

# Investigation of Remote Sensing Technologies and Capabilities

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#### Alberta Earth Observation & Remote Sensing Technologies



Optical: Aerial & Space-based



Ground Based Sensor Networks Images courtesy of Arturo Sanchez Univ. of Alberta



Light Detection And Ranging



# Albertan Why Geomatics, Remote Sensing, & Earth Observation Technologies?

- Transformational technologies allowing new and innovative ways for:
  - Regional planning;
  - Monitoring, Evaluation & Reporting
  - Modelling: Historical & Future Trends
- Use of common measuring sticks
   Regional coverage
- Data availability/resolution improving:
   Spatially, Temporally, Spectrally, Cost
- More efficient allocation of limited resources
  - Personnel,
  - Money,
  - Equipment, etc.





#### Albertan Technologies - Sensor Simulation: CCRS/UofVic/UofL/ESRD/AER

1060

0.2

Table 1: TRSI MAP1 instrument characteristics.								
Sensor	No of Bands	Spectral Resolution (nm)	Spectral Coverage (nm)	Spatial Resolutio (m)				
AISA (Hypersp.)	492	2.5 nm (VNIR) 6.3 nm (SWIR)	400 - 2500	2				
Aerial	3		VIS	0.25				

## Table 2: Potential spaceborne sensors considered for simulation purposes.

2-4 points / m<sup>2</sup>

Lidar

Sensor Name (Organ.)	No of Bands	Spectral Coverage (nm)	Swath (km)	Spatial Resol. (m)	Temporal Resol.	Date
Sentinel-2 (ESA)	13	400 - 2400	290	10 20	2-3 days	2013
EnMAP (DLR/GFZ)	218	420 - 2450	30	30	4 days	2015
HyspIRI (NASA)	220	380 - 2500	145	60	3 days	2018



#### Alberta ESRD: Monitoring Procedures for Reclamation in AB

**Digital Elevation Model** 

- UofL is developing a tool to help assess reclaimed sites across Alberta
- Use of remote sensing tools
   SPOT
  - Rapid Eye
  - LIDAR
- Based on initial scoping project near Lacombe
  - TECTERRA Project: 3 Study Areas
    - Cold Lake
    - Lacombe
    - Coal Valley Mine



SPOT 5 IMAGE August 8 2008





### Albertan ESRD:

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Monitoring Procedures for Reclamation in AB



**Digital Elevation Model** 





**Canopy Height Model** 







## **Any Questions?**

Thanks! For more information contact:

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