BioSpace25 - Biodiversity insight from Space
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Marine biodiversity metrics from space: state of the art, gaps and priorities for advancing biodiversity science and achieving conservation objectives

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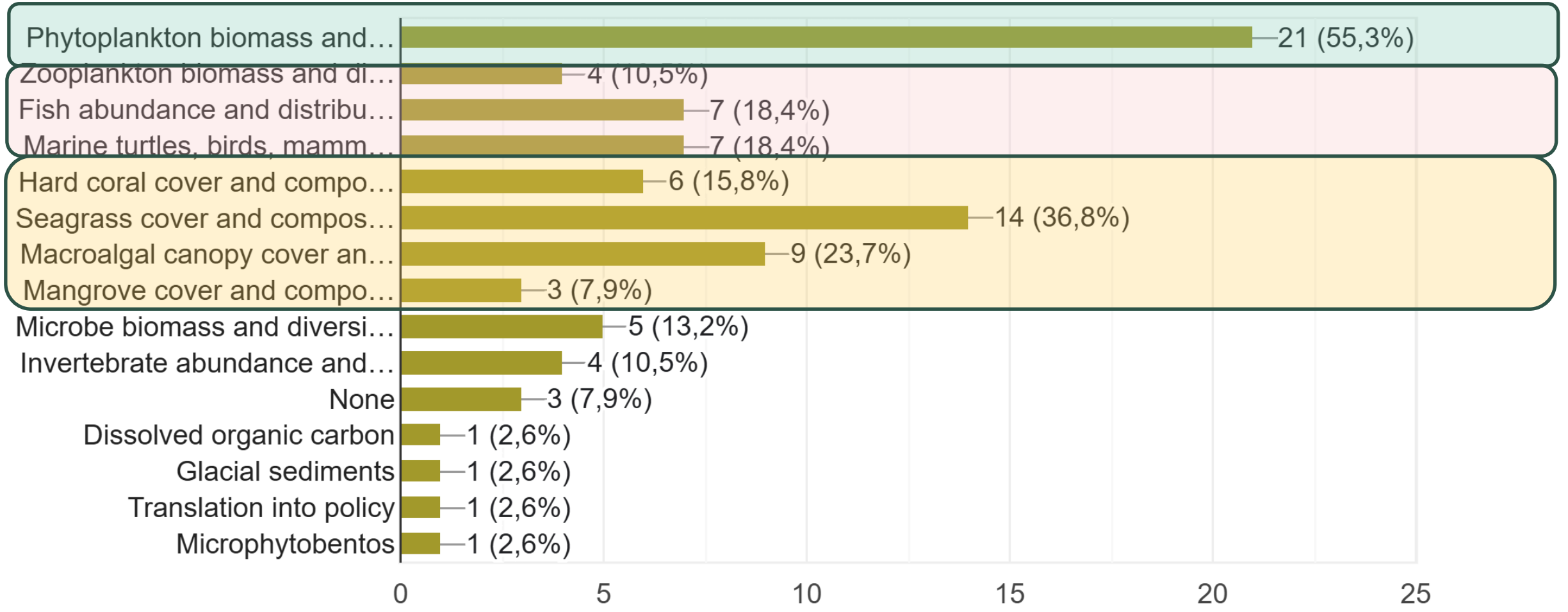
- Status – *What remote sensing products match EBV?*
- Trends in satellite technology
- Trends in algorithms/products/EBV
- Missing/Needs (data/coordination) to be addressed/Research to be done – *What are the challenges?*

Q2.1 Which Essential Ocean Variable / Essential Biodiversity variable can you contribute to?Based on currently accepted GOOS terminology (source: ...what-we-do/framework/essential-ocean-variables/)

38 risposte



TECHNOLOGY/SCIENCE TRENDS and NEEDS

1. In situ data: need more data
    - Is citizen science the answer?
        - Many levels of citizen science (regular vs trained vs opportunity)
        - Challenges on quality
    - Data ACCESS (raw!) FAIR
2. Models and AI
    - Models to help train AI
    - Validation/testing concepts harmonisations
    -
3. eDNA and DNA metabarcoding
    - Emerging work with satellite derived products but needs harmonisation of in-situ data (DNA community needs to do that!)

Science and technology needs

Characteristics of your ideal next sensor or combination of sensors

- Free (VHR) images
- Satellite that can detect deeper under the water
- What are the infrastructure to keep the data? Are we having the capability to work and storing and keeping data? → super computer to store, keep, and use data
- 5m 15 bands high signal to noise ratio
- Observing phenomena at night – moonlight sensor
- High resolution thermal – 50 cm resolution
- Data storage: What are the infrastructure to keep the data? Are we having the capability to work and storing and keeping data? → super computer to store, keep, and use data
- Merge different satellite technologies :Lidar, SAR, PACE, Sentinel, Fluorescence
- Other combinations of sensors: hierarchical resolutions merging in different sensors resolutions in more structured way, and calibrating with different spatial and temporal resolutions.
- System of systems with near real-time to a particular issue in a specific moment: we have gliders, satellites, and data transmitted to a marine center to do something about it: example: Alert systems for whales – sponsored by Canadian Space Agency; CSA does not run it.

POLICY NEEDS

- What needs to be monitored? Mapping the stakeholders and what data they need. (EBV to CBD indicators part)
    - Policies and indicators evolve through time. Should we (scientists) have more to say what indicators to measure?
        - Build a dialogue between the remote sensing community and MSP or data managers or data scientists

- Who is going to do the flow from products to indicators? Intermediary scientist? scientists about legislation?

- Condense the key information derived from satellites for decision-making. Uncertainty from remote sensing products is different from uncertainty in decision-making processes.

RECOMMENDATIONS TO ESA

- Technological recommendations
  - High spatial resolution (either through new sensors or data processing)
  - Multisensors combinations need to be exploited better
  - Better interface with in situ observations
- Community recommendations
  - More funding for marine ecosystem biodiversity
  - Support translating of Remote sensing Biodiversity relevant products TO EBV (e.g. Areal extent of a habitat → EBV habitat structure)
  - Support translating EBV into Indicators for policy (e.g. phytoplankton functional classes trends or changes in phenology)
  - Reminder that >70% of the planet is oceanDo a BIOSPACE on Marine and coastal ecosystems !!

Many thanks to all participants