

How Well, on Balance, Could the Regime do the Job Right Now?

Under the terms of the IOC the regime lacks the sensing capability to monitor central aspects of environmental stress. Most notably, the regime cannot provide data on the chemical contamination in all four media of the environment or on the levels of water stress within the vegetative land cover. On the other hand, the panchromatic, high-resolution photography holds enormous promise for a certain category of environmental "hotspot" monitoring, specifically with respect to instances of stress that came into being as a consequence of large scale land use practices and/or man-made works. Two examples can illustrate this point.

- Although urban sprawl normally covers only a small fraction of the total land area, that land is usually the most arable.⁴² In countries where there is relatively little arable land to begin with, urbanization and infrastructure development that takes place at the expense of prime farmland have obvious and direct implications for food security and, in longer run, political stability. The Open Skies regime could play an early-warning role here, and not only in keeping watch over the direction of urban and infrastructure development, but also to identify "hotspot" areas subject to high levels of soil degradation or desertification risk;
- A significant factor in regional security is competition for scarce resources. Of particular relevance in that context is competition over water, concerning specifically both the quantity and quality of freshwater derived from rivers shared in common among a number of parties. Many of these rivers are heavily polluted as a result of mining, industrial and other activities and pose a threat to the environment and the health and safety of users living downstream. The total volume of available water for many downstream users is also shrinking. The main reason is that the water demand for agricultural use has increased dramatically worldwide and water is drawn off from the feeding rivers for irrigation purposes. Regional competition can be exacerbated by uncertainty over the upstream country's river regulation works and whether such sensitive activities constitute a threat. Shared river basins present a unique opportunity for cooperative environmental monitoring to enhance local and regional security⁴³. The Open Skies regime could play a potentially useful role under this scenario too. By providing a measure of transparency, in form of high-resolution panchromatic monitoring of water works (i.e., various flow regulation and impoundment schemes), it could help alleviating reasons for conflict and help building confidence as a precursor for a more elaborate trans-border resource management regime. And, if a multilateral or a bilateral water sharing agreement is struck, why not have the Open Skies regime monitor it?

What are the Points where the Open Skies Regime Carries a Clear-Cut Advantage over Satellite Observations, and vice versa?

There are two viable points that could be made in favour of the Open Skies regime:

- The surveillance of the urban and industrial infrastructure requires very high to high resolution photography. Panchromatic B/W photography in fact is optimal. In that regard, the Open Skies regime can provide data that is of higher quality, and much cheaper, than that offered either by the U.S. IKONOS or India's IRS-C satellites – the two systems most commonly used at the present time for that purpose;
- The Open Skies regime is not bound in place by orbital dynamics. It can follow a winding river, a pipeline or a rail line – much as the early U-2s flying over the Siberian wilderness

⁴² See John Weier and Robert Simmon (Design), *Reaping What We Sow: Mapping the Urbanization of Farmland Using Satellites and City Lights*. NASA Earth Observatory *Features* Report (November 1, 2000), pp. 1-8. See also, "Cities Eat Away at Earth's Best Land." *A New Scientist* News Service *Story* (December 20, 2002), pp. 1-3, and, Michon Scott, *The Human Footprint*. NASA Earth Observatory *Features* Report (February 25, 2003), pp. 1-7.

⁴³ Perhaps the best known examples of cooperative monitoring of transborder river flows, both in terms of their quantity and quality, are the experimental research projects instituted by the Sandia National Laboratory's Cooperative Monitoring Center for: 1) Tumen River that forms part of the border between China and North Korea and between Russia and North Korea; 2) the Kura and Araks rivers both originate in Turkey, but then flow through Georgia and Armenia, respectively, and then into Azerbaijan, and; 3) rivers Syr Darya and Amu Darya as well as their major tributaries, all of which are shared among the Central Asian republics of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. For more information see www.cmc.sandia.gov/index.htm.