User Requirements	Spatial Resolution	Temporal Resolution	Delivery Timeliness	Sensor/Wavelength
Atmospheric Pollution	10-50 km	Daily at National Scale	< 1 week	-IMSR: vis/IR (NIR) -Spectrometer: UV-SWIR -Lidar: vis-NIR -Interferometer: MIR-TIR
Inland Water Bodies	30-60 m	1wk – 1m	1 m	-Pan/Optical -IMSR: vis/IR -SAR -Thermal IR Scanner (TIR)
Arable Soils	30m–1km	1m-4xannually	1-4 m	-Pan-Optical -SAR -IMSR: vis (Blue)/IR (SWIR-TIR) -IMSR: Passive Microwave -Thermal IR Scanner (TIR)
Biodiversity Loss -Land Cover -Land Use	 60-250 m 10-30 m	 Annually Annually	 Same Same	 -IMSR: vis/IR (NIR) -SAR -Pan/Optical -SAR

How does the existing Open Skies Sensor Suite Compare to these URs?

Which UR Data Needs Could the Regime Support?

The Open Skies regime can at the present moment support a partial monitoring of the natural environment in three of its media: water, soils and biodiversity. The best data that the regime could provide would be with respect to urbanization and infrastructure mapping for soils and biodiversity and flow regulation works for water. Further, the regime could usefully monitor patterns of land use, especially the cropped and irrigated lands, and it could equally usefully watch for signs of environmental degradation in form of soil erosion and salination (using SAR imagery) as well as for signs of desertification and deforestation.

What is the Information Gap: Which UR data needs the regime could not support at the present?

At the present time, the Open Skies regime lacks the sensing equipment to monitor one whole medium of the environment – the atmosphere and its chemistry. As a consequence, the regime cannot support the detection, identification and measurement of toxic pollutants in the air.[41] Lacking the ability to collect multispectral radiometric data in particular, the regime can neither be used to monitor the levels of chemical pollution in surface waters and soils, to assess the mineral content and/or composition of the soil, or the health and characteristics of vegetative biomass.

[41] This has significant implications especially in case of the numerous civilian nuclear reactors, used both for commercial purposes and to advance scientific research. During their operation, every reactor generates gaseous, liquid and solid radioactive waste that can cause radioactive contamination of air, soil, water and vegetation. Radioactive gases and aerosols ejected in air are the source of radioactive contamination of airspace far beyond the reactor building itself. In many countries, not all necessary *in situ* monitoring systems are functional or even present, making it difficult to determine the level of contamination of ambient air by radioactive aerosols or the direction of their airborne travel. For more detail on remote sensing of dust, smoke, aerosols and rare gases see: Yoram J. Kaufman, et al., "A Satellite View of Aerosols in the Climate System." Nature 419 (September 12, 2002), pp. 215-223, and Mike Sharpe, "Analyst in the Sky: Satellite-Based Remote Sensing." Journal of Environmental Monitoring 2 (2000), pp. 41-44, and, European Space Agency, *Satellite Sniffs Out Chemical Traces of Atmospheric Pollution.* Observing the Earth News Story (November 16, 2002), pp. 1-2.