

# Presentation to COPUOS STSC 2020 Session

**A Global Initiative  
To Improve Living Conditions for Indigenous Populations  
Using Earth Observation Data**

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VIENNA | February 10<sup>TH</sup>, 2020

## Outline

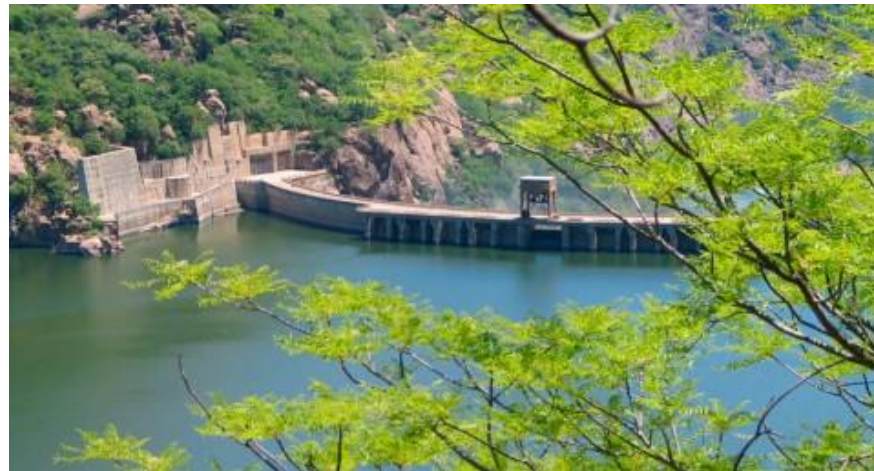
- Need for the Initiative
- About the Initiative
- Goals: Near-term and Long-term
- Proposed Implementation Plan
- Opportunities for COPUOS Members
- Acknowledgement: UNSG and GEO



## Need for the Initiative: Pressing Issues



The Indigenous communities around the world are some of the **most vulnerable populations** to, and possibly the least able to combat the negative impacts of climate change (e.g., location, land quality characteristics,...)



**Lack of reliable, timely information** is seen as one of the critical gaps facing communities in tackling the SDG's.

### World Bank on Inclusive Prosperity:

1. There are about **370 million Indigenous People** as ethnic minorities living in more than 90 countries worldwide.
2. Indigenous Peoples make up only **5% of the global population**, however, account for **15% of the world's extreme poor**.
3. Indigenous Peoples own, occupy, or use a quarter of the world's surface area, where **they safeguard 80% of the world's biodiversity**

## Need for the Initiative: Urgency by the UNSG



**CANEUS** was invited by the **UNSG**, the only organization representative the space technology sector, for the **UNSG Climate Action Summit on Indigenous Peoples**, held at UN-NY in September 2019

The **UNSG Summit outcome outlined three commitments**:

1. Lead the **implementation of holistic plans** to protect biocultural diversity, ensuring the inclusion of the most marginalized communities
2. Develop actions to secure Indigenous peoples' **rights to lands territories and resources**, self-determination and free, prior and informed consent
3. Access the **development of renewable energies** in accordance with self-determination and FPIC.

## What is the Initiative: Support Accessibility & Capacity Building Enhancement

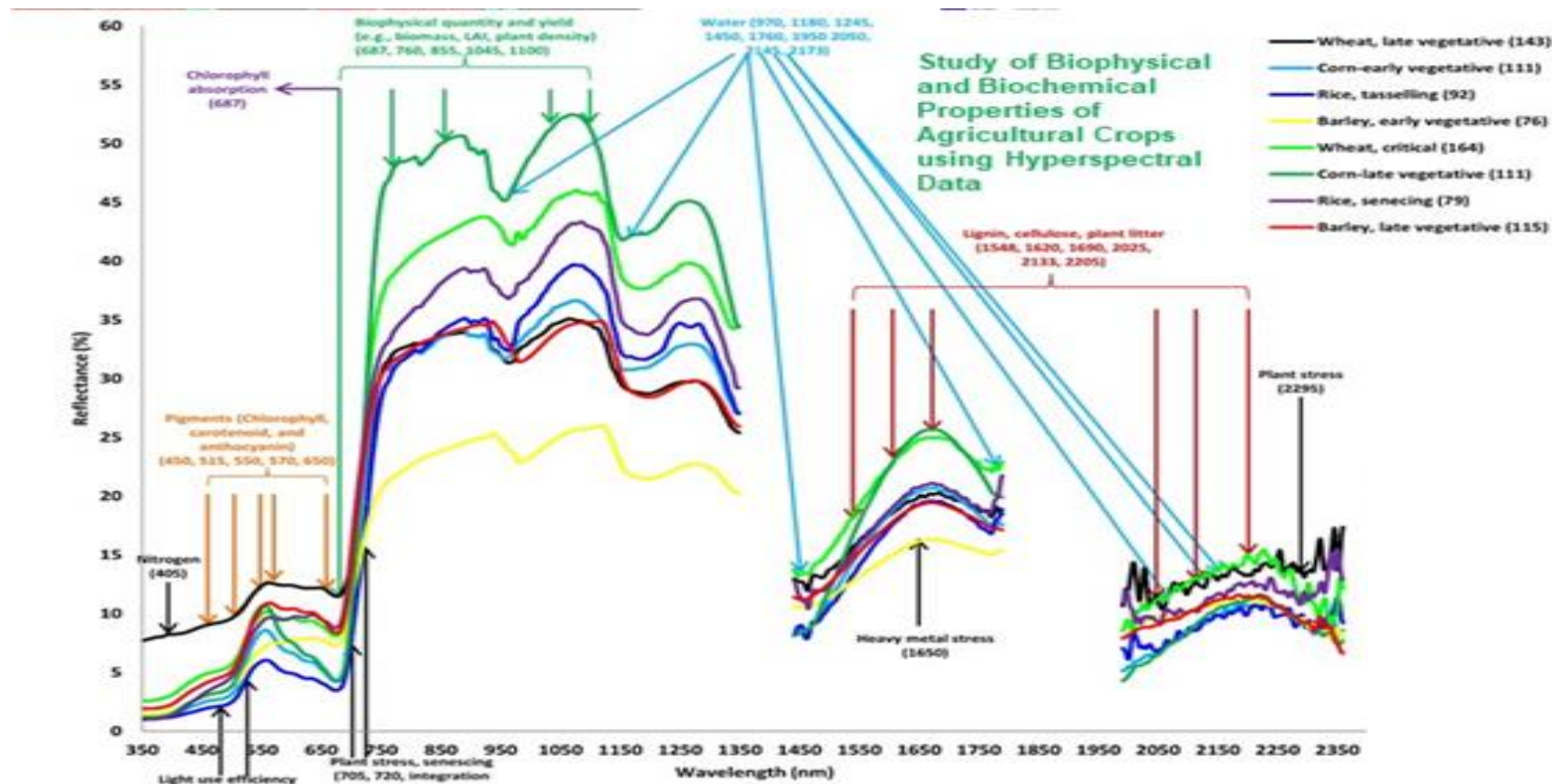


- Globally Earth observation industry is booming with inexpensive infrastructure costs and government spending. We propose to make these tools and data accessible to assist in their **capacity building**.
- We are embarking on a ambitious project to use Earth Observation data, **possibly Hyperspectral technology** to benefit the Indigenous people worldwide.
- Through this global program, we propose to serve the Indigenous communities from all seven regions through **scalable and affordable pilot projects**.

# What is the Initiative: Provide Innovative Solutions



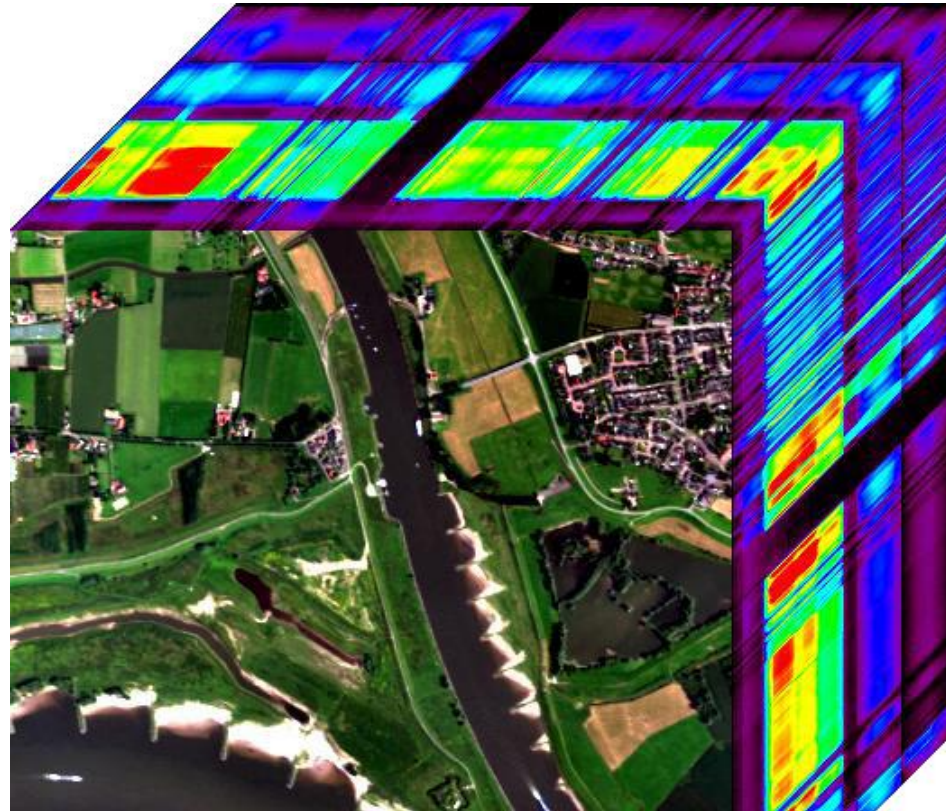
Hyperspectral Remote Sensing captures **unique “signatures”** of Earth Observation Phenomena



# What is the Initiative: Support Timely Decision-Making



Complex information needs to be acquired and processed in order to match the complexity of the questions being addressed by **daily, decision making**.





# What is the Initiative: Actionable Big Data & Information



High Spatial and Temporal Resolution, Hyperspectral Imaging coupled with High-Performance, Edge Computing provides an **early warning system** for low false positives and negatives.



Use this information to **drive decisions** about land conditions and manage them throughout the year.

# What is the Initiative: Commitments to Sustainability



Commitment 1: The initiative will enable space technology to guide the Indigenous people in identifying and managing **their land holdings** that are critical for sustainability.



Commitment 2: The initiative would create an inclusive prosperity for all the world by **empowering Indigenous people** with technology.

# Goals of the Initiative: Near Term



- **Demonstrate the usefulness of remote sensing data**, i.e. hyperspectral, for providing timely, actionable information for disaster management, water management and land management at a consumer level to the Indigenous community.
- **Hackathons: Example - GEOHack19**
- **Bridging Indigenous and scientific knowledge to address community challenges**

CANEUS had partnered with GEO to identify locally and culturally relevant challenges that can be solved or addressed using open Earth Observation (EO) data, including satellite imagery, remote sensing and in situ data.

- **Similar Hackathons** are being proposed in Canada and elsewhere during year 2020.



## Goals of the Initiative: Long Term



1. Apply actionable Hyperspectral Imaging Data and Information Products for all aspects of asserting **specific collective rights** of Indigenous Peoples for their survival as human groups.
2. Indigenous Peoples' rights to their **lands, territories and resources**, to maintain their cultures, to recognition of their distinct identities, to self-government and determination.
3. Develop an **ecosystem of products** including financial products and protection instruments such as insurance to protect Indigenous communities as part of sustainable resilience.

# Proposed Implementation: Pilot Projects



## Demonstration:

- To develop and execute initial Pilot Projects **in collaboration** with local Indigenous Stakeholders.
- The key objective is **to demonstrate the utility** of High Spatial and Temporal Resolution, Imaging data and information products for supporting daily complex, resource management decisions.

## Expansion:

- The Pilot Projects will be **expanded to multiple sustainable business verticals** as well as to other global Indigenous Peoples' Regions.

# Proposed Implementation: Pilot Project in Canada



To demonstrate in Saskatchewan, Quebec and Alberta to Indigenous communities the benefits of Earth Observation data in the following areas:

## Capacity Building to Consumers - Indigenous people:

- **Monitoring land, agriculture**, its conditions and management.
- Timely and precise information delivery.

## Business and Ecosystem offering:

- **Inclusive finance** and protection community.

## Commercial Products:

- Land management products driven by EO data.
- **Insurance** products.

| Topic                                    | Summary of Past Needs Assessment Findings   |
|--|---|
| Geomatics Capacity                       | Most communities did not maintain internal geomatics capacity because of difficulties putting in place long term committed funding, training and retaining staff. The report found a heavy reliance on outside expertise.   |
| Use of Web-Based Mapping                 | Internet technologies such as WMS and WFS were not being used, nor did communities report any need or desire to use these. This was thought to be a result of lack of access to reliable high-speed Internet and limited fluency with computer-based applications.  |
| Locating and Downloading Geospatial Data | Only about half of participants had working knowledge of data discovery portals. Those who did found it difficult to locate and download the data they needed.  |
| Access to Data                           | Communities reported that up-to-date information from government and industry on resource development was difficult to obtain on a routine basis.   |
| Data Confidentiality and Protocols       | Communities were hesitant to release data in absence of information sharing agreements, consultation protocol agreements, and agreements on intellectual property rights.   |
| Cultural Data Inventories                | All communities relied heavily on cultural data to inform land use decision-making. Participants indicated the cost of collecting and maintaining the data was high. The report noted wide discrepancies in approaches in methodologies used for the research resulted in studies having differing value for resource management. |
| Satellite Imagery                        | Satellite imagery was desired by a number of participants to depict and understand changes in land cover, but was not widely used because of cost and because most groups did not have the technical capacity to analyze raw imagery to identify changes.   |

Recent report by Natural Resources Canada highlighting opportunity for the use of geospatial data for Indigenous community.



# Proposed Implementation: Pilot Projects Worldwide



## Phase II - Expansion - Developing EO market for Indigenous Peoples

- Expand the programs to **regions of Latin America, Africa and Asian communities**



# Opportunities for Collaboration with COPUOS Members



1

Participate and/or Initiate **Pilot Projects** in collaboration with the local Indigenous Communities

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2

Partner to organize **Hackathons** at local, regional and global level that will support Indigenous community needs.

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3

Contribute to the **Capacity development** efforts through services and infrastructure development

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