BioSpace25 - Biodiversity insight from Space
10 - 14 February 2025 | ESA-ESRIN | Frascati - Italy

COASTAL SESSION

STATE-OF-THE ART

50/50 Female/Male distribution

- SUBTIDAL (2 PRESENTATION)
  - SEAGRASS
  - CORAL REEFS
  - MACROALGAE (SEAWEED) - KELP
- INTERTIDAL (4)
  - SEAGRASS
  - MICROPHYTOBENTHOS
- MANGROVES (2)

Hyperspectral and VHR/HR main techniques

- SUBTIDAL
  - ECOSYSTEM STRUCTURE CLASS - EXTENT & CONDITION
  - Trends
- INTERTIDAL
  - ECOSYSTEM STRUCTURE CLASS - EXTENT
  - ECOSYSTEM FUNCTIONING CLASS - PRIMARY PRODUCTION
  - SERVICES: BLUE CARBON
  - IMPACTS FROM HEATWAVES
- MANGROVES
  - ECOSYSTEM STRUCTURE CLASS - EXTENT
  - SERVICES: BLUE CARBON

MESSAGES FROM SPEAKERS

- SCIENCE DEVELOPMENT
  - Higher spatial resolution ALWAYS helped refine extent & “condition” (e.g. sub-tidal mapping with VHR – 1m scale and kelp mapping with drones, Mangroves not all the same) - >> need to understand loss of information from VHR to HR (uncertainties)
  - Global scaling up is possible but challenging computationally and due to lack of in situ data (intertidal ICE-CREAMS)
  - VALIDATION, VALIDATION, VALIDATION WITH IN-SITU - >> need to harmonize in situ methods
  - Possible to derive proxies of function from spectral measurements (impact from marine/air heatwaves, NPP)
  - Intercomparisons (benchmarking) needed for methods on development, protocols for data aggregations (intertidal)
  - Combination of sensors – P-Band BIOMASS mission in the tropics – mangroves
  - Need to improve Carbon models and uncertainties.
- APPLICATIONS/CROSS CUTTING ACTIONS
  - Develop indicators and platforms for access to managers/policy, Indigenous and local stakeholders
  - Support to communities of practice to share knowledge / harmonise methods

RECOMMENDATIONS TO ESA

R1- Address “The big absents” from the session:

- Condition – leaf length of seagrass (we can do cover rates, however!), kelp..
- Coastal phytoplankton.. Can it be improved with hyperspectral?
- Large organisms – links with Species distributions models communities
- Connectivity among ecosystems and among EBV

R2- Progress towards VHR, it has potential but

- basic development (upstream methods) needed: VHR+hyperspectral, VHR+HR (co-registration..)
- In situ Datasets needed : Harmonised , open access (and more observations !)

R3 – MULTI SENSOR

R4 - Beyond science

- Connection with Management: produce indicators with easier access for users