



Bringing to life a global biodiversity observing system

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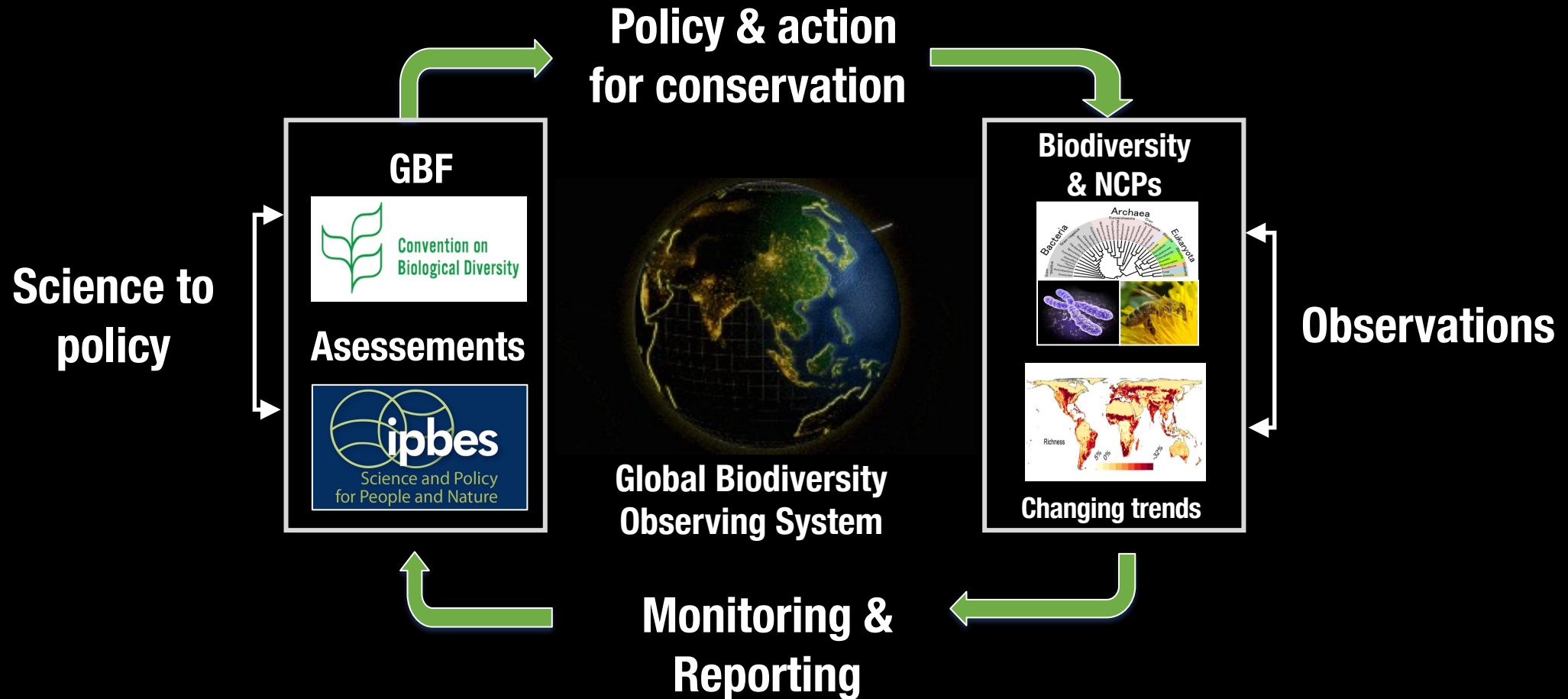
Co-chairs GEO BON

AP BON webinar
April 12th, 2023

<https://geobon.org/>



A missing piece: A Global Biodiversity Observing System

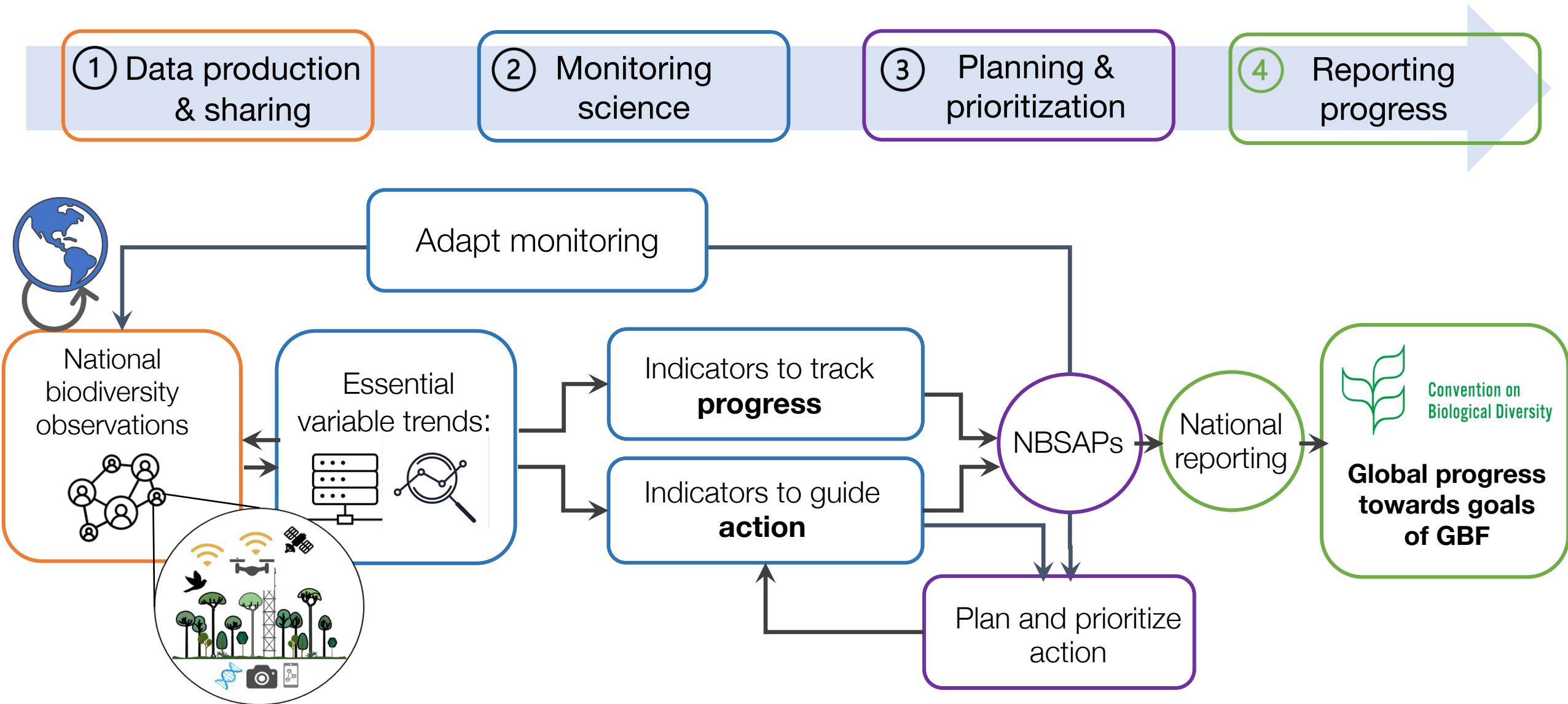


Summary

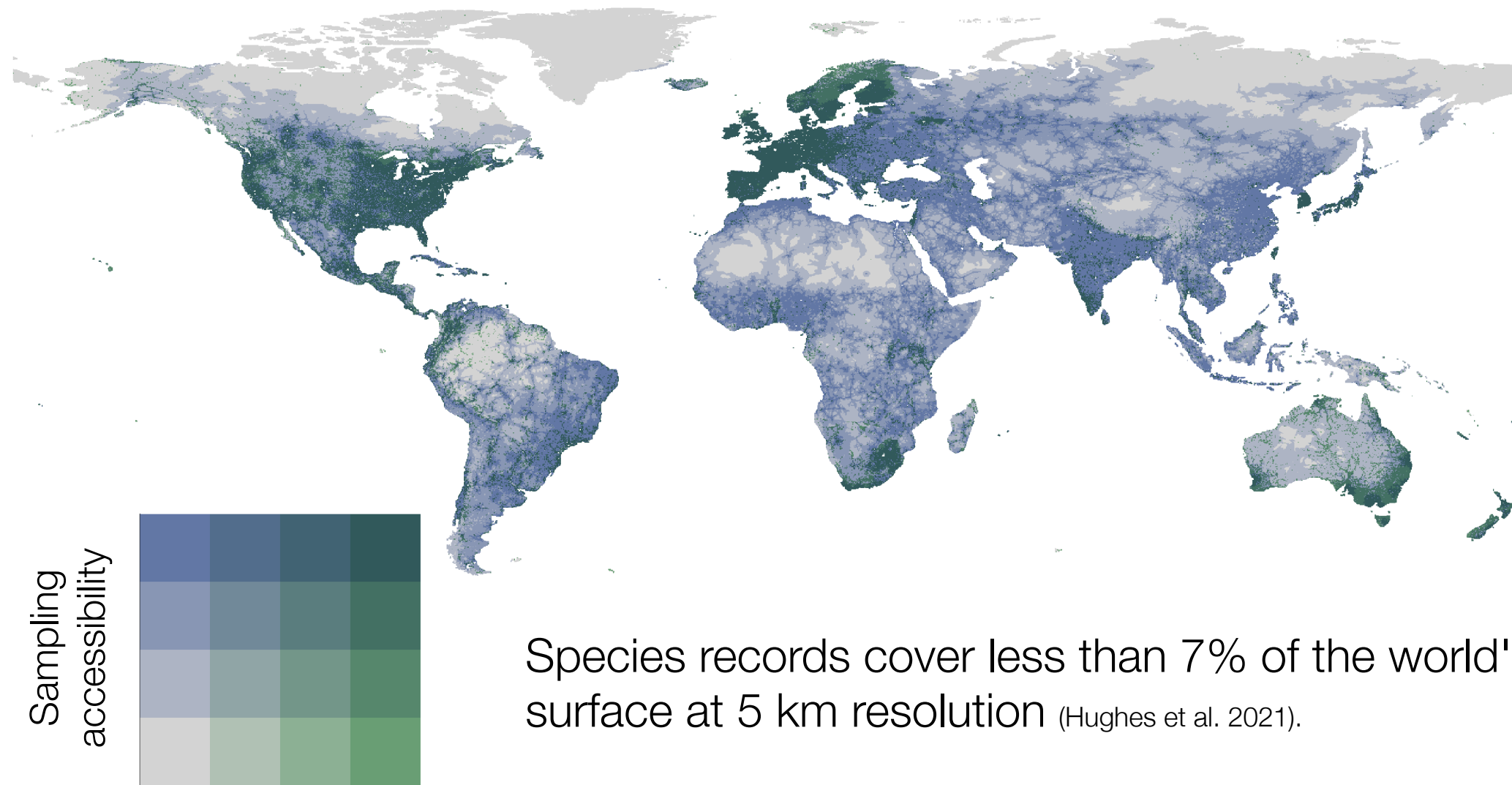


- We have an opportunity to establish a global biodiversity observing system (GBIOS) that will monitor biodiversity trends and events and use this knowledge to guide action for the GBF goals and targets.
- This system can be assembled as a network of existing and planned national and regional biodiversity monitoring systems and communities.
- GBIOS could be coordinated through national and regional hubs networking observation technologies, research capacity, with data integration, modeling and forecasting services.

Linking monitoring to indicators, reporting and action



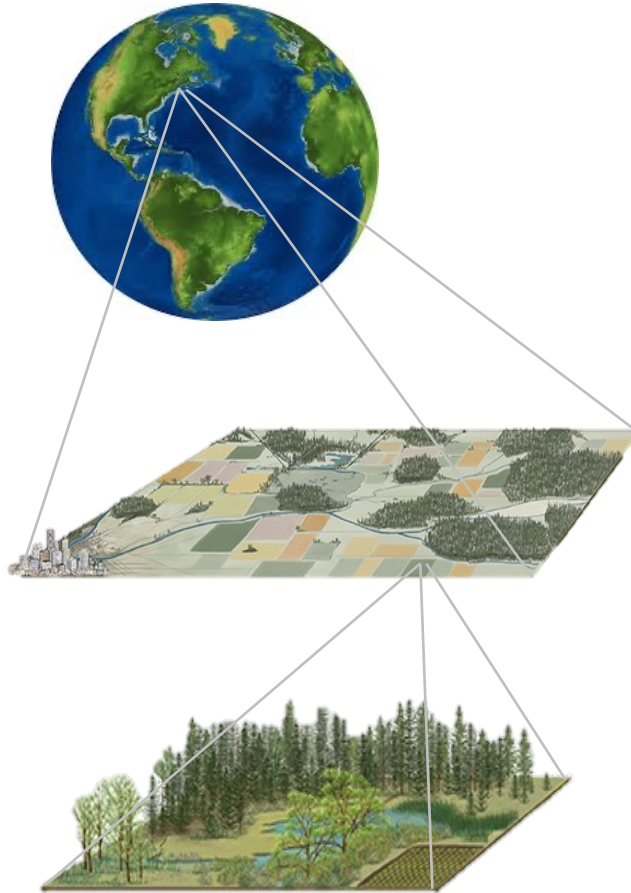
Building GBiOS from what we know



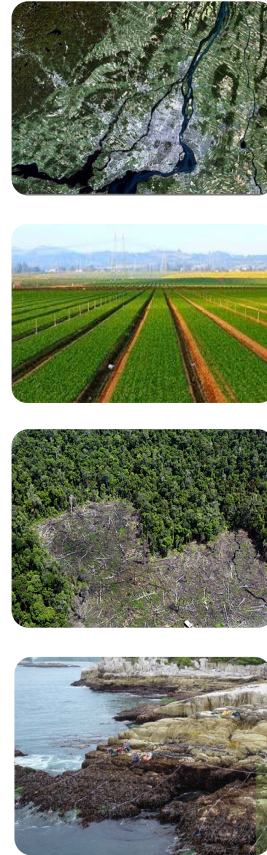
Species records cover less than 7% of the world's surface at 5 km resolution (Hughes et al. 2021).

Biodiversity change: monitoring drivers acting across scales

Scales



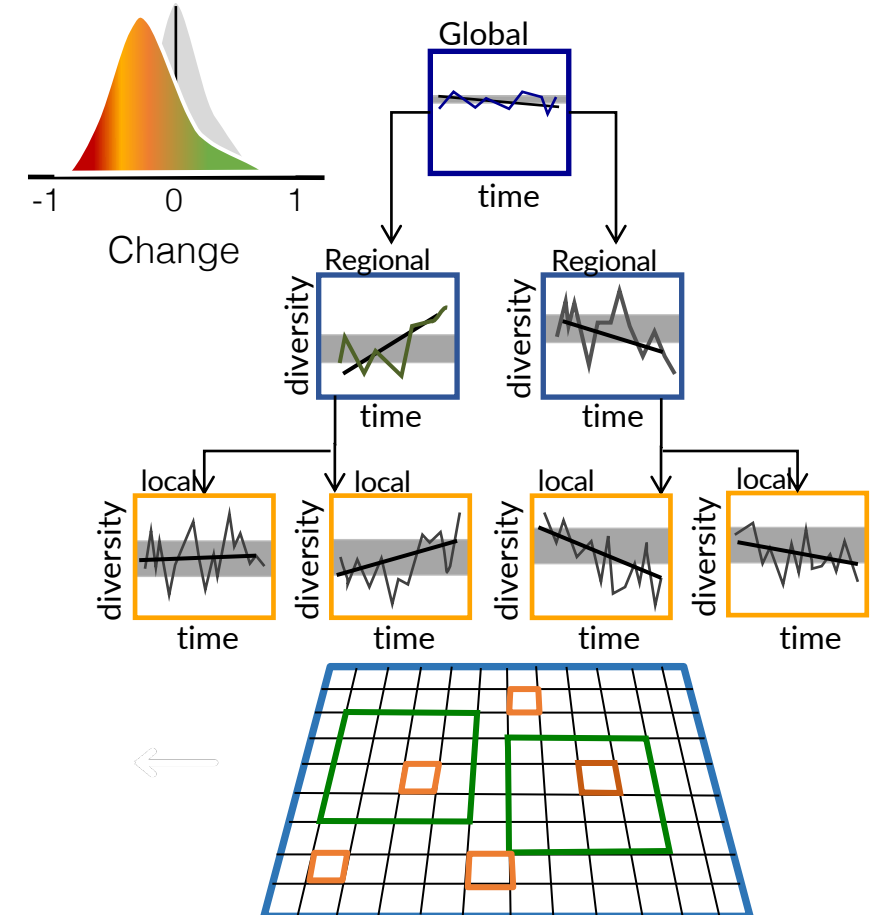
Drivers



EBVs

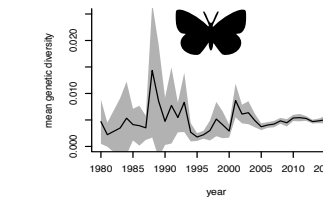
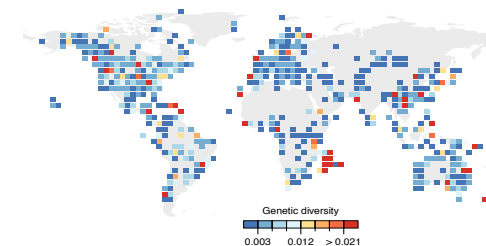
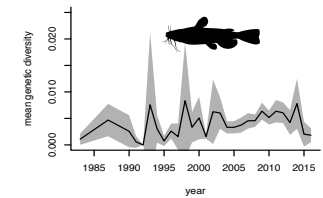
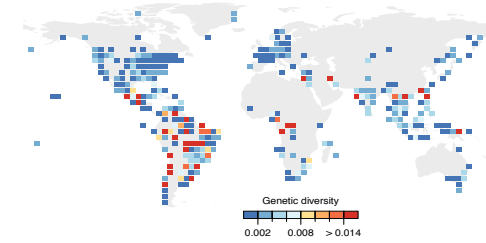
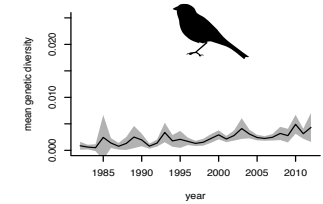
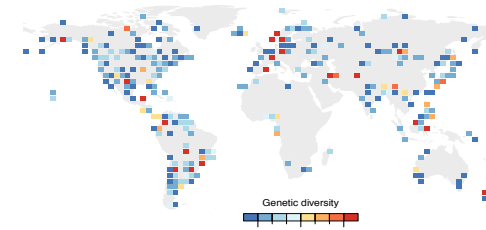
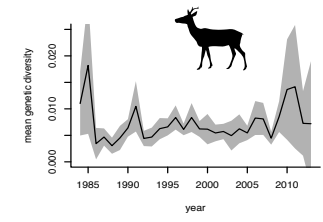
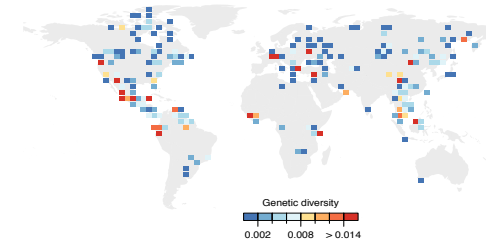
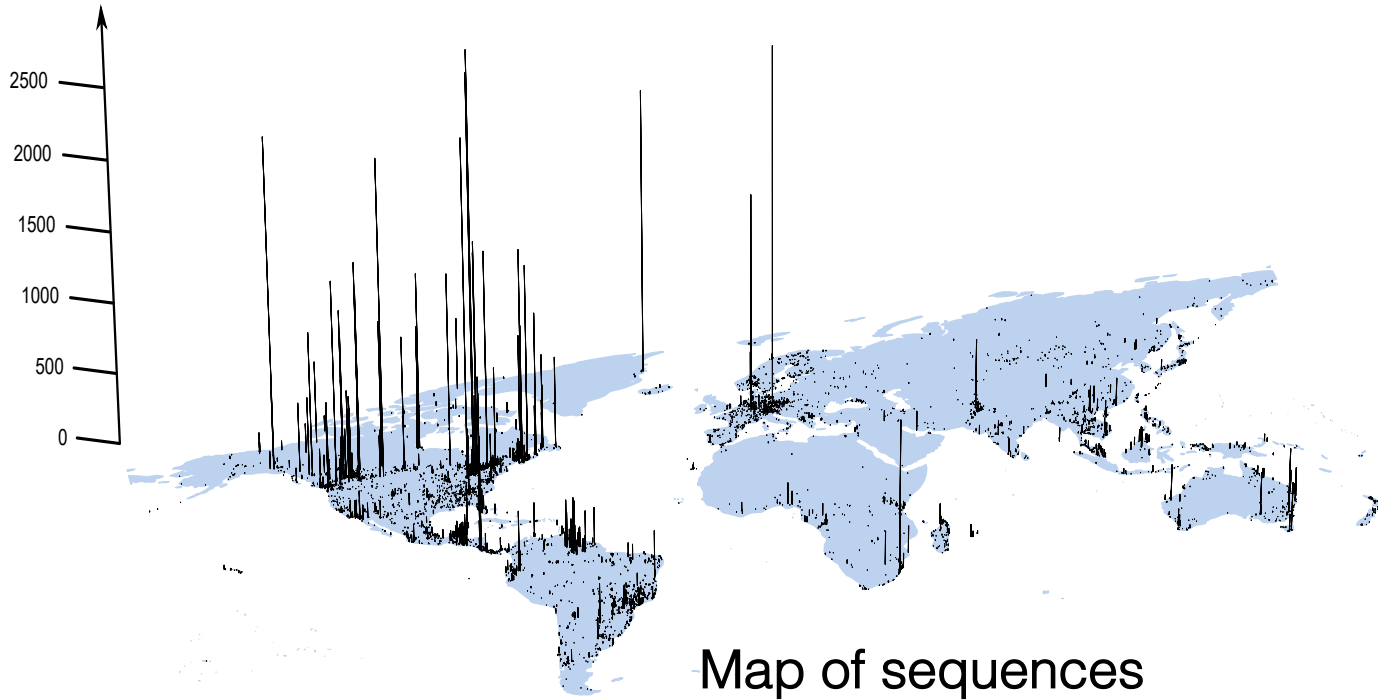


Trends and extremes



Global patterns of genetic diversity **change**

146,092 COI sequences for 17,082 species



Millette, Fugere, Debyser, Garnier, Chain, Gonzalez. (2019) *Ecology Letters* 23: 55-67

Assembling National, Regional and Thematic BONs

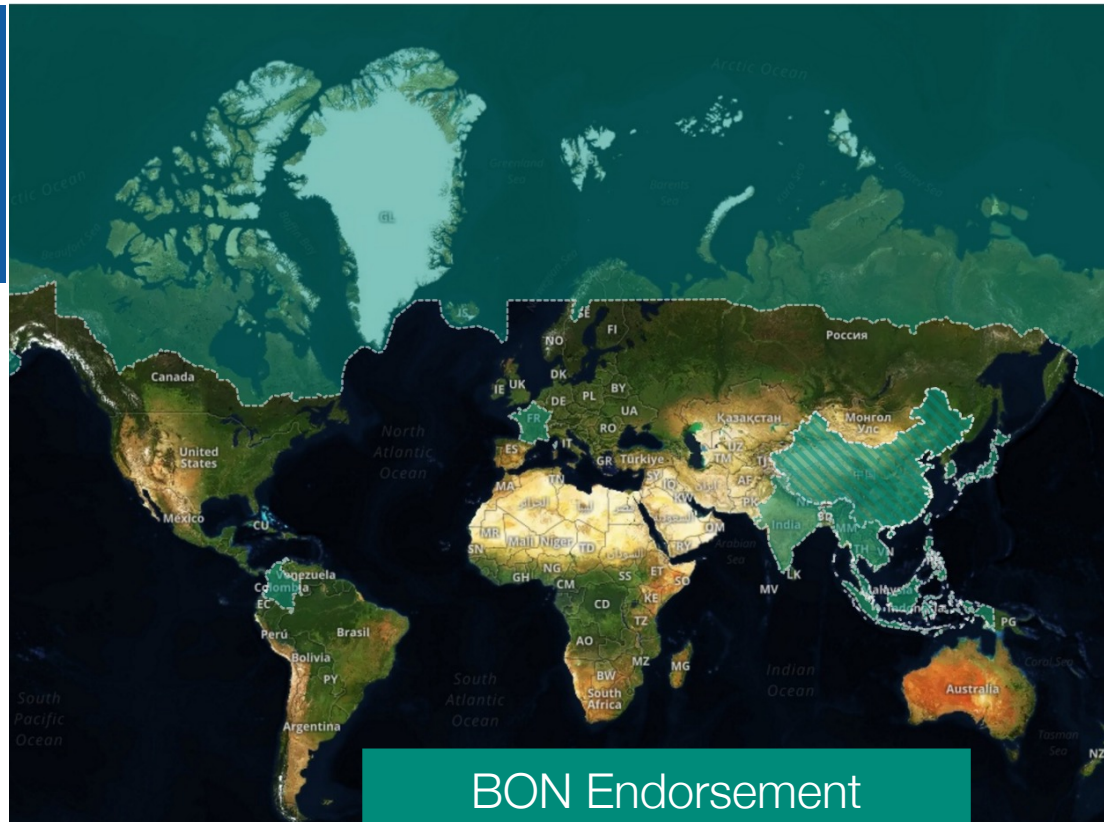
A significant starting point for the GBiOS network: National, regional, and thematic networks endorsed by GEO BON covering aquatic and terrestrial systems.

A global network:
~2500 registered members, 137 countries,
1304 institutions



<https://geobon.org>

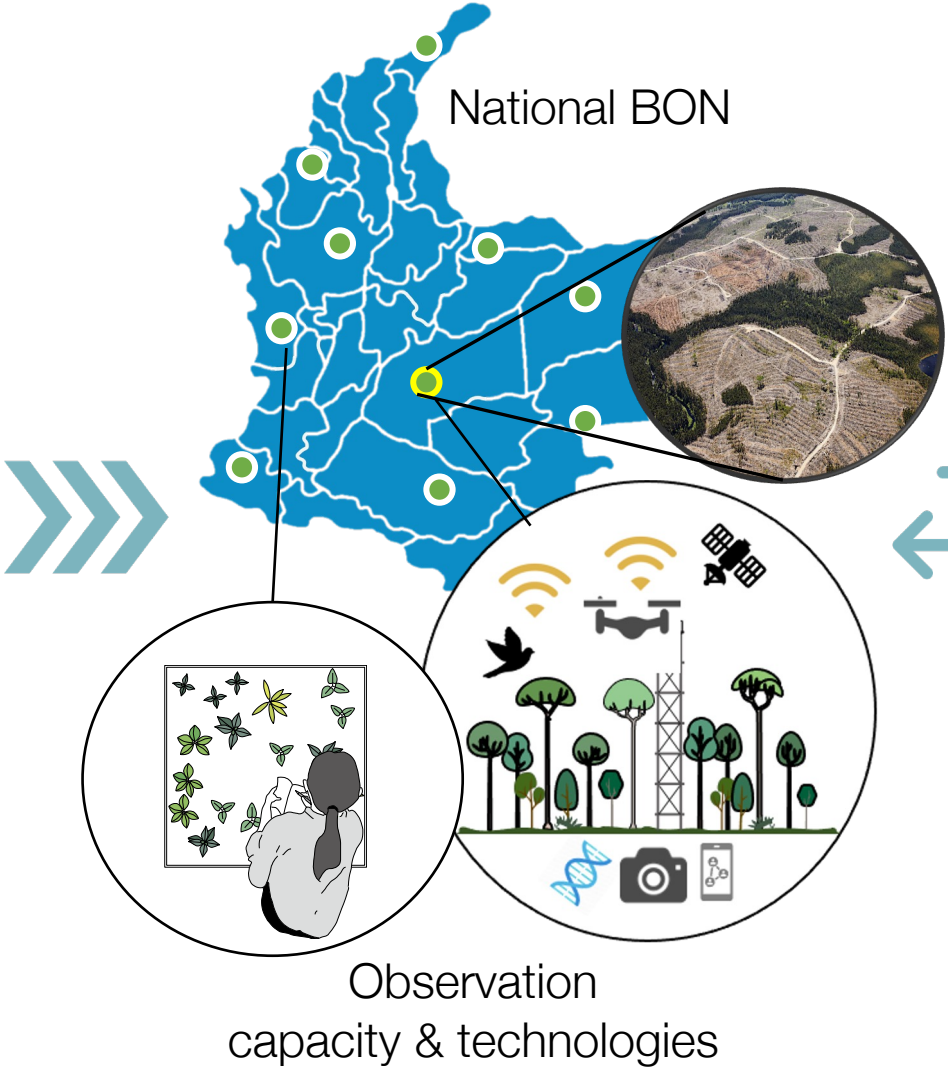
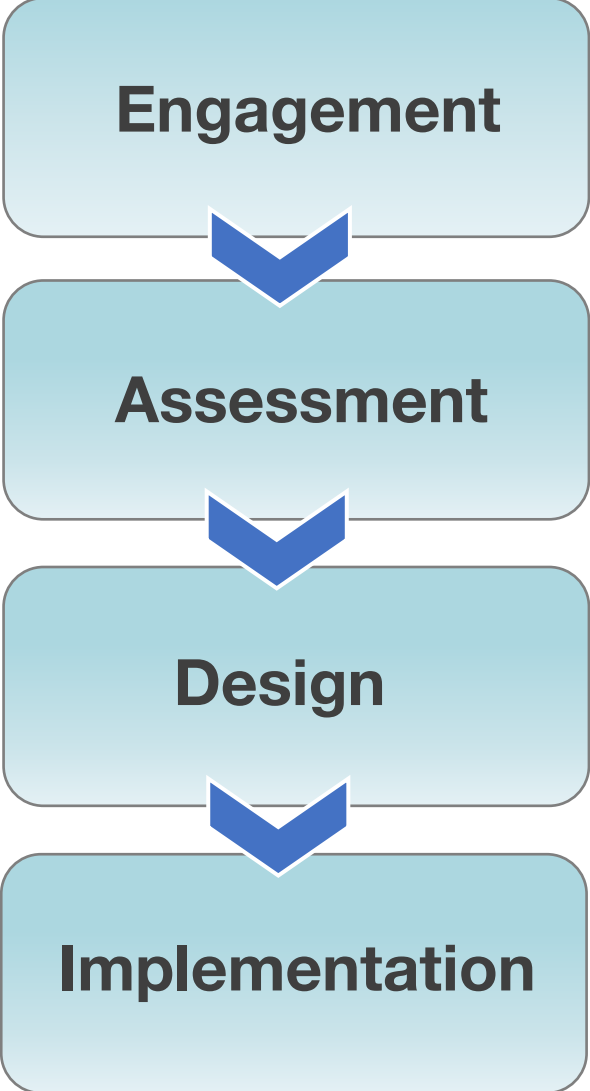
(<https://geobon.org/bons/bon-development/>)



GBiOS – the spectrum of options for implementation and governance



Building a Biodiversity Observation Network



Global Biodiversity Observing System



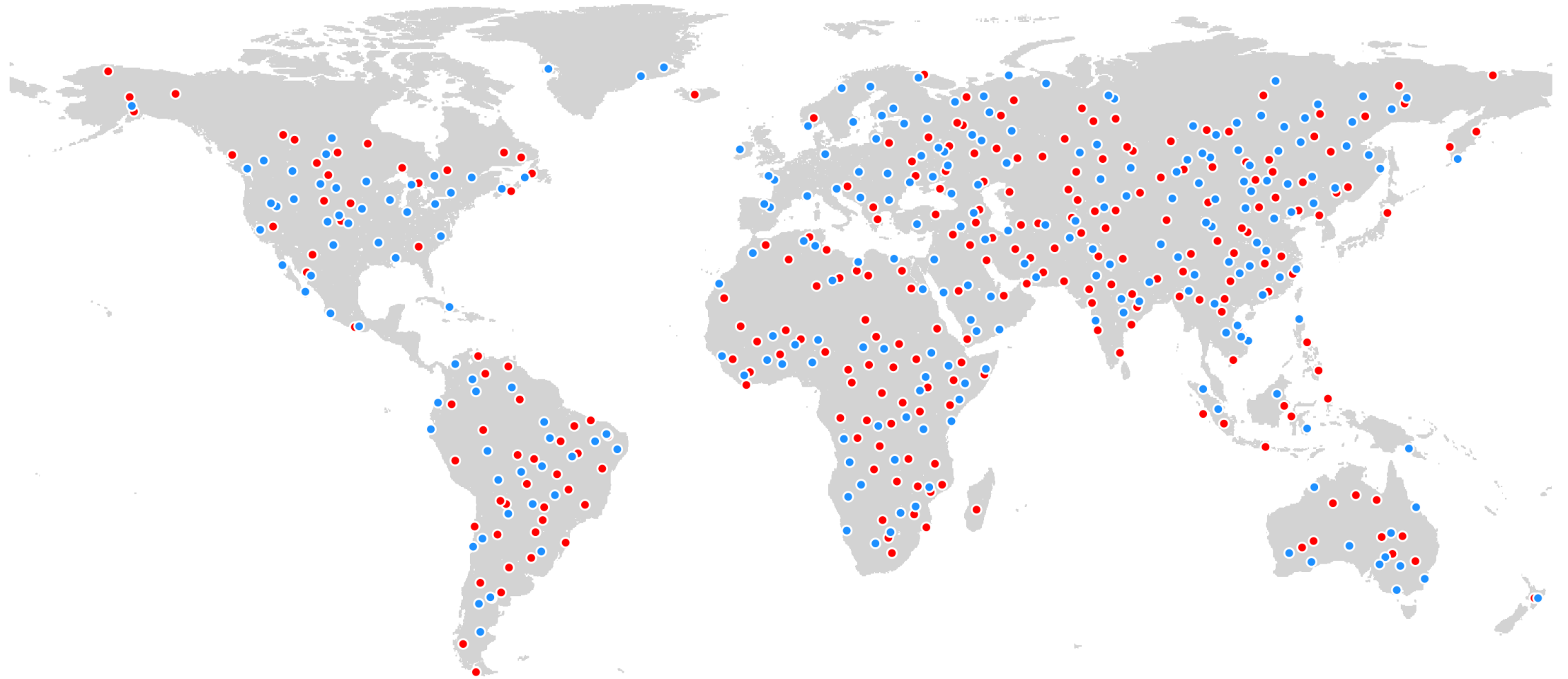
Network of BONs

A GBiOS will address four critical issues

- 1 Systematic biodiversity monitoring designed to fill gaps and assess outcomes of action
- 2 Federate the monitoring community
- 3 Network scaling: capacity and technologies transform translation of knowledge up and down social and ecological scales
- 4 Detection & attribution: Supporting fit-for-purpose data for global and regional biodiversity models and assessments



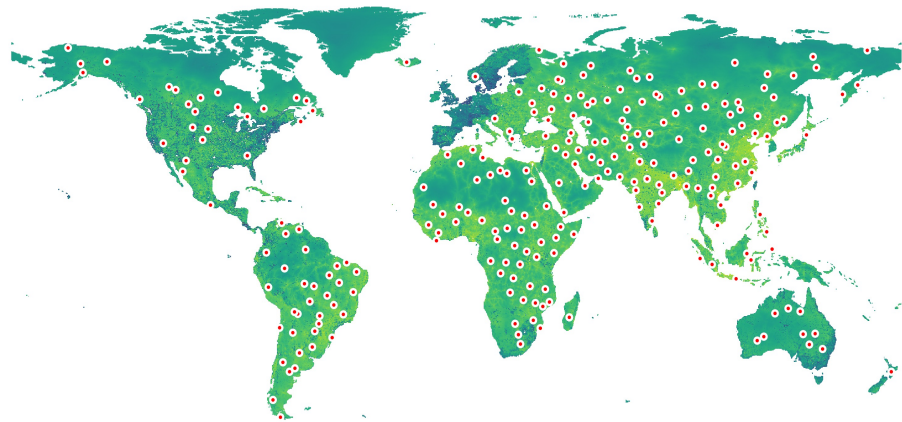
A global backbone of GBiOS sites to fill global gaps



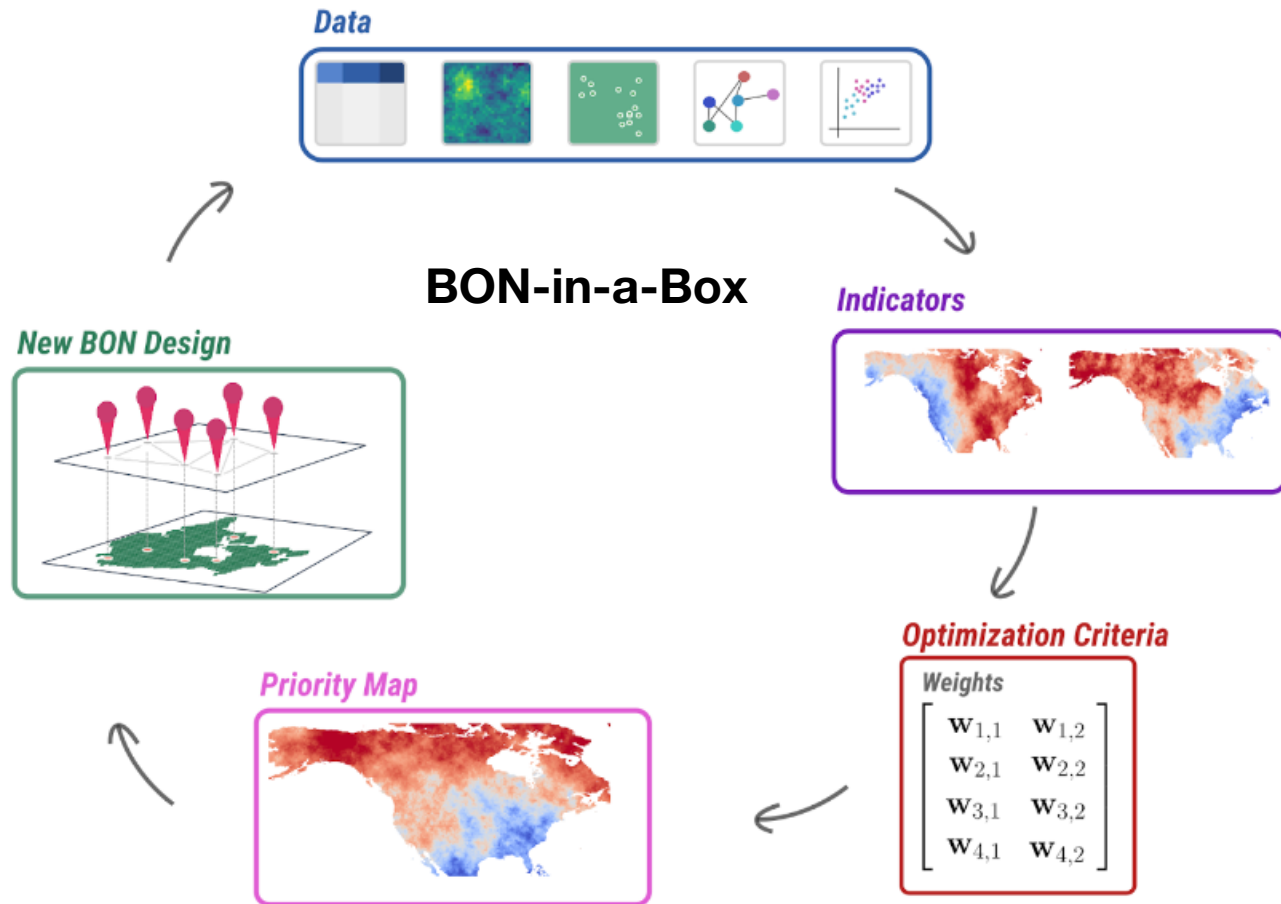
A network of 500 sites for assessing current state and expected change (M. Catchen, GEO BON)



Optimize sampling to fill data gaps



GBIOS sites guided by data and reduction in uncertainty in indicators of change





A GBiOS Prototype

Conduct a first BON driven biodiversity *change* assessment

- **Network:** Demonstrate how sets of BONs can form operational interlinked network-of-networks.
- **Assessment:** Interlink data repositories, research centres (models and analyses), and national government, space/EO agencies, NGO, and indigenous communities as partners in each region.
- **Collaboration:** with GEO BON partners to allow the development and update of global protocols for in situ data collection, remote sensing and trend evaluation.

GBiOS – a few next steps

Assessment of value and scope:

An assessment of needs 1) technologies, data infrastructure, governance, partnerships 2) the components of GBiOS that already exist and could link up to form the first phase of the GBiOS implementation.

Co-sponsorship and governance:

One option could be for GBiOS to follow the solution taken by the Global Climate Observation System that is co-sponsored by several intergovernmental organizations (WMO, ISC, UN Env.).

Funding:

Assess costs and benefits (return on investment) arising from an initial investment in GBiOS. A Systematic Observations Financing Facility (SOFF) could be established to fund GBiOS.



Thank you

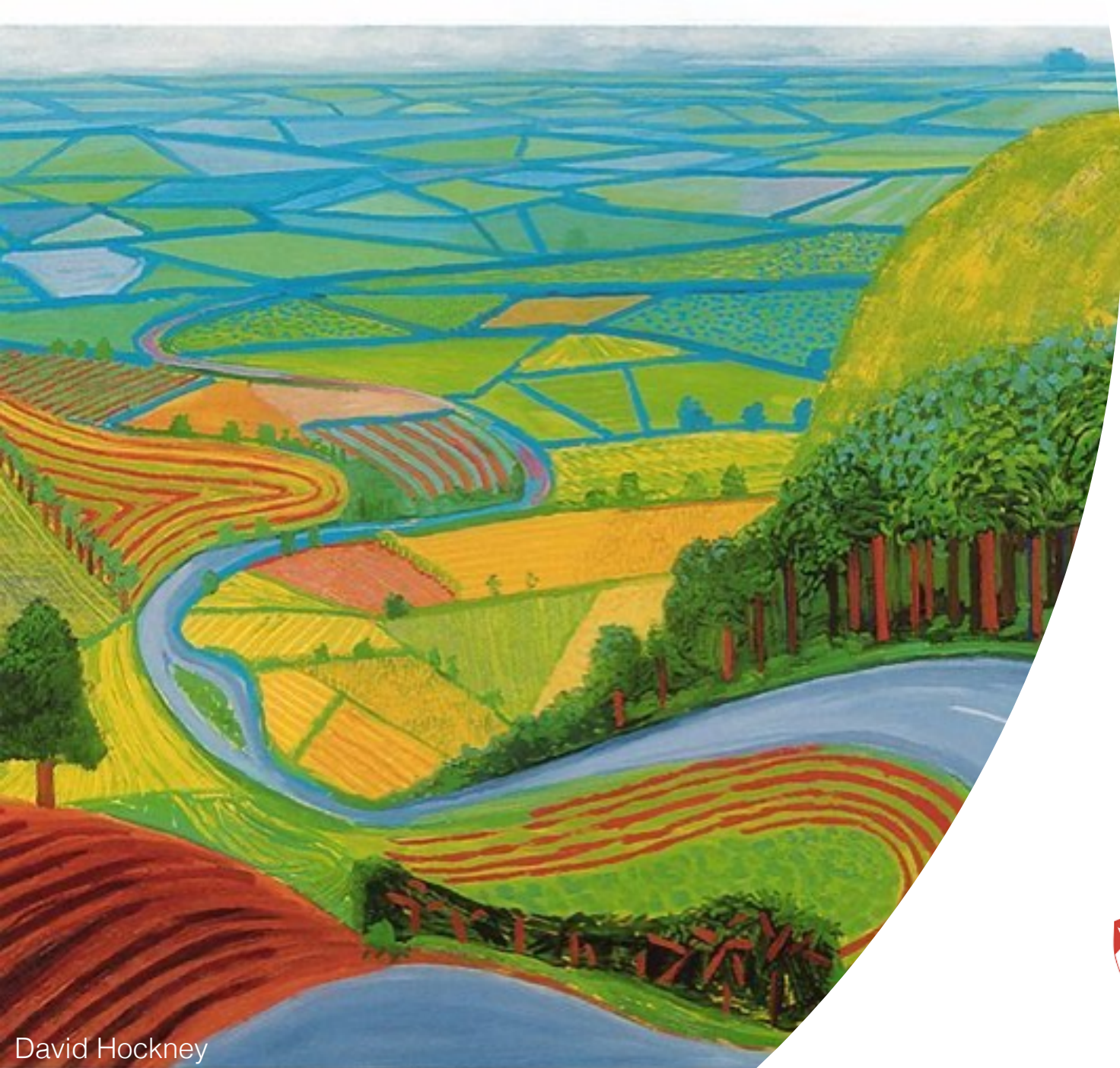
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Thank you



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David Hockney