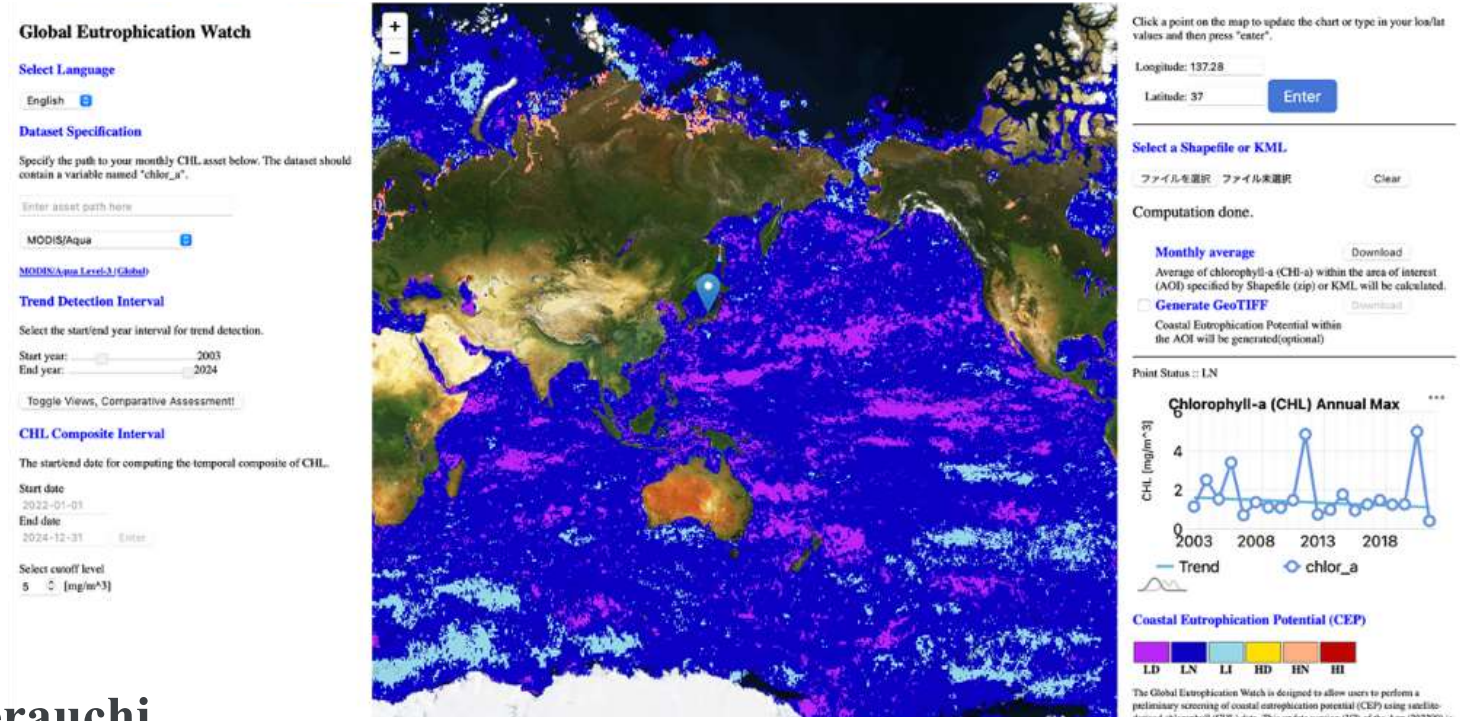
Developing regional and national indicator for SDGs 14.1.1a, index of Coastal Eutrophication, with Global Eutrophication Watch

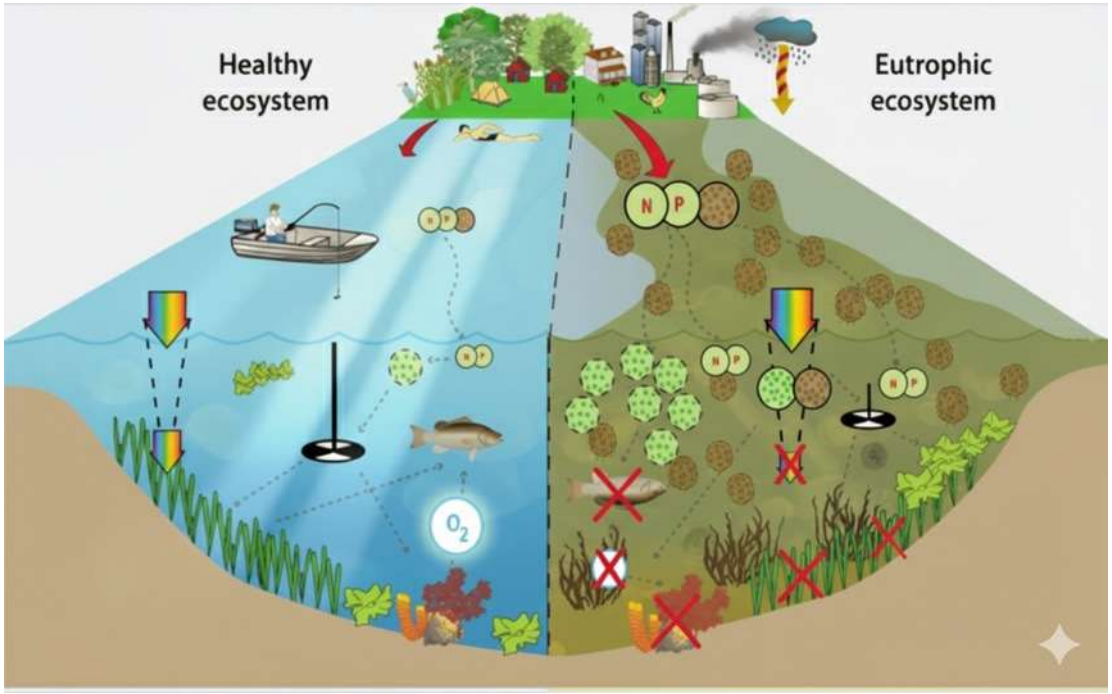


Genki Terauchi

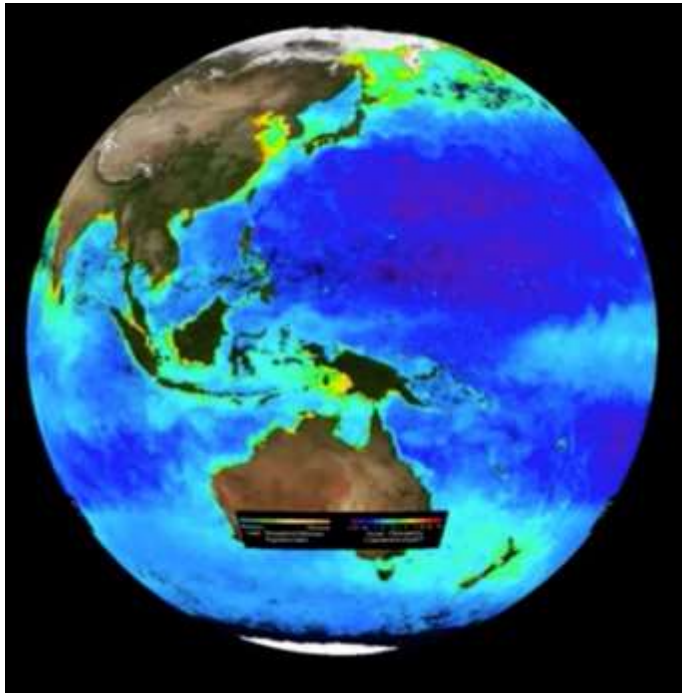
Northwest Pacific Region Environmental Cooperation Center

Sixteenth meeting of the IAEG-SDG

Assessment of eutrophication by remotely sensed chlorophyll-a concentration



Health Ecosystem and Eutrophic Ecosystem



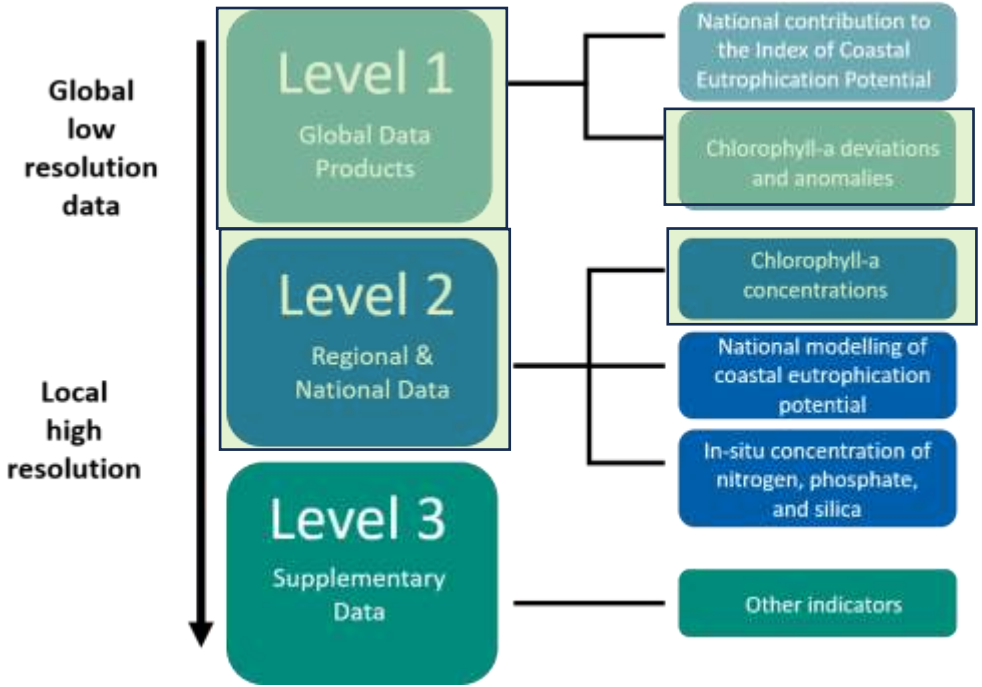
Satellite derived chlorophyll-a

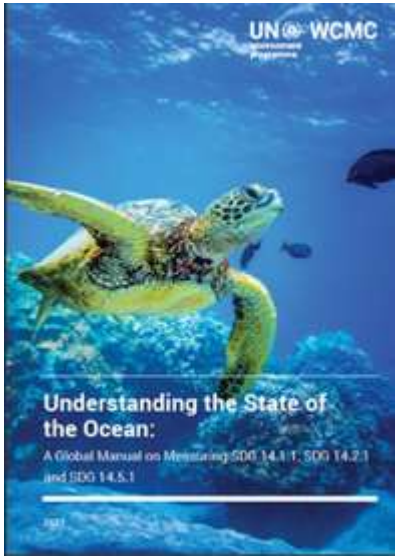
14 LIFE BELOW WATER

"By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution"

Indicator 14.1.1a:

"Index of coastal eutrophication"



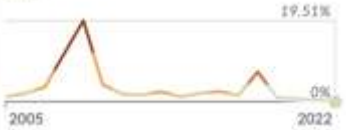


UNEP (2021)

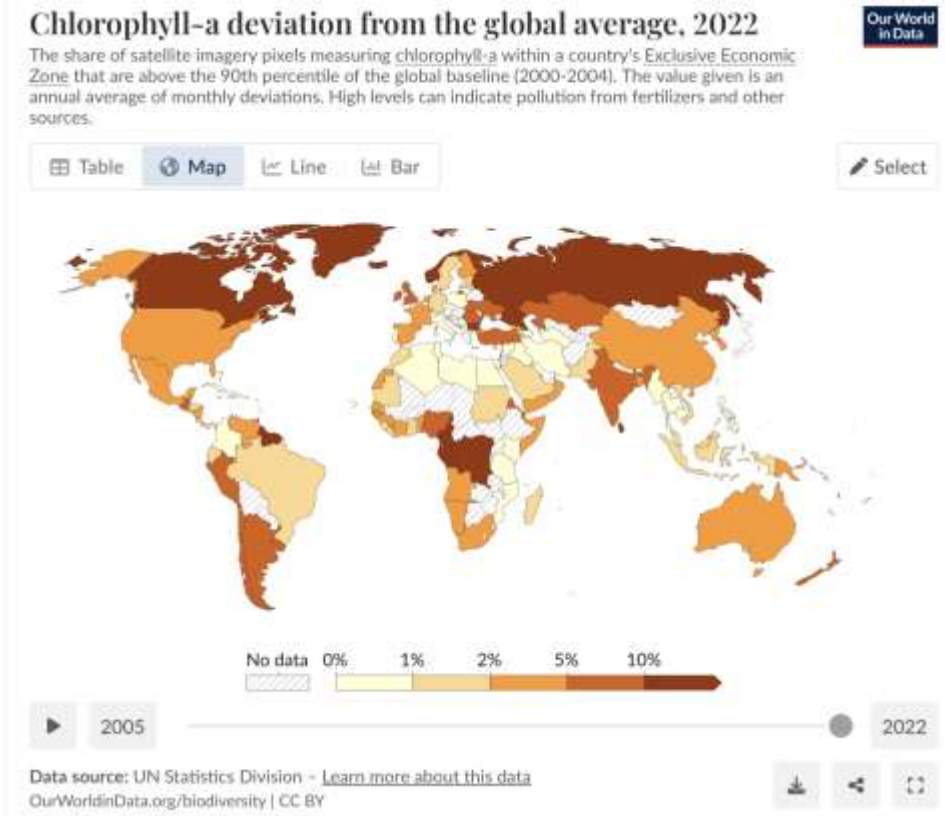
SDG INDICATOR 14.1.1
Reduce marine pollution

Chlorophyll-a prevalence

Canada
2022
14.1.1 - Chlorophyll-a deviations, remote sensing (%) - EN_MAR_CHLDEV
15.65%


Belgium
2022
14.1.1 - Chlorophyll-a deviations, remote sensing (%) - EN_MAR_CHLDEV
0%


Thailand
2022
14.1.1 - Chlorophyll-a deviations, remote sensing (%) - EN_MAR_CHLDEV
0.58%

Ireland
2022
14.1.1 - Chlorophyll-a deviations, remote sensing (%) - EN_MAR_CHLDEV
7.19%


Jordan
2022
14.1.1 - Chlorophyll-a deviations, remote sensing (%) - EN_MAR_CHLDEV
No data


Tunisia
2022
14.1.1 - Chlorophyll-a deviations, remote sensing (%) - EN_MAR_CHLDEV
0.49%

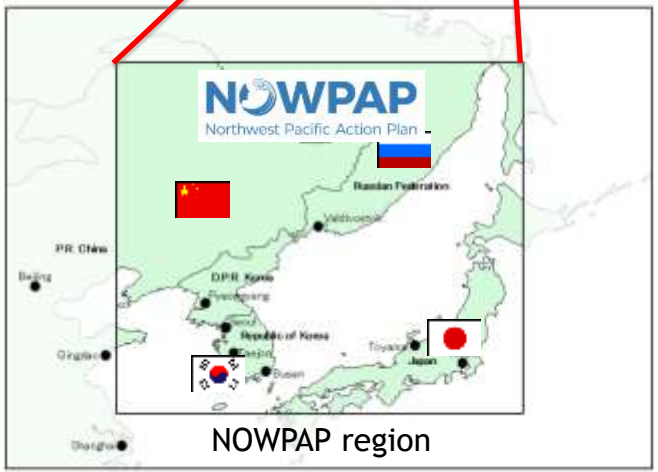

https://ourworldindata.org/sdgs/life-below-water

Regional Sea Program and NOWPAP

- Regional Sea Program (RSP)
  - Launched in 1974 by UNEP to address the accelerating degradation of the world's oceans and coastal areas.
  - RSP covers 18 regions across the world today

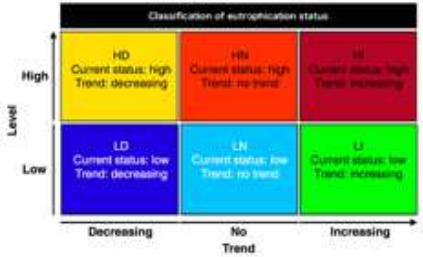
- NOWPAP

  (Northwest Pacific Action Plan)
  - Adopted in 1994
  - China, Japan, Korea and Russia
  - Latitude 33 - 52^{O}N
  - Longitude 121 – 143E

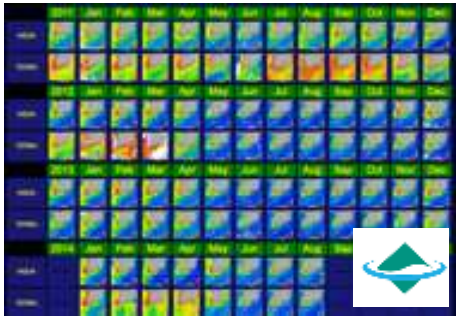


NOWPAP region

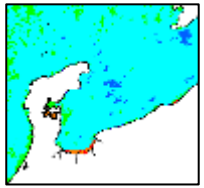
NOWPAP Evolution in Assessing Eutrophication



NOWPAP CEARAC (2009, 2014)

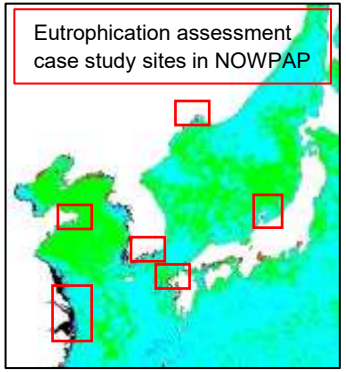


Marine Environmental Watch Project



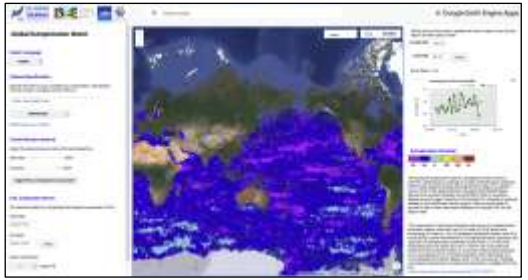
Methodology development in Toyama Bay

Terauchi et al. (2014)



Application of the methodology in the NOWPAP Region

Terauchi et al. (2018)



Global Eutrophication Watch

Maúre et al. (2021)

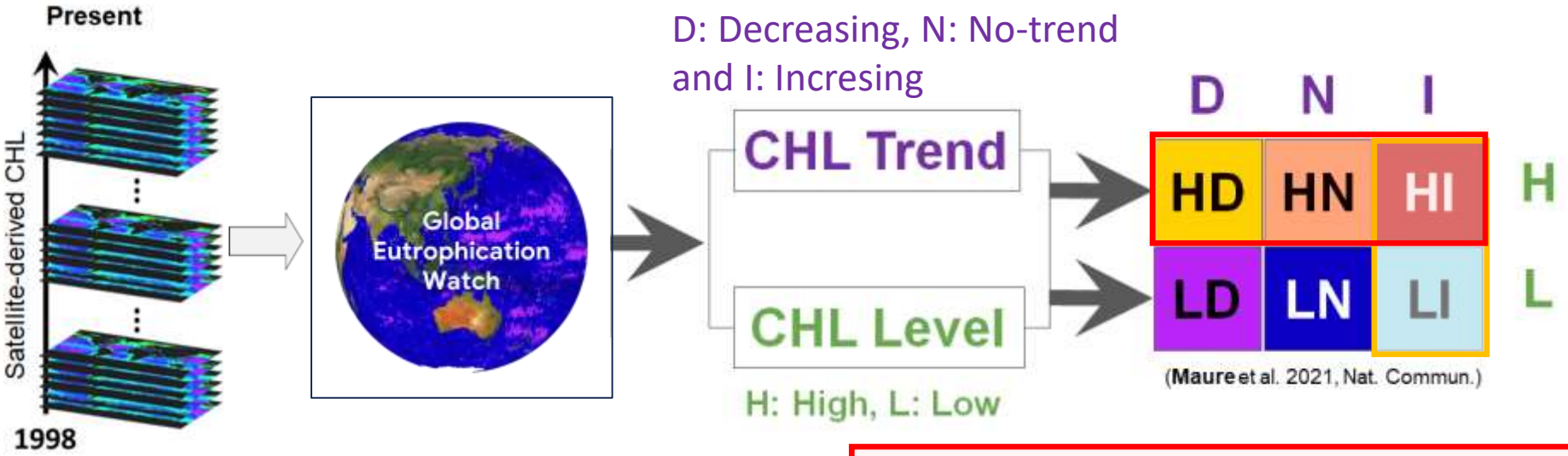
2000-2010

2011-2020

2021-2025

Global Eutrophication Watch

Global Eutrophication Watch: a Google Earth Engine based tool
for coastal eutrophication assessment using the **NEAT** methodology
It detects coastal eutrophication potential using only satellite-derived chlorophyll-a (CHL) concentration

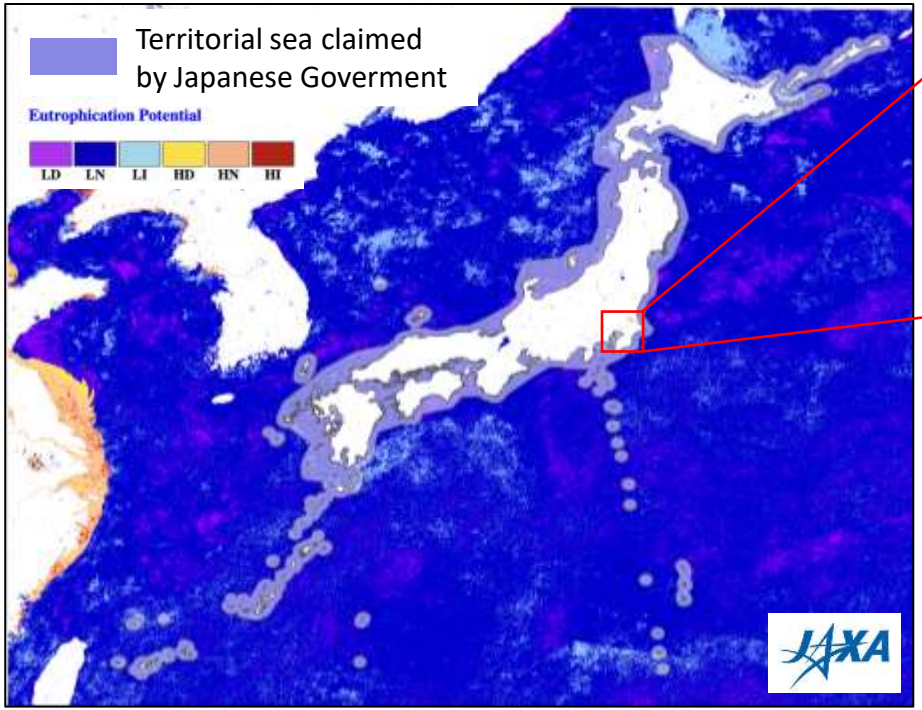


NOWPAP: Northwest Pacific Action Plan
NEAT: NOWPAP Eutrophication Assessment Tool (**Terauchi et al. 2014, 2018**)

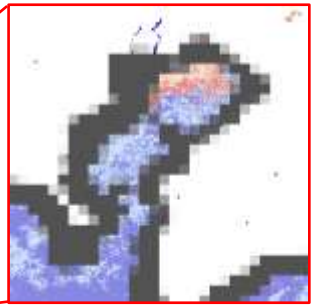
Eutrophic potential waters: HD, HN and HI

Eutrophication potential waters: HI and LI

Proposed SDGs 14.1.1a indicator for Japan



SGLI derived eutrophication potential and Japan Teritorial Sea (12 nautical miles from coastline)



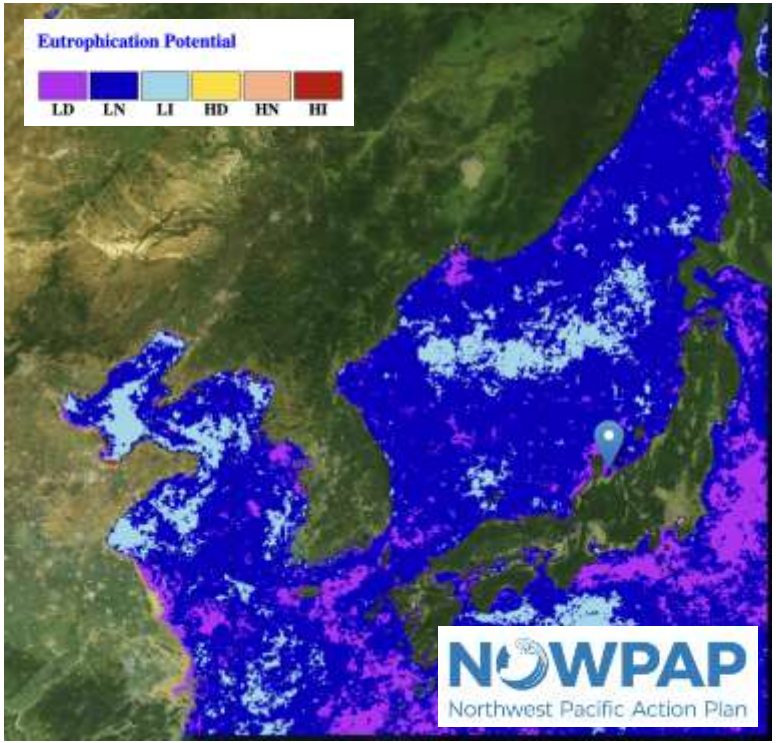
Tokyo Bay

JAXA SGLI

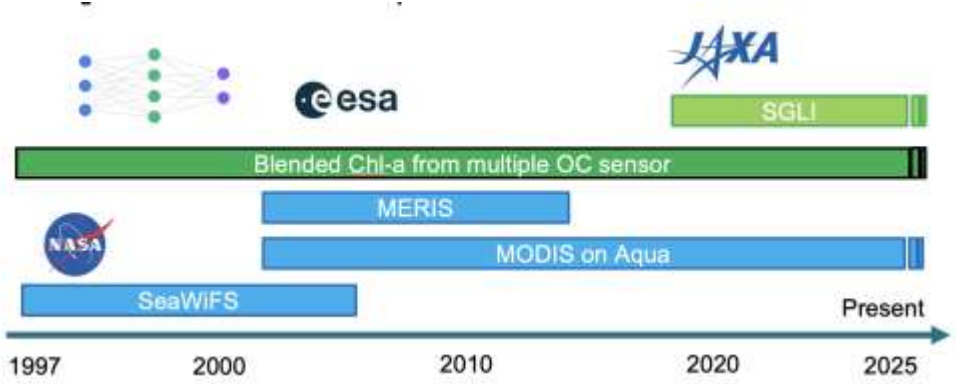
$$\frac{735\ \text{km}^2 \text{ SGLI derived HI area (2018-2024)}}{537{,}036\text{km}^2 \text{ Japanese Territorial Sea}} = 0.13\%$$

HI ratio against territorial sea

Proposed SDGs 14.1.1a indicator for NOWPAP



Yellow Sea Ocean Color (YOC) data derived eutrophication potential in NOWPAP Sea Area



YOC + SGLI derived HI area extent (1998-2024)

NOWPAP Territorial Sea

HI ratio against NOWPAP tetorial sea

Collaboration with partners