Satellite Imagery for Environment Reporting

Journalists can use these images and data to report and illustrate stories.

By Claire Parkinson

During the past several decades, satellite technology has provided an amazing new ability to observe the earth-atmosphere system. With satellites, the most remote regions of the globe can be viewed as readily as the least remote regions, and data can be collected globally within a few days. Some instruments can obtain surface data even in the presence of a substantial cloud cover, while other instruments can provide the data to produce three-dimensional visualizations of the structure of such atmospheric phenomena as hurricanes and thunderstorms.

Satellites collect data relevant to a wide range of environmental topics, from the ozone hole and low-level pollution in the atmosphere, to deforestation and glacier retreats on the land, to algae blooms and El Niño-signaling temperature patterns in the oceans, to biomass burning and shrinking lakes or eroding coastlines. In each of these cases, and many others, the amount of information that the satellites can provide is enormous. By carefully selecting satellite imagery, these pictures can be used quite effectively by reporters to illustrate many points. For example, journalists who might be reporting on the shrinking of the Aral Sea (caused largely by the diversion of inflowing waters for such purposes as irrigation) can vividly portray this shrinkage by presenting side-by-side, identically geolocated images from different decades.

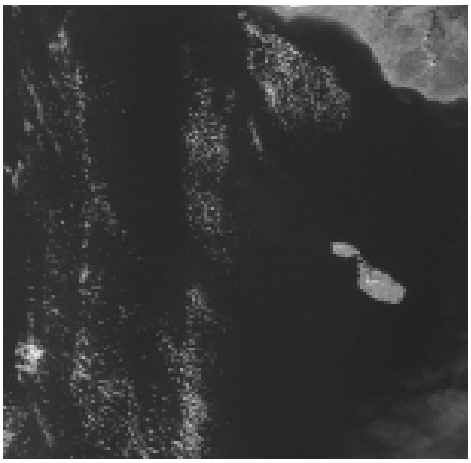
Types of Satellite Data

Satellite data come in different types, but a common factor is that all satellite instruments measure radiation and only radiation. Some sensors measure various wavelengths of visible radiation, all of which our eyes can see, and other sensors measure ultraviolet, infrared, microwave or other types of radiation, none of which our eyes can

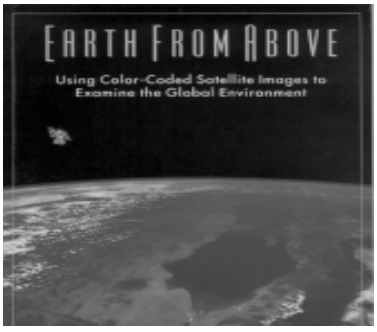
see. In any event, no matter what the topic of ultimate application, what's measured directly is exclusively radiation.

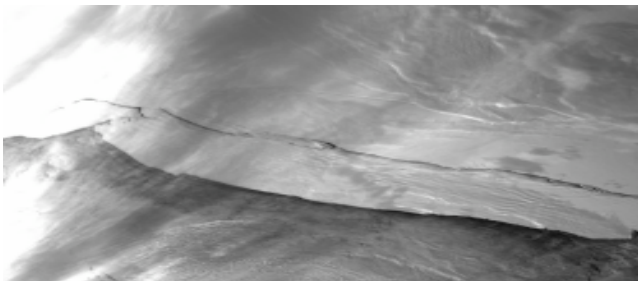
Satellite images constructed from visible data have one inherent gigantic advantage, which is that the images are generally readily understood just by looking at them: Clouds look like clouds, sea ice floes look like sea ice floes, land/sea boundaries are readily identified, etc. Furthermore, the value of some visible imagery has been clear since the first earth-observing satellites were launched decades ago. A prime example of this utility is provided by the visible imagery of hurricanes. Hurricanes form over warm ocean areas, fed by evaporation from the ocean beneath. In view of their oceanic origin, prior to satellites hurricanes were often not observed until just hours before landfall. Now they are readily recognizable in satellite visible images, often days before landfall, thereby enabling what can be lifesaving warnings to the communities along their paths.

Visible radiation is often ideal for observing hurricanes, clouds or, under clear conditions, many phenomena at the earth's surface. Satellite instruments measuring only visible radiation, however, have the same limitations that our eyes have.



Eruption of Mount Etna, in Sicily, as viewed from NASA's Aqua satellite on October 30, 2002, using data from the Moderate Resolution Imaging Spectroradiometer (MODIS) instrument. ***Original image in color, courtesy of the MODIS Science Team.***





Calving of a major iceberg off the coast of Antarctica, as viewed from NASA's Terra satellite on March 28, 2000, using data from the MODIS instrument. This iceberg is twice the size of Delaware and broke off from Antarctica's Ross Ice Shelf, necessitating remapping of the coastal boundaries. ***Original image in color, courtesy of Jacques Descloitres and the MODIS Science Team.***