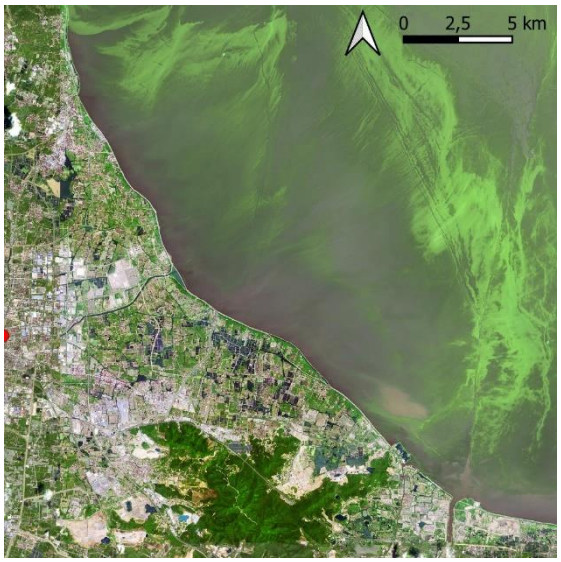
Overview - Sentinel-2, 2019-08-12

Detail - Sentinel-2, 2019-08-12



Detail - Sentinel-2, 2020-05-03

With the increasing intensity of landuse use in East Taihu, China, the amount of nutrients in the Lake Tai has increased. This so-called eutrophication led to an increased algal growth and a decreased water quality. As a consequence, the water supply in surrounding areas suffered. In addition, development of marshiness in the eastern littoral zones and East Taihu has occurred.

From 1993, the entire lake suffered eutrophication, a process in which an excess of nutrients such as nitrates and phosphates causes an algal bloom. The increased growth of algae removes oxygen and reduces the water quality, causing fish and other organisms to die. These algal blooms have become increasingly severe.

In response to these challenges, the Chinese authorities have launched a series of projects to reduce the inflow of nutrients into the lake. While the water quality has improved significantly, algal blooms remain a issue in Lake Tai. In addition to in-situ measurements, satellite data are a valuable tool for monitoring the state of the lake.

Exercises

- Look at the overview satellite image from **2019** and try to identify important land cover classes around the lake.
- Look at the detail satellite image from **2019-08-12** and continue your analysis. Can you identify areas, in which the lake is directly influenced by the surroundings?
- Compare with the detail satellite image from **2020**. Which changes can you identify? Have you found the green algae cover?
- Where can you find an increase of algae in the water?
- Compare this with the satellite image from **2020**.
- What are the linear structures in the algae carpet?
- How do the algae affect the people living there?

Additional Material

View of algae in the littoral zone of Lake Tai (photograph: Adam C. Powell)

Links and Sources

- https://www.esa.int/ESA_Multimedia/Images/2019/11/Lake_Tai_China - Sentinel 2 image of Lake Tai.
- https://www.esa.int/ESA_Multimedia/Images/2018/07/Shanghai_China - Sentinel-3 image of the larger Shanghai area.