

Remote sensing is being used in Canada to manage the country's vital resources and to monitor environmental changes. MacDonald Dettwiler's MERIDIAN system gives high-resolution images like this one of Vancouver, on Canada's west coast.

Canadian expertise in educational satellite networks has also been successfully applied in international tele-education projects. National schools of public administration in Quebec, Senegal and the Ivory Coast were linked in 1987, and a co-operative science program operates between Thailand and British Columbia.

Canada took the lead in international tele-education at both the Francophone Summit in Quebec and the Commonwealth Heads of Government Meeting in Vancouver, in 1987, proposing to pilot and administer two international tele-education networks. The Centre international francophone de formation à distance (CIFFAD) will soon be offering teleconferencing and video links to 41 Francophone nations. A similar co-operative educational institution will link the 48 countries of the Commonwealth.

Telemedicine

Extending health-care services to remote regions through satellites is another field of Canadian leadership. The services of both urban specialists and sophisticated diagnostic equipment can be transferred via satellite to isolated areas.

For example, an early Hermes experiment linked the University Hospital in London, Ontario, with a small hospital in Moose Factory, in northern Ontario. Doctors operating on patients in the remote hospital simultaneously consulted with surgeons in London. They in turn observed the operation through a remotely controlled TV camera placed in the operating room. The doctors could also instantly relay X-ray images, electroencephalograms (EEGs), electrocardiograms (ECGs) and other medical data.

An offshore oil rig was the site of another such experiment, this time using the Anik B satellite. A terminal, specially stabilized to compensate for the roll

During telehealth experiments with the Hermes satellite, images like this X-ray were transmitted by telephone. and pitch of the oil rig, linked the rig with the Memorial Hospital's Science Centre in St. John's, Newfoundland.

Audio-teleconferencing remains, however, the most common use of satellite communications in telemedicine. Medical personnel in remote areas thus have access to the latest information, training and research material. Pilot projects include the use of satellite communications for an air ambulance service in northern and eastern Canada.

Canada has begun sharing its growing expertise in telemedicine with other countries. In 1986, Memorial Hospital established low-cost. high-efficiency links with medical centres in Kenya and Uganda, facilitating transmission of EEGs, ECGs, slow-scan television (for transmission of images such as X-ray over telephone links) and interactive audioteleconferencing. The hospital is currently applying its expertise in inexpensive telehealth communications systems to develop a similar link with Jamaica.

Remote Sensing

Faced with the enormous job of managing vast resources, keeping watch over the country's extensive land mass and waters, and monitoring environmental changes, Canada has pursued satellite remote sensing technologies since the early 1960s. It has developed particular expertise in ground systems and image analysis technologies.

As one of the world's most productive agricultural nations, Canada uses remote sensing data to gather information about its crops — more quickly, more cheaply, and more efficiently than is possible by any other means. The data obtained make it possible to monitor changing crop conditions, estimate potential yields, and detect disease earlier than by ground surveillance.

Canada has also applied remote sensing data to forestry, geological mapping and exploration, surveys, search and rescue techniques, ice reconnaissance, water resource management, weather forecasting, fisheries, land-use surveillance, and arms control and verification.

With the expected launch of Canada's RADARSAT in 1994, Canada should also control its own remote sensing satellite. The satellite's ability to see through cloud and darkness would help Canada monitor its resources more closely, manage them more efficiently, and maintain its position as a world leader in remote sensing technologies.

