

BIOMONDO



Towards Earth Observation supported monitoring of freshwater biodiversity

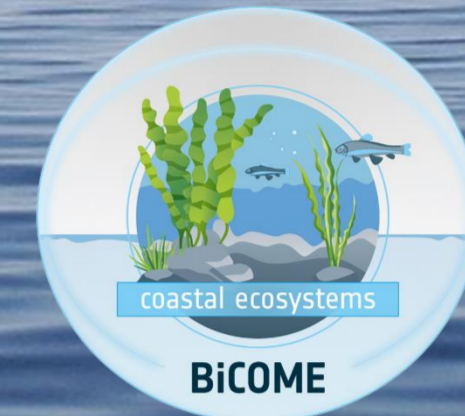
The European Space Agency (ESA) activity called Biodiversity+ Precursors is a contribution to the joint EC-ESA Earth System Science Initiative launched in February 2020 to jointly advance Earth System Science and its response to the global challenges that society is facing at the onset of this century. BIOMONDO is the ESA Biodiversity+ Precursor project focused on freshwaters and biodiversity in lakes and rivers.



Project partners



ESA Biodiversity+ Precursors



BIOMONDO Pilots

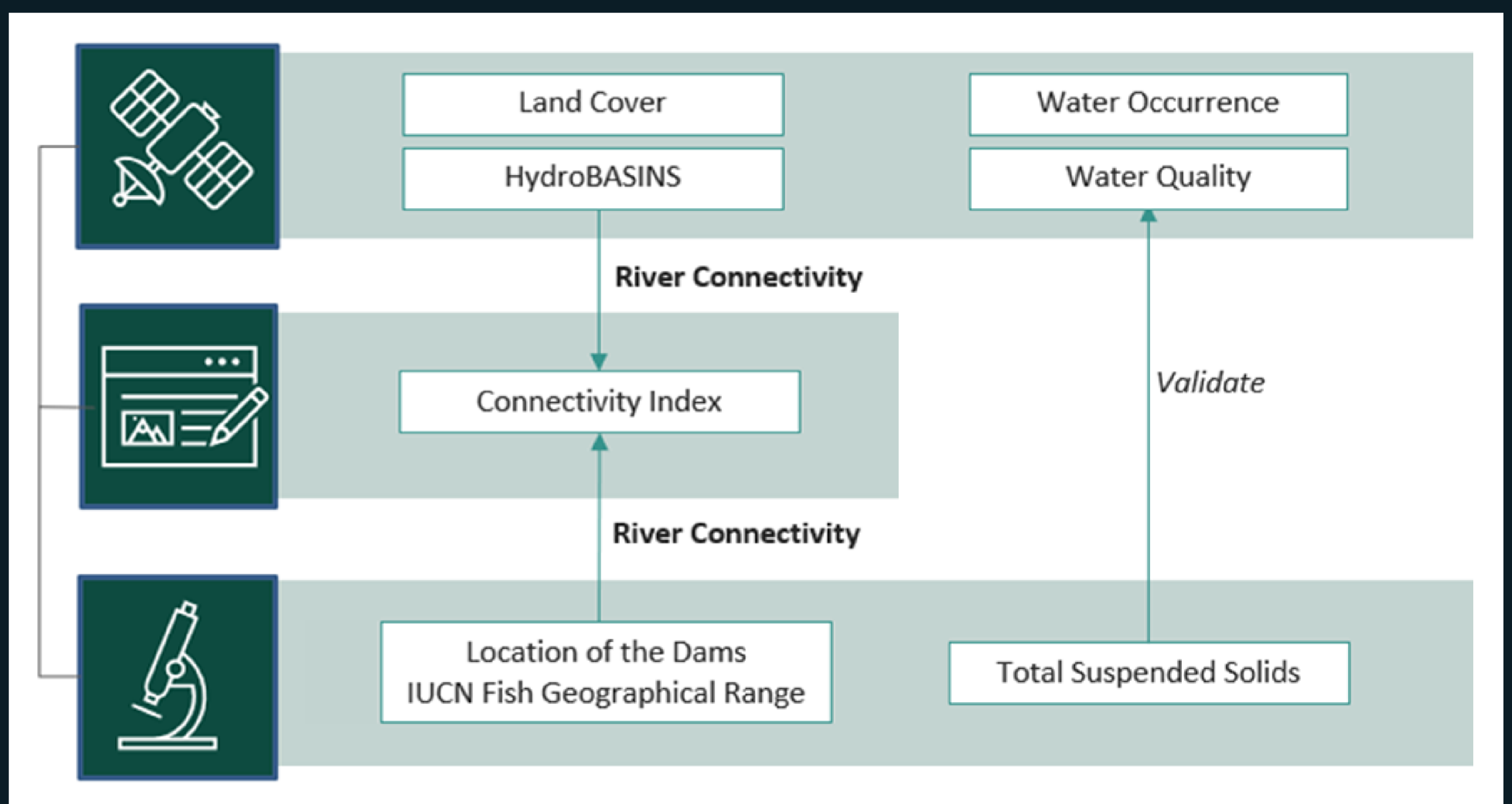
The purpose of the biodiversity pilot studies is to explore if Earth Observation products in combination with models and in situ data can support freshwater biodiversity monitoring and management.

- ▶ **Pilot 1 – Eutrophication**
- ▶ **Pilot 2 – Heat tolerance**
- ▼ **Pilot 3 – Connectivity**

Exploring the impact of eutrophication and other habitat changes on the water quality.

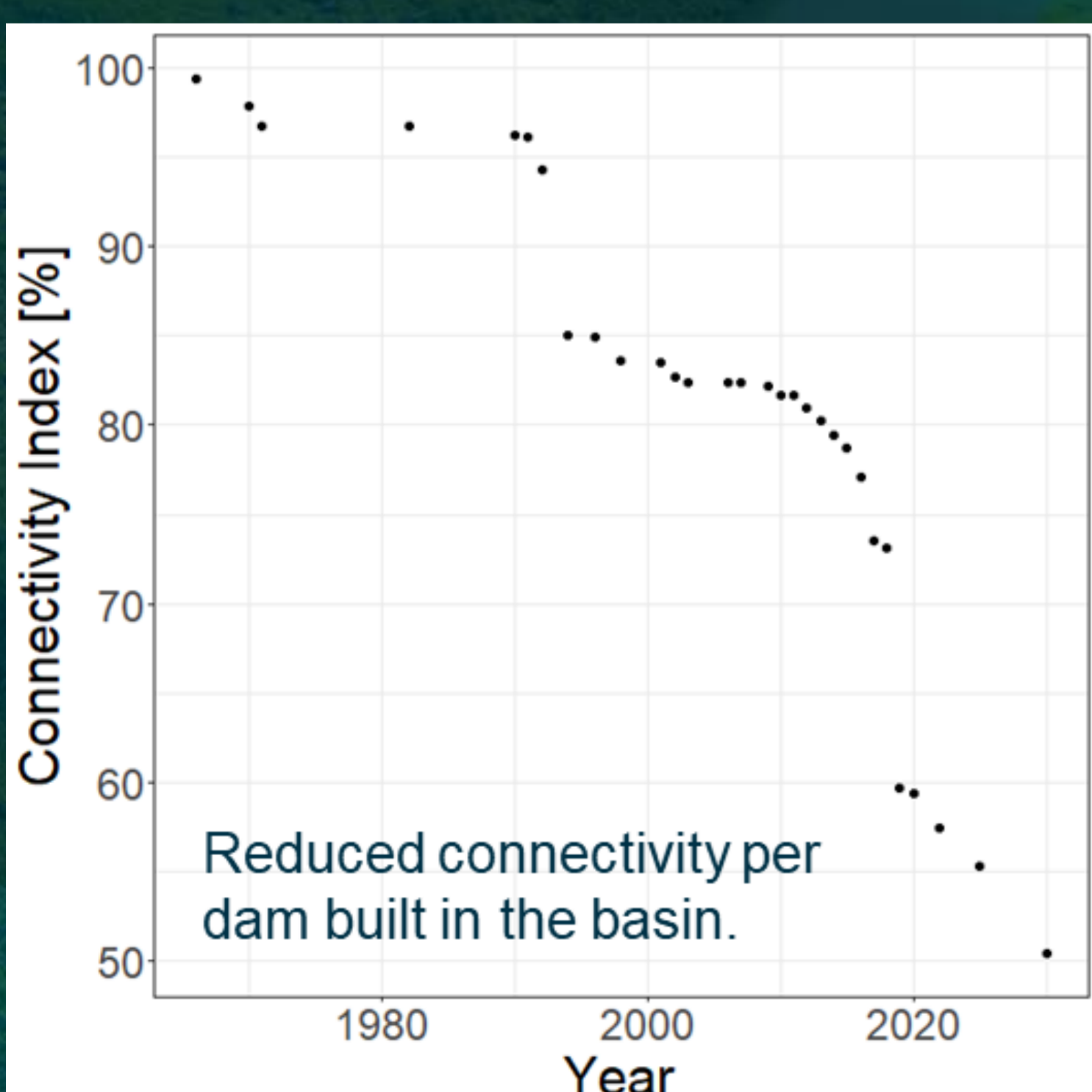
Exploring the impact of changes in water temperature and heat waves on freshwater fish diversity.

Monitoring river connectivity effect by dams, and their changes and impact on biodiversity.

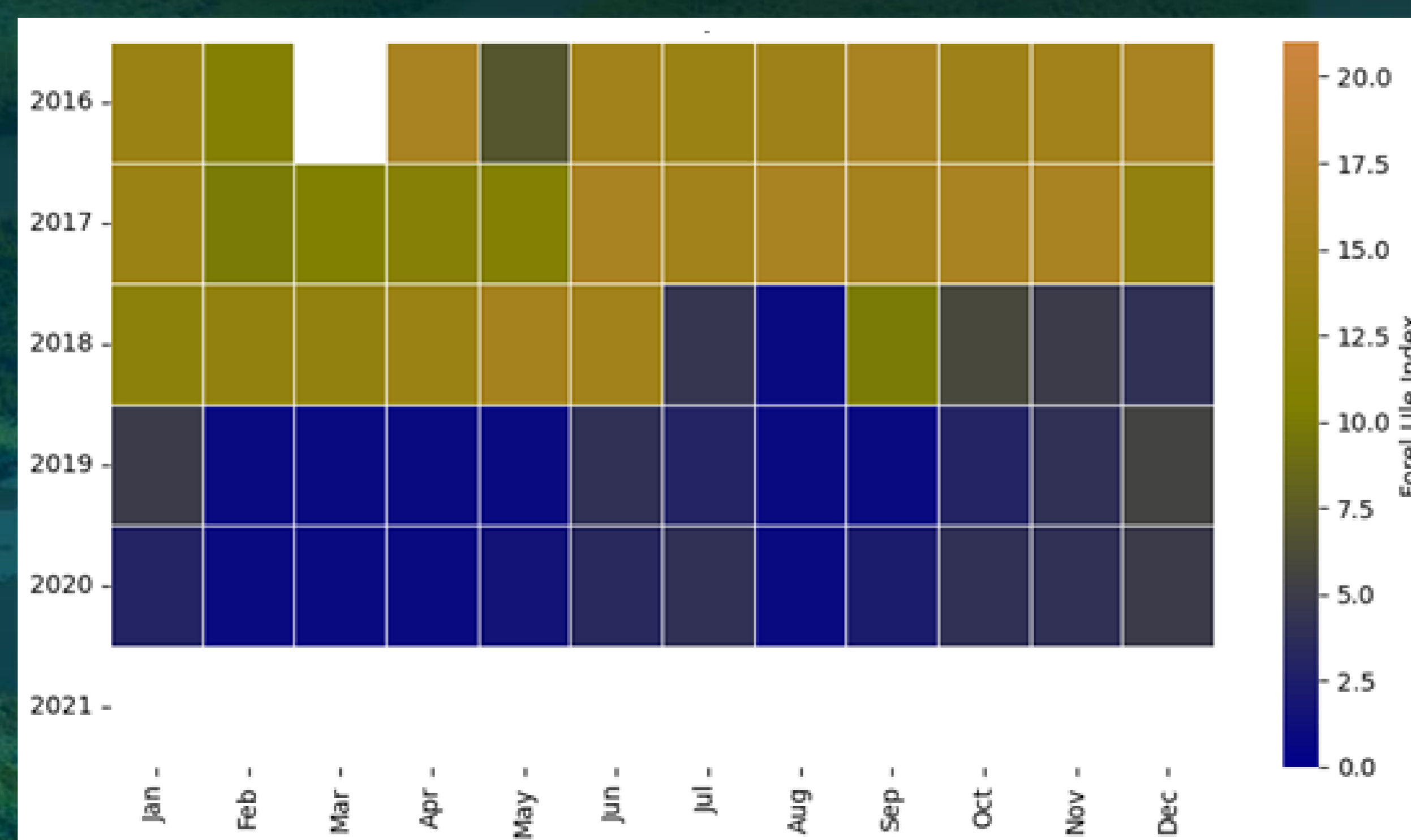


EO based water quality to assess dam impact

In the Mekong basin, power dams hinders fish migration and alter sediment transportation. This threatens many fish species, and put inland fishery at risk, compromising food and nutrition security of downstream communities.



Connectivity Index (CI)
A modelled CI developed by Barbarossa et al. (2020) has been used to estimate the degree of geographic range fragmentation across the entire Mekong basin.



Water colour – Heat maps
The Forel Ule (FU) value, a color index, has been derived from EO data for selected dam subbasins. The heat map shows monthly FU-values for the Nam Giep sub-basin and the difference in water colour before and after the dam construction in 2018.



Water colour - Maps
EO based FU-maps over the Nam Giep sub-basin before and after dam construction shows the significant change in the surrounding habitats. The sediment transport is also affected.