

during the late 1990s (Odjugo, 2010). The second decade (2006-2015) showed a rise to 33.3°C, with peaks at 34°C, consistent with regional climate change trends. Elevated temperatures reduce dissolved oxygen, disrupt breeding cycles, and increase disease prevalence, thereby stressing fisheries. Comparable warming patterns across Nigeria were documented by Akinsanola and Ogunjobi (2020), while Cohen et al. (2016) demonstrated that warming in Lake Tanganyika reduced nutrient mixing and fish productivity.

The third decade (2016-2025) recorded a modeled mean of 33.2°C, with variability from 31°C-34°C, highlighting dynamic coastal processes. Nwosu et al. (2022) reported similar variability in Niger Delta ecosystems, driven by rainfall anomalies and ocean-atmosphere interactions. Overall, Ilaje's warming trajectory underscores the need for adaptive fisheries management, habitat conservation, and climate-resilient livelihood strategies to safeguard artisanal fishing communities.

3.7 Decadal minimum temperatures for Ilaje LGA (1996-2025)

Table 7 presents decadal minimum temperatures in Ilaje Local Government Area (LGA), showing gradual warming trends. The first decade (1996-2005) recorded a mean minimum of 19.6°C, ranging between 19°C-20°C, reflecting relatively stable cooler conditions. Similar modest warming was reported in southern Nigeria during the late 1990s (Odjugo, 2010). The second decade (2006-2015) showed a slight increase to 19.9°C, with some years reaching 21°C, indicating rising nighttime and seasonal minimums. Warmer waters reduce oxygen solubility, alter breeding cycles, and stress fish habitats. Comparable increases were documented across Nigeria (Akinsanola and Ogunjobi, 2020), while Nnaji and Nzeadibe (2023) noted that elevated nighttime temperatures disrupted agricultural and fishing calendars in southeastern Nigeria.

Table 6 Decadal maximum temperatures for Ilaje LGA coastal waters

Year	Decade 1 (1996-2005)	Decade 2 (2006-2015)	Decade 3 (2016-2025)
1	33°C	33°C	33°C
2	33°C	34°C	31°C
3	32°C	33°C	33°C
4	33°C	34°C	34°C
5	33°C	33°C	33°C
6	32°C	33°C	32°C
7	32°C	33°C	34°C
8	33°C	32°C	33°C
9	32°C	34°C	33°C
10	33°C	34°C	33°C
Mean	32.6°C	33.3°C	33.2°C

Source: Nigerian Meteorological Agency (NiMet), 2025

The third decade (2016-2025) recorded a mean of 21.3°C, with several years reaching 22°C-23°C, marking a significant departure from earlier decades. Such warming reduces cooling effects of nights and intensifies ecological stress. Cohen et al. (2016) demonstrated similar impacts in Lake Tanganyika, where warming reduced nutrient mixing and fish productivity. Overall, Ilaje's rising minimum temperatures threaten artisanal fisheries, underscoring the need for climate-resilient practices, ecosystem monitoring, and livelihood diversification.

3.8 Effects of water level on fish catch volume in Ilaje coastal waters

Table 8 presents fishermen's perceptions of water level effects on fish catch volume in Ilaje coastal waters. Nearly all respondents (98.6%) agreed that high water levels increase fish output, while 97.5% confirmed that low levels reduce catches, underscoring the strong link between hydrological regimes and fishing productivity. Seasonal flooding creates breeding and feeding grounds that enhance yields (Welcomme, 2011), while rainfall variability in