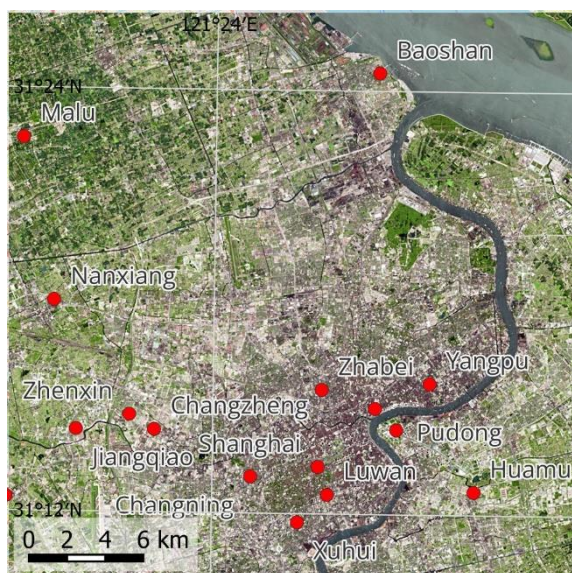
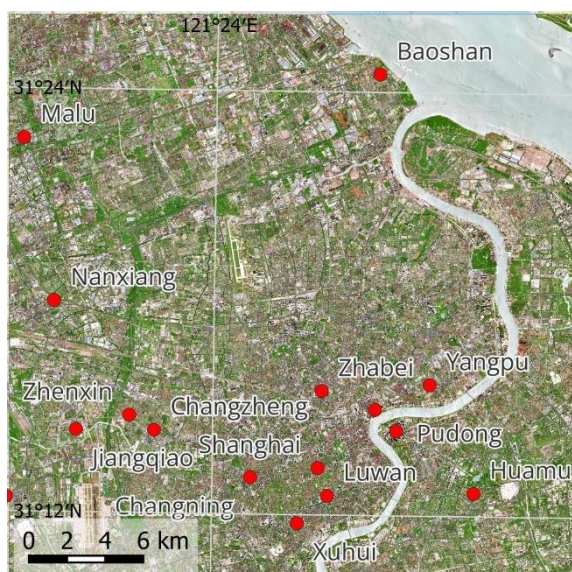




*Landsat5, 1986-05-31*



*Landsat7, 2001-07-03*



*Sentinel-2, 2023-05-28*

### The Growth of Shanghai and Its Changing Land Use

Shanghai, China's largest city, has experienced rapid growth over the past century. Located on the eastern coast of China, it is an important port city at the mouth of the Yangtze River. Its expansion has been driven by trade, industry, and global investment, making it one of the world's most influential economic centres.

Shanghai became a major trading hub already in the 19th century due to its strategic location. The establishment of the Shanghai Free-Trade Zone in 2013 further boosted trade. Over the last century, millions of people migrated to Shanghai for job opportunities, leading to an increase in housing, infrastructure, and services. This development was further enhanced, when in 1978 China introduced economic reforms, attracting foreign companies and businesses to Shanghai, leading to rapid industrial and commercial expansion. During this process the city developed an extensive transport network, including high-speed rail, highways, and one of the world's busiest ports, making it easier for people and goods to move efficiently.

Shanghai's rapid expansion has transformed its **land use**. The city centre, once dominated by traditional housing and colonial-era buildings, is now filled with skyscrapers, financial centres, and commercial districts. The Pudong area, which was mainly farmland, has become a modern financial hub with landmarks like the Shanghai Tower. This is reflected in the satellite images, in which the green belt around the city is more and more lost.

In the wider environment, rural areas surrounding Shanghai have been converted into industrial zones, highways, and satellite cities. Farmland has been replaced with factories and housing developments, while green spaces have been reduced. However, efforts have been made to improve sustainability, such as the development of eco-friendly industrial parks and urban greening projects.

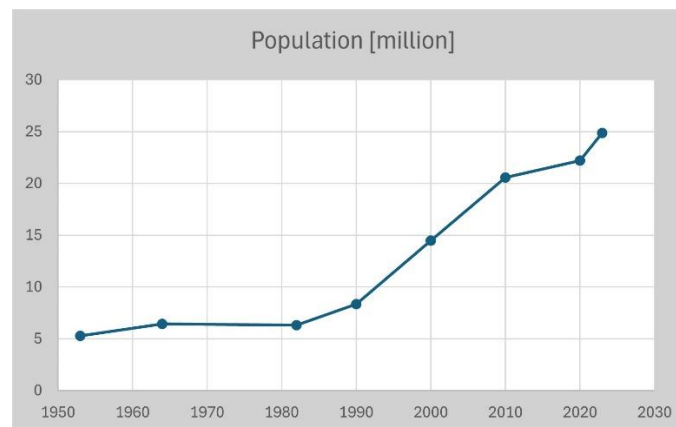
Satellite data is useful for monitoring Shanghai's growth and land use change. High-resolution satellite images help track urban expansion, deforestation, and land-use changes over time. Scientists and urban planners use this data to analyse the impact of development on the environment, assess pollution levels, and plan future infrastructure. Remote sensing technology also helps in disaster management, such as monitoring flooding risks in low-lying areas of the city.

## Exercises

- Look at the satellite images from 1986 and 2023 and try to find examples of land use change in the Shanghai area.
- What features in the images indicate urbanization? (Think about increased road networks, reduced green spaces)
- Shanghai's urban area covered approximately **400 km² in 1980** but expanded to **6,300 km² by 2020**. Calculate the percentage increase in Shanghai's urban land area from 1980 to 2020. Based on this trend, predict one challenge the city might face in the future and suggest a solution.
- Urban expansion often reduces green spaces and farmland. Discuss possible environmental problems caused by Shanghai's growth and suggest ways these problems could be addressed.

## Additional Material

Year	Population	Change
1953	5,258,210	—
1964	6,423,017	+22.2%
1982	6,320,829	-1.6%
1990	8,348,299	+32.1%
2000	14,489,919	+73.6%
2010	20,555,098	+41.9%
2020	22,209,380	+8.0%
2023	24,874,500	+12.0%



Shanghai, population development since 1953 [source: China Data Lab (2020). "[China County Map with 2000-2010 Population Census Data](#)".]

## Links and Sources

- [https://www.esa.int/ESA\\_Multimedia/Images/2018/07/Shanghai\\_China](https://www.esa.int/ESA_Multimedia/Images/2018/07/Shanghai_China) - presentation of a Sentinel-3 image of East China showing the distribution of towns and the discharge of sediments along the coast
- [https://www.esa.int/ESA\\_Multimedia/Videos/2018/07/Earth\\_from\\_Space\\_Shanghai](https://www.esa.int/ESA_Multimedia/Videos/2018/07/Earth_from_Space_Shanghai) - the same Sentinel-3 image presented in an ESA video
- [https://www.esa.int/ESA\\_Multimedia/Images/2019/06/Urban\\_sprawl\\_in\\_Shanghai](https://www.esa.int/ESA_Multimedia/Images/2019/06/Urban_sprawl_in_Shanghai) - The urban sprawl in the larger Shanghai area in data from WSF-Evolution
- [https://www.esa.int/ESA\\_Multimedia/Images/2016/10/Shanghai](https://www.esa.int/ESA_Multimedia/Images/2016/10/Shanghai) - the city in a Sentinel-2 image.