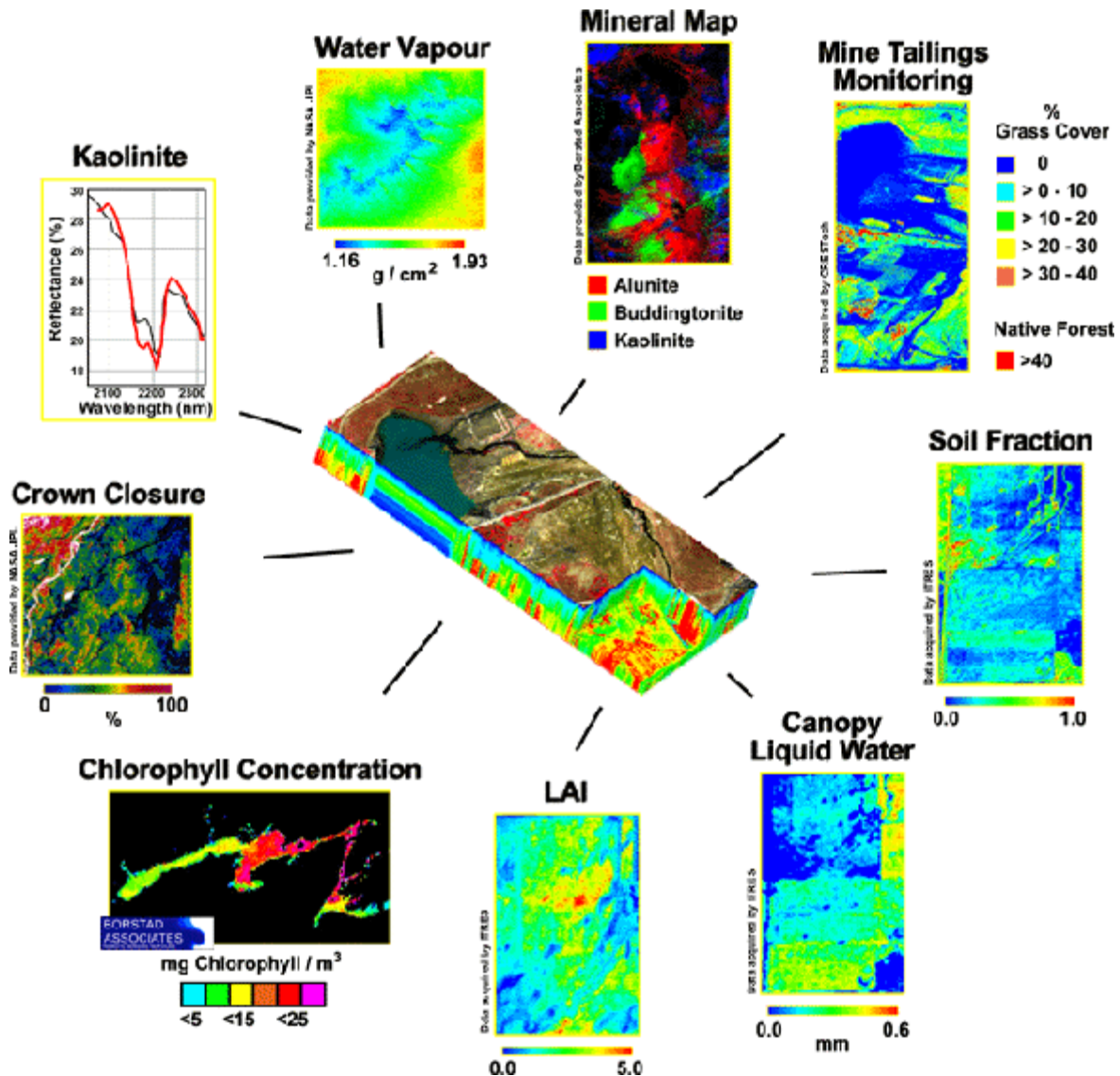




Natural Resources  
Canada

Ressources naturelles  
Canada

# THE CANADIAN HYPERSPPECTRAL MISSION



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**IN PREPARATION FOR**

**THE CANADIAN**

**HYPERSPECTRAL MISSION**

**HYSPEC Report 2002**

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**Canada Centre for Remote Sensing**

**Earth Sciences Sector**

**Natural Resources Canada**

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# The Canadian Hyperspectral Mission

## Overview:

At the 19<sup>th</sup> CEOS WGCV Plenary, the Hyperspectral Group (HYSPEC) at the Canada Centre for Remote Sensing, Natural Resources Canada (CCRS/NRCan) presented a variety of activities which support the calibration and validation of hyperspectral data for application to areas such as geology, forestry, the environment, and land use management.

The objectives of the HYSPEC Group at CCRS promote the application of present and future hyperspectral sensors for environmental monitoring and surface resource management :

- Develop applications products to enhance the Canadian expertise for the utilization of hyperspectral data from future sensors, but in particular with respect to the Canadian space mission activities.
- Develop and evaluate information extraction algorithms and related applications products to meet user requirements in land use management, environment, and geology.
- Assess the impact of sensor characteristics on information products.
- Stimulate and support technology transfer and disseminate new knowledge among industrial and educational stakeholders.

Several activities are ongoing at CCRS for the support of present and future hyperspectral missions, and include :

- Algorithm Development
  - BRDF utilization and normalization using the FLAIR Model (Four-Scale Linear Model for AnIsotropic Reflectance)
  - Atmospheric Correction with scene-based estimation of water vapour, aerosol optical depth, and surface liquid water equivalent
- Impact of sensor characteristics
  - Removal of sensor artefacts, such as smile/frown, sensor noise
  - Detection and correction of wavelength and bandwidth shifts
  - Correction for tilt/roll of sensor during acquisition
- Impact of lossy on-board data compression
  - Increased data collection for improved task scheduling
- National and International Activities.
  - The Canadian Hyperspectral Mission
  - International partners

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## The Mission:

The Canadian Space Agency (CSA), with the participation of CCRS, industry, and academic institutions, is currently conducting mission concept studies in preparation for launch of a hyperspectral earth observation satellite. The Canadian Hyperspectral Mission will build on Canadian industry's experience and expertise in remote sensing and make new capabilities available for a wide variety of users that will provide economic, social, and environmental benefits to Canada and the world.

In April 2003, new programs will be initiated at CCRS which will include activities involved in developing improved methods for calibration and validation of hyperspectral sensor characteristics, and processing and application of hyperspectral imagery. In the Geomatics for Sustainable Development of Natural Resources Program, projects will focus on the improved characterization and integration of a full range of geospatial information. Other programs, such as Sustainable Development Through Knowledge Integration and Geomatics for Northern Development, will apply hyperspectral and other data sources to various applications.

## Contacts:

For more information on any of the hyperspectral activities presently ongoing in Canada, please contact any of the following:

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