

The Landsat Earth Observing System as I know it

**Round Table Contribution of
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at

**The 40th Anniversary of the Landsat Programme,
55th Session of the United Nations Committee on
the Peaceful Uses of Outer Space**

**Vienna, Austria
June 6, 2012**



W.T. Pecora—The Vision; S. T. Udall—The Courage

Landsat –The Trail-Blazer

In the first two decades of the space age, six nations designed and launched Earth-orbiting satellites for scientific purposes:

**The Soviet Union (1957),
The United States (1958),
France (1965), Japan (1970),
China (1970), and
The United Kingdom (1971).**

For those first 20 years, Landsat system weathered all the storms of being a pioneer in a suspicious global community

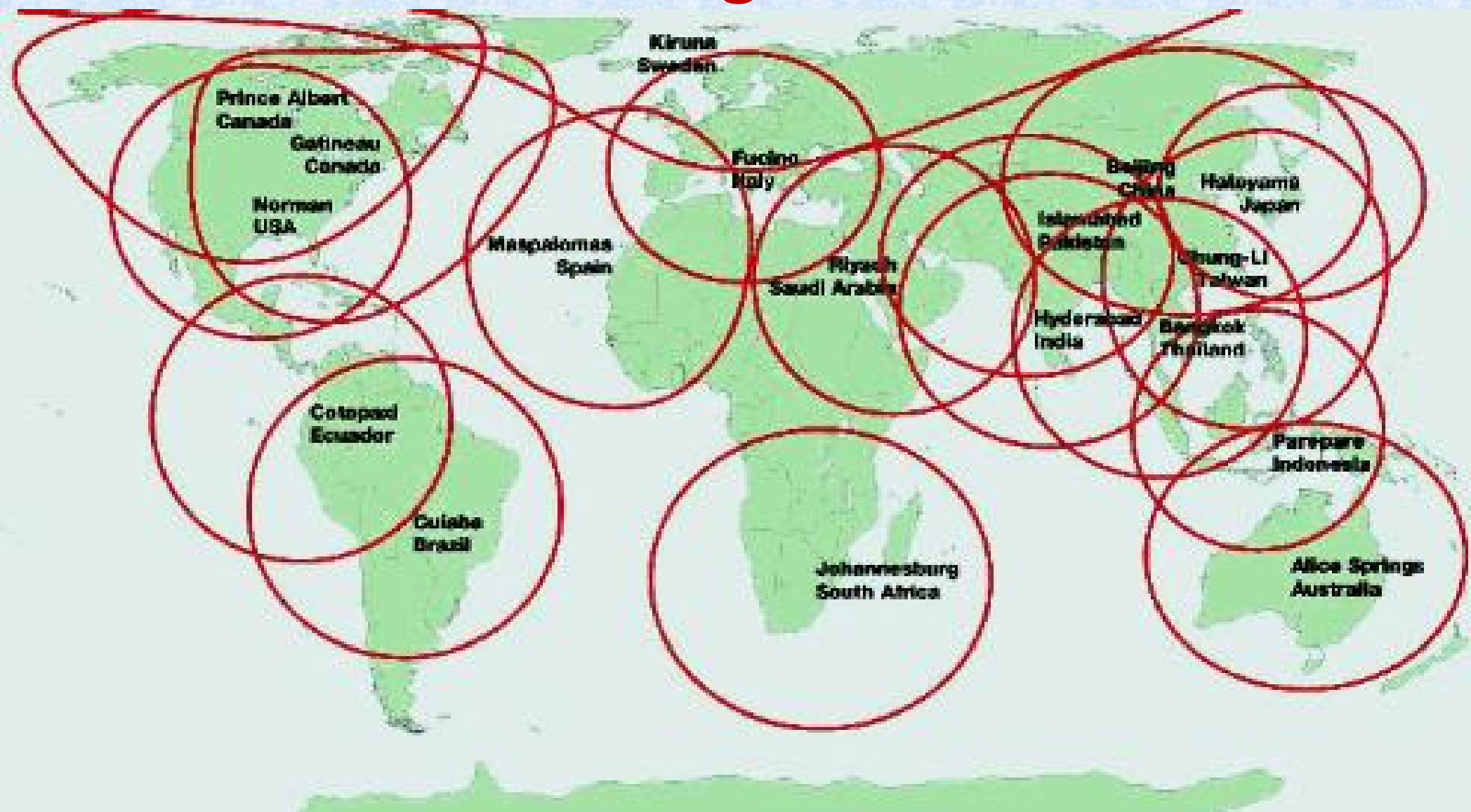
Landsat – The Trail-Blazer

- Given the global panic that surfaced following the initial successes of both the USA and USSR in 1957 & 1958, did the success of Landsat-1 hasten the founding, in 1974, of the European Space Agency?

Landsat Challenges

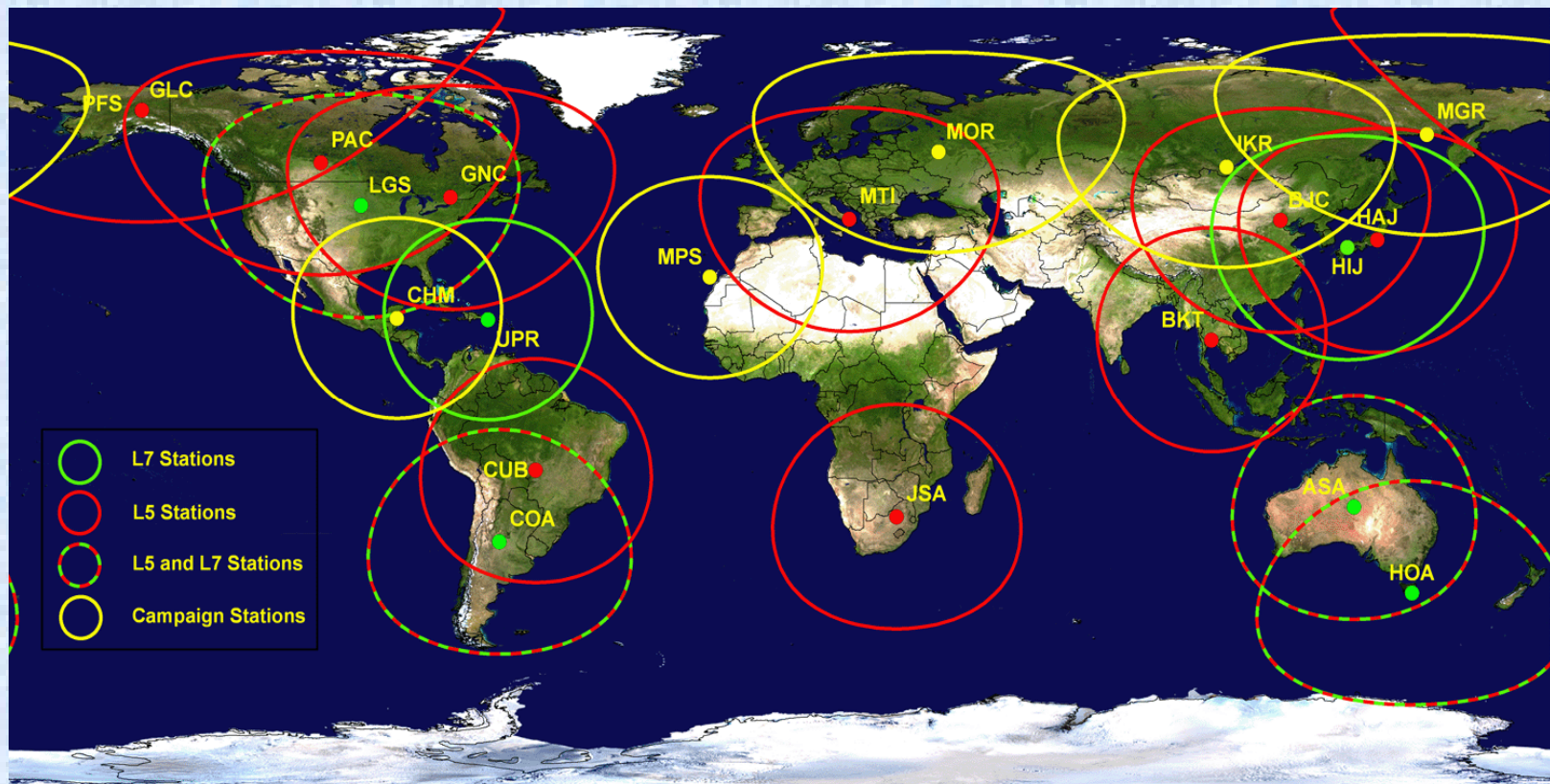
- 🌍 A civilian satellite programme that could compromise the secrecy of reconnaissance missions – *The Military*
- 🌍 How to overcome geopolitical concerns of being accused of photographing foreign countries without permission - *Foreign Service*
- 🌍 The unwillingness to, or fear of, adapting to new technologies, particularly by the traditional surveyors and the belief that aerial photography could do the job – The African example – *The traditionalists vs The upstarts*

Landsat receiving stations - 30 years ago



The global reach of Landsat – International cooperation

Examples: (a) The establishment of Landsat ground receiving stations in many parts of the world: The Landsat data receiving stations today



The global reach of Landsat – International cooperation

(b) Data acquisition agreements with many countries, including Nigeria and Kenya.

Those countries that judiciously made use of the data benefited from such agreements



Landsat-1



GE IMAGE 100 Analysis System

The global reach of Landsat – International cooperation

(c) Canada –

- First country to buy the first commercial image analysis system, the GE IMAGE 100**
- Its pioneer development of the Landsat data format used world-wide**
- Employment of hundreds of award-winning scientists and engineers, and hosted thousands of visiting students, scientists, post-doctoral fellows – same as in the United States**

The global reach of Landsat – International cooperation (contd.)

(d) ITC in the Netherlands

Organisation of national and regional
remote sensing meetings for decision makers

(e) The United Nations System (UN-OOSA & FAO)

Organisation of annual national and regional
remote sensing training courses, workshops,
seminars and conferences

(f) Sweden's remote sensing education for
educators

(g) **ESA's** Long-term fellowships programme

Landsat ground receiving stations

- Revealed the rivalry and suspicions amongst neighbours.
Example: In South East Asia, in 2000, there were 22 ground receiving stations
- Annual satellite access fee of US\$1 million was simply too steep for many countries
- Owners of ground receiving stations could not recover the cost of operating such stations from data sales to neighbours
- The 1991 Persian Gulf War changed the world perception of data accessibility and availability. Those with stations had no access to satellites and those that already paid for data could not receive them from the stations.
- Could this have hastened the commercial development of microsatellites as a remote sensing alternative?

Landsat ground receiving stations

Africa's expected external support for two to three Landsat stations did not materialise







🌍 Africa's first station was built by South Africa in 1980.

The Lasting impact of the Landsat system

The Landsat Earth observing system was born at the onset of the space and digital age, and soon became one of the main drivers of the information age.

The Lasting impact of the Landsat system

-  **Has given employment to millions around the world at research, development and application institutions in different aspects**
-  **An indispensable tool in the management of our life support systems and in sustainable development as we know it today**
-  **Providing indisputable key evidence in judicial litigation against pollution of water bodies, e.g. Lake Michigan in 1974**
-  **Remote sensing satellites have served as a national technical means of verification of international nonproliferation, arms control, and disarmament regimes.**

The Lasting impact of the Landsat system

- Major component of today's information economy- e.g.
Through direct contribution and productivity impacts, Australia estimated that Earth observation systems contributed at least US\$3.3 billion to its GDP in 2008-09
- Gave birth to a new industry known today as geo-information systems – image processing and value-added companies; Image software developers
- Changed for good the way maps are made
- Indispensable component of navigation systems used in our daily lives
- Led to the establishment and re-naming of national, regional and international environmental governmental and non-governmental organisations – **Asian Association of Remote Sensing (AARS)**, **Society of Latin American Remote Sensing Specialists (SELPER)**, **African Association of Remote Sensing of the Environment (AARSE)** etc.

Thank You

