

## Definitions of the domains used in forecast verification

Table 1. Definition of the analysis domains used in real-time and retrospective forecast verifications.

| Region                      | Definition                          |
|-----------------------------|-------------------------------------|
| Globe                       | 0 °E– 360 ° E, 90 °S – 90 ° N       |
| Tropics                     | 0 °E– 360 ° E, 20 °S – 20 ° N       |
| Northern Extra-tropics      | 0 °E– 360 ° E, > 20 °N              |
| Southern Extra-tropics      | 0 °E– 360 ° E, < 20 °S              |
| East Asia                   | 75 °E–150 °E , 15 °N–60 ° N         |
| South Asia                  | 60 °E–140 °E , 10 °S–35 ° N         |
| North America               | 190 ° E–310 °E, 10 ° N–75 °N        |
| South America               | 270 °E–330 °E , 60 °S–10 ° N        |
| Australasia                 | 110 ° E–180 °E, 50 ° S–0 ° N        |
| Australasia + South Pacific | 110 ° E – 260 ° E , 50 ° S – 20 ° N |
| Northern Eurasia            | 25 °E–190 °E , 40 °N–80 ° N         |
| Middle East                 | 25 °E–75 ° E, 10 °N– 45 °N          |

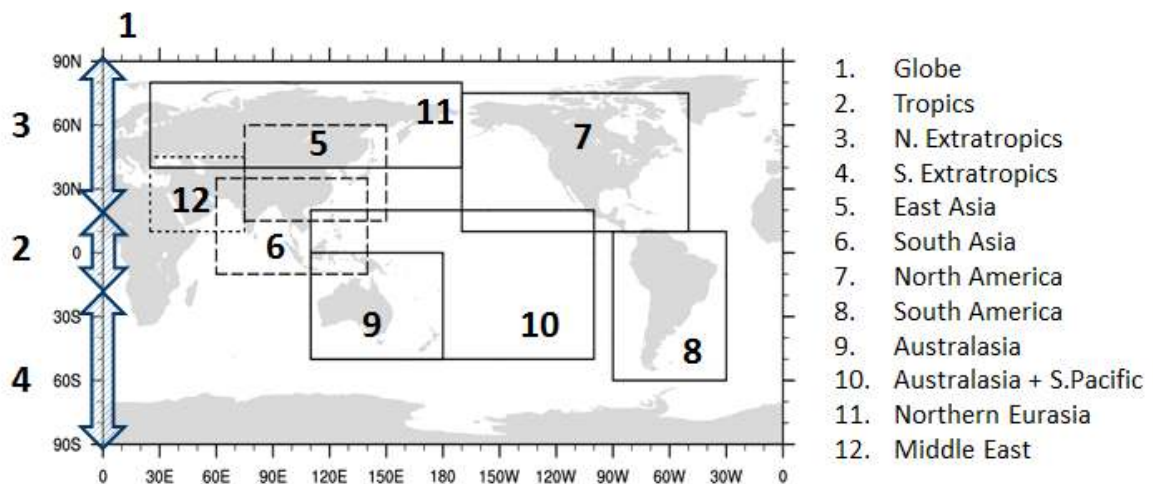


Figure 1 . Regions used in real-time and retrospective forecast verifications. Each domain is denoted by range of arrow or rectangle , along with corresponding number

Table 2. Definitions of tropical Indo-Pacific oceanic indices.

| Index                           | Regions (Definition)                       |
|---------------------------------|--|
| Nino Index                      | Nino 1 + 2 ( 0 °S – 10 °N , 80 ° – 90 °W ) |
|                                 | Nino 3 ( 5 °S – 5 °N , 90 ° – 150 °W )     |
|                                 | Nino 4 ( 5 °S – 5 °N , 150 °W – 160 °E )   |
|                                 | Nino 3.4 ( 5 °S – 5 °N , 120 ° – 170 °W )  |
| Indian Ocean Dipole Index (IOD) | IOD = WIOD – EIOD                          |
|                                 | WIOD (10°S–10°N, 50°–70°E)                 |
|                                 | EIOD (10°S–0°, 90°–110°E)                  |
| ENSO-Modoki Index (EMI)         | EMI = A – 0.5 x ( B + C )                  |
|                                 | A (10°S–10°N, 165°E–140°W)                 |
|                                 | B (15°S–5°N, 110°W–70°W)                   |
|                                 | C (10°S–20°N, 125°E–145°E)                 |

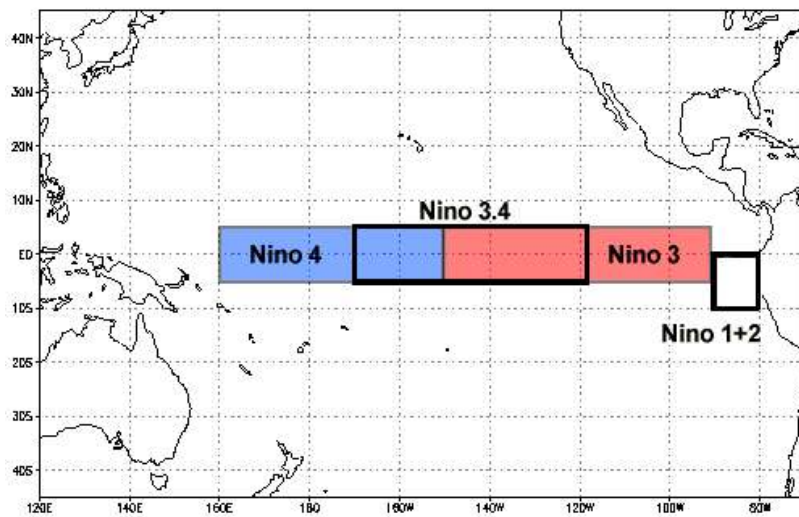


Figure 2. The Nino regions used in forecast verification.

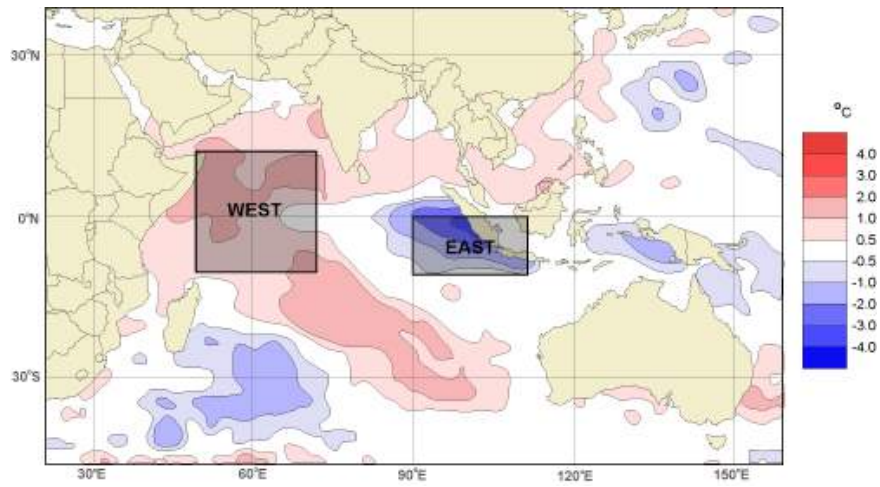


Figure 3 . Regions used for defining the Indian Ocean Dipole (IOD)

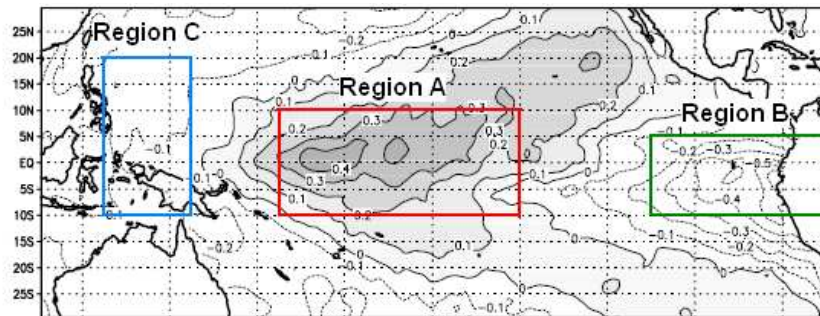


Figure 4. Regions used for defining the El Niño Modoki (EMI).