the regime for making a useful contribution comes from its capability for conducting detailed urban and industrial damage assessment and mapping; and in the recovery phase, from the monitoring of reconstruction progress.

In the context of disaster risk management, the relevance of the Open Skies regime is real and substantial. That relevance stems from two characteristics of the situation as it obtains right now. First, an increasing percentage of the world population is concentrating in urban areas that in turn depend on complex infrastructure for their effective functioning. Roads, pipelines, power grids and telecom networks are all particularly vulnerable to natural hazards because a single break in the network can render the entire system useless. The Open Skies panchromatic photography is ideally suited to conducting detailed assessments of urban/industrial infrastructure, including estimates of the number of people affected by a disaster and/or being displaced into refugee camps. The second reason as to why the Open Skies regime enjoys a niche advantage has to do with the fact that remote sensing satellites have significant limitations for supporting humanitarian relief operations. Persistent cloud cover can delay the delivery of the satellite EO data by weeks. Another limiting factor is the cost of satellite imagery.

The Kyoto Protocol

The importance of and the need for terrestrial carbon sink monitoring cannot be overstated. Climate change is a major factor behind an increasing incidence of natural disasters and an increase in their severity. Rising global temperatures constitute also an important category of environmental stress. The Kyoto Protocol makes provisions for the use of biological sources and sinks to meet national commitments especially related to afforestation, reforestation and deforestation, the so-called ARD activities. Further, if forestry projects are allowed to proceed on a wider scale under the terms of the CDM, then not only national but worldwide assessments of changes in ARD become a mandatory monitoring requirement.

Both the current and FOC technical capabilities of the Open Skies regime are simply too limited to provide sound basis on which to build a reliable terrestrial carbon sink measurement and monitoring system that could satisfy user requirements at international, regional and possibly even national scales. The regime cannot provide radiometric data at 500 m-1 km spatial resolution that is required in order to produce central baseline inventories: the forest cover statistics for reference years 1990 and 2000 and forest fire statistics for reference years 1990 and 2000. By the same token, the regime cannot provide data that are needed to produce land cover maps and land cover change maps. Lacking global coverage and daily revisit capability, the regime can neither be used for near real-time monitoring of the major perturbation that can radically alter forest carbon stocks – vegetation fires. However, by using its SAR sensor in particular, the regime potentially could contribute data at local scale. The Open Skies SAR data could be used to provide maps and statistics of ARD at a local scale to be used as input for national inventory. In could be also used to assess fire impact on ARD activities and to provide detailed quantitative estimates of forest conversion in general.

Environmental Stress

Land cover changes resulting from human activities constitute a major cause of environmental degradation and of biodiversity loss. For instance, biomass burning plays a major role in the human-induced land cover changes. Repeated burnings can force changes in various ecosystems and promote the process of desertification and/or shifts in biodiversity. Land clearing by fire also contributes significantly