

High-Resolution Satellites



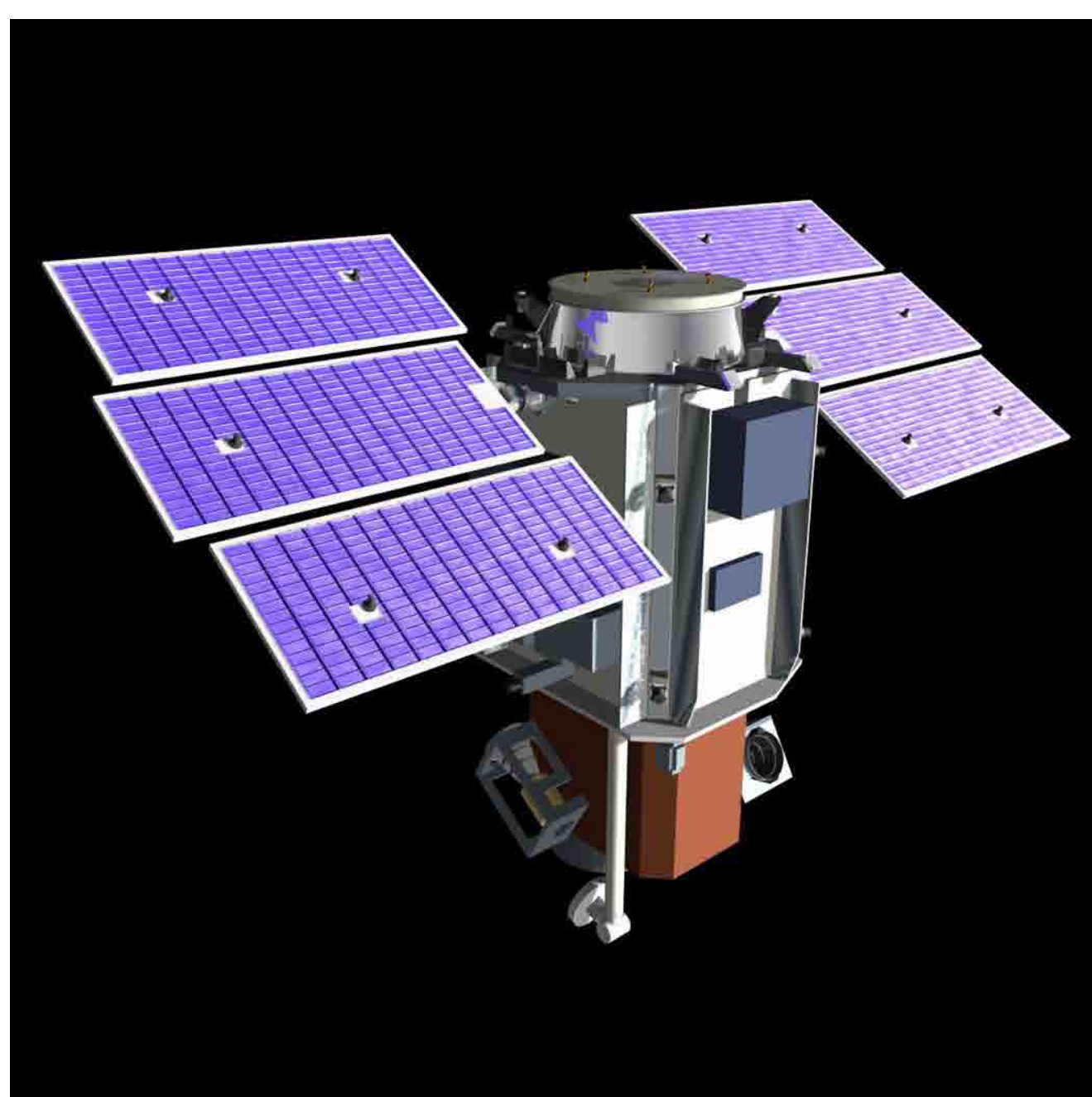
Artist's drawing of IKONOS, the first commercial high-resolution satellite. Launched on September 24, 1999 by Space Imaging, now GeoEye. Credit: GeoEye

Uses

The detail in high-resolution satellite imagery is most valuable for feature identification and mapping. Many satellite technologies were initially developed for military purposes, such as surveillance of foreign nations, but now have civilian applications. Examples of civilian uses include:

- city planning
- pipeline routing
- law enforcement
- emergency management
- transportation
- mining
- real estate
- agriculture & forestry

High resolution imagery is similar to aerial photography but provides coverage for larger areas, more quickly, and over airspace where aircraft are not available to fly. Aerial photography is available at higher resolutions than satellite imagery, such as 1ft (30cm), 6in (15cm), and even 3in (7.5cm). However, data volume becomes a problem if joining together many high resolution images to cover an area of more than a few square miles.



Artist's drawing of Quickbird-2. Launched October 18, 2001 by DigitalGlobe. Credit: DigitalGlobe

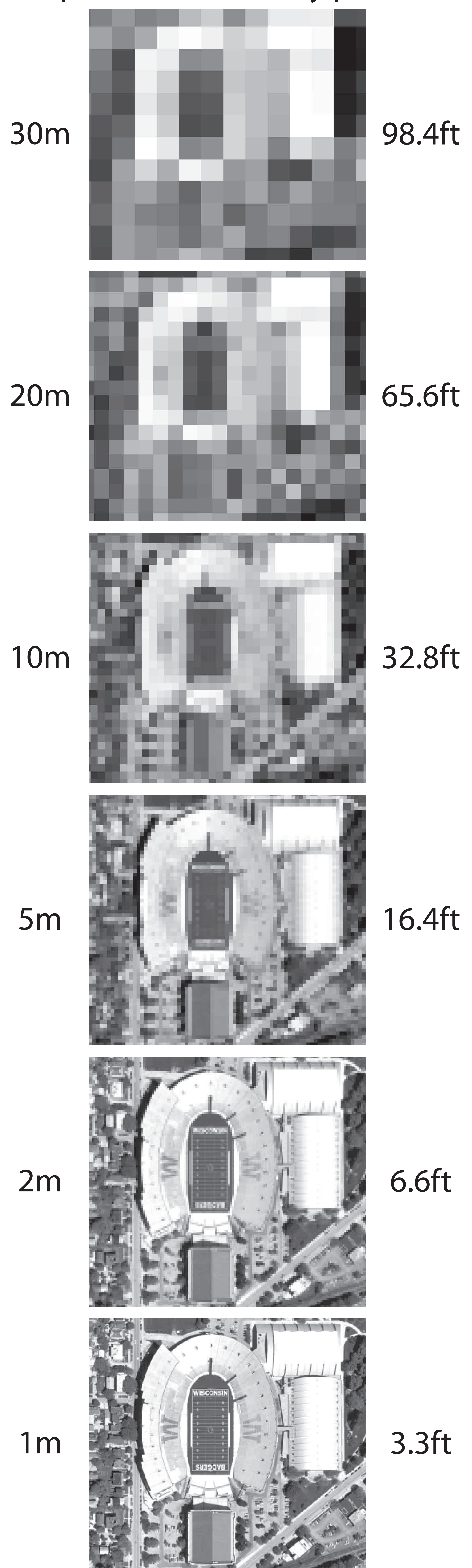


Artist's drawing of GeoEye-2. Its launch is planned for early 2013. It will be capable of 10in (25cm) resolution imagery but access will be restricted. Credit: GeoEye

High-resolution aerial photography of Wisconsin is available for free download at <http://www.wisconsinview.org>

High-resolution satellite imagery of land usually refers to high spatial resolution, or the level of detail visible in satellite imagery. Data with resolutions of 100m per pixel or less are generally considered to be "high-resolution." The newest commercial satellites such as GeoEye-1 provide 16in (41cm) resolution panchromatic and 5ft (1.65m) multispectral (color) imagery. However, the data coverage is only 9.5 miles (15.2km) wide per swath. The basic trade-off for high spatial resolution is low coverage area, similar to the trade-off between a telephoto lens and a wide angle lens on a camera. Both are useful, but for different purposes.

Spatial resolution by pixels



Camp Randall Stadium on the UW-Madison campus as it appears at different spatial resolutions. Credit: Tom Lillesand, UW-Madison