

# Regarding the red soil runoff problem and current situation in Okinawa Prefecture

## 1. History of red soil runoff and countermeasures in Okinawa Prefecture

Okinawa Prefecture has a unique natural environment with a subtropical oceanic climate, consisting of blue seas with developed coral reefs and lush islands inhabited by many rare wildlife species. Coastal sea area, including coral reefs, are a major asset for the lives of prefectural residents, the fisheries industry, and the tourism industry. In addition, the red soil that makes up the prefectural land can be said to be an important asset that supports the citizens of the prefecture, as it is used to produce agricultural products and as raw materials for crafts such as pottery.

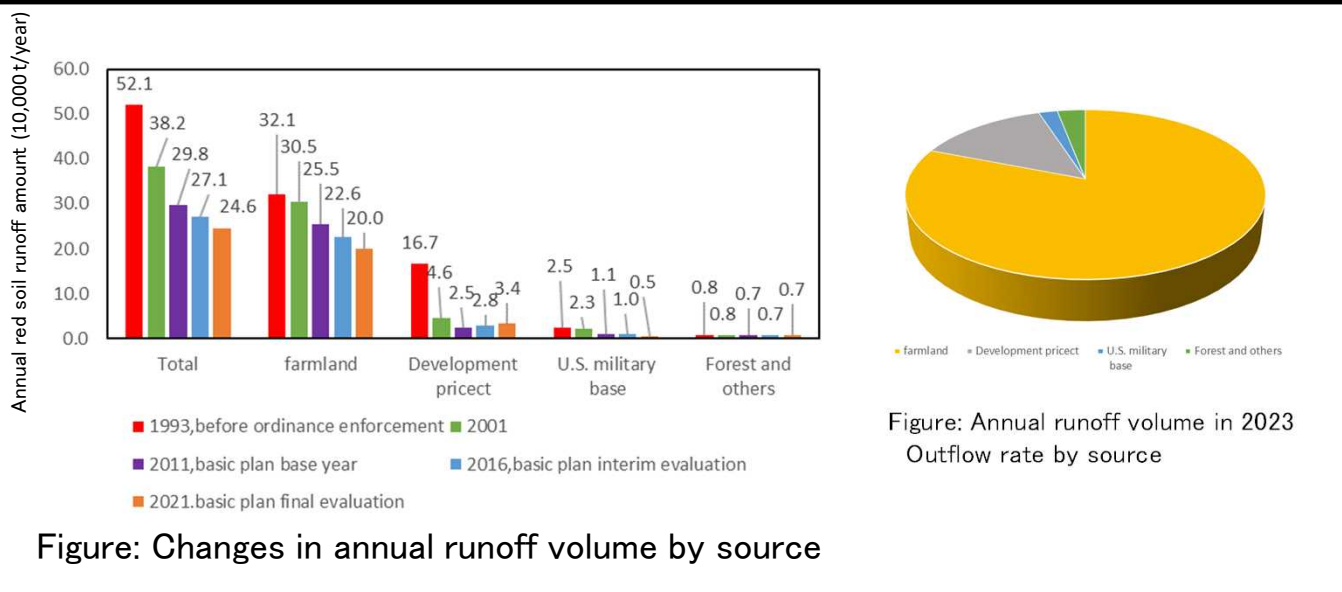
In order to protect these important assets for the prefecture, there is a need to build a sustainable marine coexistent society that harmonizes measures to prevent red soil runoff with economic activities. On the other hand, in this prefecture, a large amount of red soil has flowed into the sea, which had a serious impact on the sea environment.

In order to solve this red soil problem, the prefecture established the “Okinawa Prefecture Red Soil Erosion Prevention Ordinance” in 1994, and in 2013 formulated the “Okinawa Prefecture Red Soil Runoff Prevention Measures Master Plan” to prevent red soil runoff. We have been working on measures to prevent runoff. Progress has been made to decrease the amount of red soil runoff and it has been steadily decreasing. However, there are still areas that require improvement. Therefore, in 2023, we formulated the “Second Okinawa Prefecture Red Soil Runoff Prevention Measures Master Plan”, set goals, and created a comprehensive plan in which related organizations and prefectural residents collaborated to achieve the goals. We are promoting measures to prevent red soil runoff.

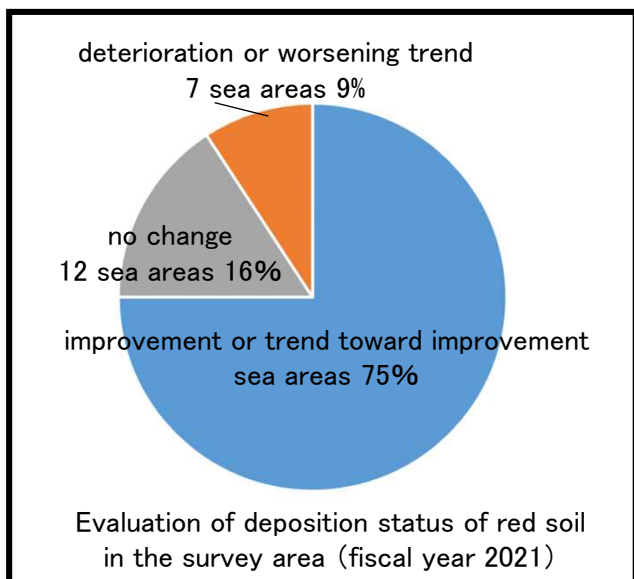
Era	Content
1734	Soil management methods (measures to prevent sediment runoff) are described in “ <i>noumucyou</i> (Agriculture Book)” written by Sai On, a politician from the Ryukyu Kingdom era.
around 1880~	Deterioration of production areas due to forest clearing
1945~	After the end of World War II <ul style="list-style-type: none"><li>• Construction of US military bases (large scale development)</li><li>• Decrease in rice fields</li><li>• Development of pineapple industry</li><li>• Increase in sugarcane fields</li></ul>
1972~	Return of Okinawa Prefecture to Japan <ul style="list-style-type: none"><li>• large scale public works projects (and improvement, roads, dam construction) etc. increased.</li></ul> →As a result, due to insufficient measures to prevent runoff, large amounts of red soil have flowed into the water, and rivers and oceans are polluted by fine particles.
1976~	Amend “the Okinawa Prefecture Pollution Prevention Ordinance” and impose an obligation to make efforts to prevent red soil runoff.
1994~	“Okinawa Prefecture Red Soil Runoff Prevention Ordinance” was enacted.
2013~	“Okinawa Prefecture Red Soil Runoff Prevention Measures Master Plan” (fiscal year 2013–fiscal year 2022) was formulated.
2023年~	“Second Okinawa Prefecture Red Soil Runoff Prevention Measures Master Plan” (fiscal year 2023–fiscal year 2031) was formulated.

## 2. Runoff status of red soil in Okinawa Prefecture

The estimated annual red soil runoff from the entire prefecture in fiscal year 2011 was approximately 246,000 tons, which will be reduced by approximately 52,000 tons from fiscal year 2011 to fiscal year 2023. The amount of runoff from farmland has been reduced by approximately 40% compared to 1993 and approximately 20% compared to 2011. The amount of runoff from development projects has been reduced by approximately 80% compared to before the ordinance was enacted (in 1993) due to regulations under the Okinawa Prefecture Red Soil Runoff Prevention Ordinance. The amount of runoff from agricultural land remains high, accounting for 81% of the prefecture's total, but this is due to the high proportion of agricultural land in land use.



## 3. Deposition status of red soil in the sea area



Based on the Okinawa Prefecture Red Soil Runoff Prevention Measures Master Plan (Fiscal year 2013–Fiscal year 2023), we are conducting a monitoring survey on red soil deposits in the sea area. As a result of the monitoring survey, the status of red soil deposition in sea areas in fiscal year 2023 was “improved or had a trend toward improvement” in 57 of the 76 surveyed sea areas (75%) compared to fiscal year 2011.

On the other hand, no change was observed in 12 sea areas (16%), and in 7 sea areas (9%) a “deterioration or worsening trend” was observed. In addition, 38 sea areas (50%) achieved the deposition goals set in the master plan.

## 4. Issues in measures to prevent red soil runoff in Okinawa Prefecture

As a result of the implementation of various measures to prevent runoff, the amount of red soil in this prefecture has steadily decreased. However, it is necessary to take further measures to further reduce the amount of red soil.

Regarding the various measures that have already been implemented, it is necessary to continue the efforts and maintain the effects of the measures. Additionally, it is necessary to strengthen measures to reduce the amount of runoff from farmland. Efforts must be made to ensure that the marine environment, which is currently improving, is restored and maintained without worsening again.