**Attribute Ranges in GAN Model:**

**Notes:**

| **Attribute** | **Permissible Range** |
| --- | --- |
| Bloom\_Index | (-1.0, 1.0) |
| Rolling\_Chlorophyll\_Anomaly | (-2.0, 5.0) |
| Rolling\_SST\_Anomaly | (-3.0, 3.0) |
| Surface\_Chlorophyll | (0.0, 10.0) mg/m³ |
| Sea\_Surface\_Temperature | (20.0, 35.0) °C |
| Dissolved\_Oxygen | (0.0, 12.0) mg/L |
| pH | (6.5, 9.5) |
| Total\_Nitrogen | (0.0, 10.0) mg/L |
| Total\_Phosphorus | (0.0, 1.0) mg/L |

* The ranges provided reflect typical conditions found in marine and coastal environments. Values outside these ranges may indicate anomalies or unusual conditions.
* These attributes are part of a dataset used for detecting Harmful Algal Blooms (HABs), which can have significant impacts on aquatic ecosystems and human health.
* The dataset was enhanced using Generative Adversarial Networks (GANs) to simulate diverse scenarios, improving the robustness of HAB detection models.