

Biodiversity in CEOS

Committee on Earth Observation Satellites

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Joe Parks from Wikimedia

What is CEOS?

- ❑ Formed in 1984
 - Coordinate civil space agency activities
 - Close observation gaps
 - Increase societal benefit from space-based EO
- ❑ More than 60 members
- ❑ Funding
 - No separate funding for CEOS
 - In kind support from member agencies

Focus Areas

- ❑ Currently: 13 core areas, e.g.: climate, disasters, capacity building...
- ❑ What about biodiversity?

- ❑ 2022-2024: Ecosystem Extent Task Team
 - Vehicle to initiate discussions, demonstrate relevance
 - Demonstrator
 - White paper
- ❑ EETT led to next phase
 - 2024-2025: Biodiversity Study Team

EETT Demonstrators

- ❑ All three
 - Showed value of EO for ecosystem extent mapping
 - Combined data from different sensors
 - Designed around Data Cubes
- ❑ Hudson Bay Lowlands--Wapusk National Park (Canada)
 - Vast wetland
 - Part of ongoing work by Environment Climate Change Canada
- ❑ Great Western Woodlands
 - Biodiversity hotspot in Western Australia
 - Funded by CSIRO
- ❑ Tropical Forests in Costa Rica
 - Characterize forest ecosystems using EO
 - Funded by CNES

White Paper

- ❑ Available [here](#)
- ❑ 38 pages
- ❑ Assesses EO support for ecosystem mapping and monitoring
- ❑ Key outcomes
 - Challenges
 - Recommendations

Challenges

- ❑ Ecosystem discrimination relies on knowing ecosystem characteristics
- ❑ Combining data from different types of sensors, e.g., SAR, optical
- ❑ Ecosystem condition
- ❑ Effective use of time series
- ❑ Limited availability of value-added products, e.g., EBVs
- ❑ Reference data for training and validation
- ❑ Data accessibility, usability and technical capacity of users

EETT White Paper Recommendations

□ Eight recommendations

- User engagement (3)
- Technical advances (4)
- Capacity (1)

Thematic Recommendation Area	Specific Recommendations
<p>1. User Engagement</p> <p>Increase biodiversity community engagement with EO and CEOS through workshop(s) and other activities to improve ecosystem extent mapping.</p> <p>Key organizations:</p> <ul style="list-style-type: none"> • Convention on Biological Diversity • UN System of Environmental Economic Accounting • GEO Global Ecosystems Atlas initiative • Ramsar Convention on Wetlands 	<p>1a. Identify specific user requirements and priorities for EO and related value-added products for ecosystem extent.</p> <p>1b. Establish a sustainable communication channel between CEOS and user communities for continued interaction.</p> <p>1c. Improve CEOS understanding of technological, socio-political, and cultural constraints for the biodiversity community to use EO data.</p>
<p>2. Technical advances</p> <p>Support development of technical advances to improve utilization of EO for ecosystem mapping.</p>	<p>2a. For each ecosystem class in IUCN's Global Ecosystems Typology (GET) and Ramsar's classification scheme, identify the key EO data sources and mapping approaches needed for its delineation.</p> <p>2b. Facilitate combining data from different types of sensors to take advantage of their complementarity.</p> <p>2c. Facilitate time series analysis and its application to ecosystem extent mapping.</p> <p>2d. Explore ways to utilize EO to characterize ecosystem condition and its relationship to ecosystem extent.</p>
<p>3. Capacity</p> <p>Work to increase capacity of biodiversity users to utilize EO for ecosystem mapping and monitoring.</p>	<p>3. Identify opportunities for capacity development resources, e.g., a training or a Massive Open Online Course (MOOC) focused on the use of EO for ecosystem mapping and monitoring.</p>

2025: Biodiversity Study Team

- ❑ Next phase for CEOS biodiversity
- ❑ Task: Assess options for sustainable support for biodiversity within CEOS

- ❑ Three major steps
 - 1) Assess needs of the biodiversity conservation community
 - 2) Consult across CEOS entities and agencies
 - 3) Develop a recommended approach and implementation plan (2025)

Recommendations for Space Agencies

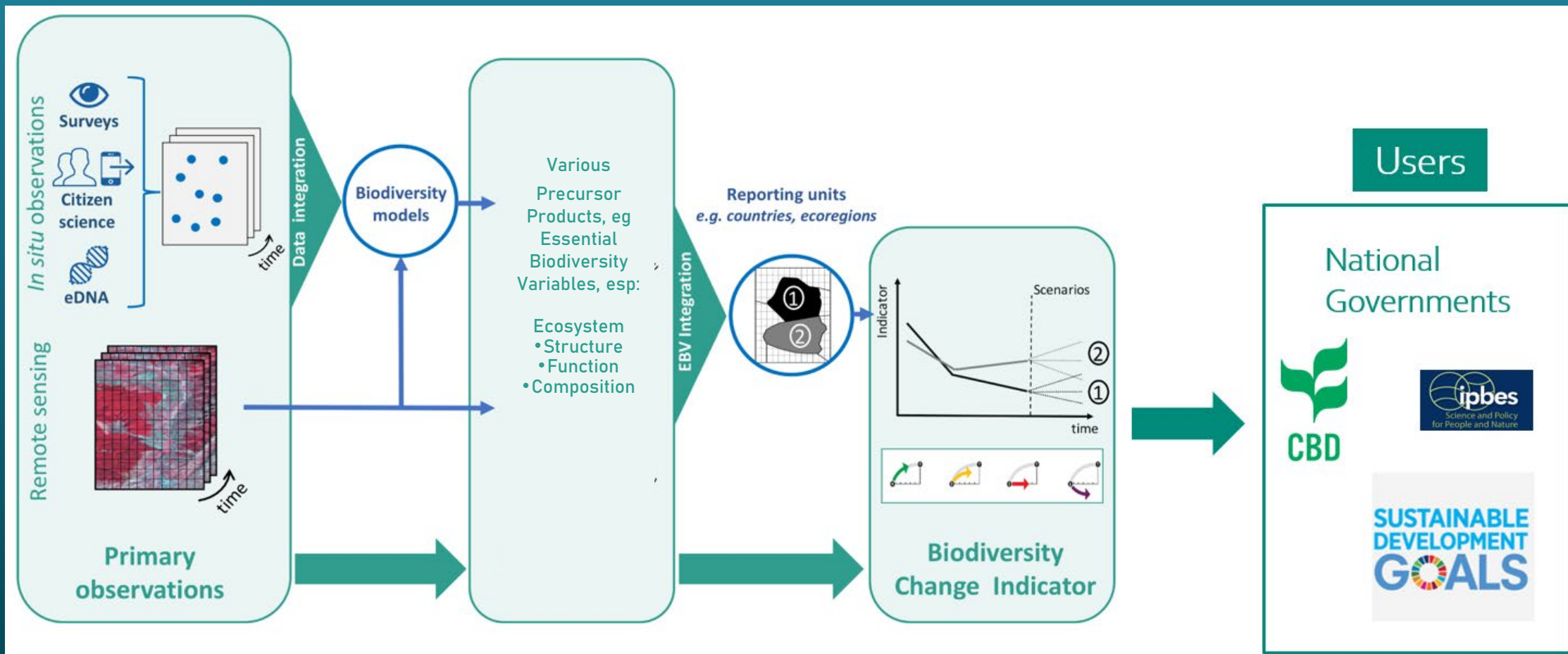
- ❑ Refer to the [EETT White Paper](#)
 - Recommendations
 - Challenges

- ❑ One more: *Actively pursue more partnerships*
 - Tap further into complementary capabilities of partners
 - Ex: generate indicator products

Thank You



Backup: Product Workflow



Based on Navarro et al. 2017