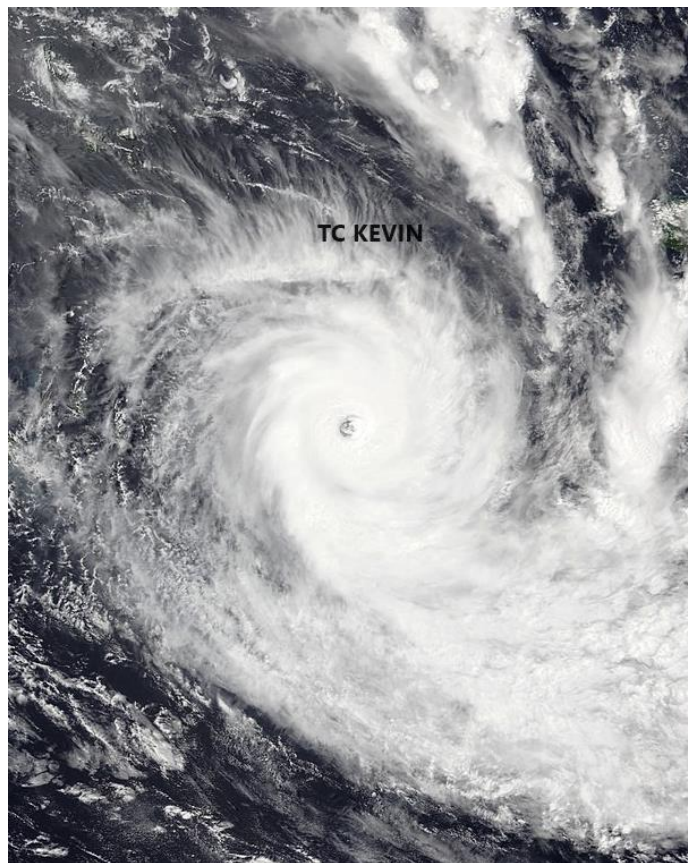


**REGIONAL SPECIALIZED METEOROLOGICAL
CENTRE NADI - TROPICAL CYCLONE CENTRE
TROPICAL CYCLONE SEASONAL OUTLOOK – 2023-24**

DETAILED OUTLOOK



Detailed Outlook

Tropical cyclone activities in the Pacific Island region are closely associated with the El Niño Southern Oscillation (ENSO), which is a fluctuation of oceanic and atmospheric conditions between the eastern and western tropical Pacific. The ENSO has two extreme phases, that is, El Niño and La Niña.

To predict the outlook for the coming tropical cyclone season, analogue seasons were identified, that is, seasons in the past with similar ENSO state. Firstly, the analogue seasons were identified based on the state of tropical Pacific in the months preceding the tropical cyclone season, in particular, between May and September. During this period, the ENSO state transitioned from ENSO neutral (neither El Niño nor La Niña) to a weak El Niño. The analogue seasons were further narrowed based on ENSO outlooks from the global climate models. The global climate model outlooks suggest that this tropical cyclone season is likely to be driven by a strong El Niño event. This outlook uses the three-month running mean of the NINO3.4 index and the Southern Oscillation Index for analogue identification, the most widely used indices for defining the ENSO.

Based on the above methodology, six analogue seasons were identified with similar climate state to present and expected condition during this tropical cyclone season. The analogue seasons include 1982-83, 1987-88, 1991-92, 1997-98, 2009-10 and 2015-16 seasons (Tables 1 & 2 and Figures 1-6). Note that the selection of analogue seasons is limited due to availability of high-quality and verified satellite data from the 1980-81 season. Enhanced high quality tropical cyclone best track data from the Southern Hemisphere Tropical Cyclone Portal were used for tropical cyclone analysis.

Upon analysis of tropical cyclone counts in the analogue seasons, it is concluded that ***eight to fourteen tropical cyclones*** are likely to occur in the Regional Specialized Meteorological Centre Nadi Tropical Cyclone Centre (RSMC Nadi - TCC) Area of Responsibility (AoR) (Figure 5) during the 2023-24 tropical cyclone season (Figure 1). On average, around seven tropical cyclones affect this region a season. Thus, the region has an ***elevated risk of tropical cyclone*** activities this season.

Out of the predicted total number of tropical cyclones, ***five to seven*** are expected to become a ***severe tropical cyclone***, that is, Category 3 to 5 intensity (Figure 2). On average around three severe tropical cyclones affect the RSMC Nadi-TCC AoR a season. Thus, this season is likely to have ***above average number of severe tropical cyclones***.

Table 1: Tropical cyclone numbers in the RSMC Nadi – TCC AoR in the six analogue seasons

Seasons	Total Number of Tropical Cyclones (Category 1 to 5)	Number of Severe Tropical Cyclones (Category 3 to 5)
1982-83	14	9
1987-88	5	3

1991-92	12	7
1997-98	16	7
2009-10	8	5
2015-16	8	5
Average (rounded-off)	11	6

Near average to above average tropical cyclone activity is likely to the west of International Dateline in the RSMC Nadi-TCC AoR this season with around **four to six tropical cyclones**, in comparison to the long-term average of four (Figure 1). Out of these, **two to four are likely to be severe tropical cyclones**, which is **near average to above average** number of severe tropical cyclones for this region (long-term average is two) (Figure 2).

On average around four tropical cyclones occur east of International Dateline in the RSMC Nadi - TCC AoR every season. However, it is expected that **this area will have increased tropical cyclone activity** with **six to nine tropical cyclones** (Figure 1). The **risk of severe tropical cyclone to the east of the Dateline is also enhanced**. **Three to four tropical cyclones** are likely to be severe in **the eastern region**, in comparison to the long-term average of two (Figure 2).

Usually around two tropical cyclones affect Fiji per season. **Near average to above average** tropical cyclone activity **for Fiji is likely this season**, with **two to three tropical cyclones** expected to pass through Fiji's Exclusive Economic Zone (Figure 3). Out of these, **one to two** are expected to be **severe tropical cyclone** (Figure 4).

Table 2: Tropical Cyclone numbers passing through Fiji's EEZ in the six analogue seasons

Seasons	Total Number of Tropical Cyclones (Category 1 to 5)	Number of Severe Tropical Cyclones (Category 3 to 5)
1982-83	3	2
1987-88	1	1
1991-92	3	1
1997-98	2	1
2009-10	2	1
2015-16	3	2
Average (rounded-off)	2	1

The analysis of past tropical cyclone tracks in the analogue seasons indicate that there is equal risk of tropical cyclones affecting any part of the Fiji Group during the 2023-24 season (Figures 5-10).

The tropical cyclone season of the RSMC Nadi-TCC AoR extends from November to April, with the peak tropical cyclone activities normally experienced from January to March. However, tropical cyclones have occasionally occurred in this region during October and May, and rarely in September and June. One of the analogue seasons (1997-98) also had an out of season tropical cyclone. Thus, out of season tropical cyclone cannot be ruled out this season.

It does not take a direct hit or a severe tropical cyclone to cause considerable damage or life-threatening weather. In the past, tropical disturbances and tropical depressions have created havoc in the region. Therefore, the Pacific Island communities should be vigilant throughout the tropical cyclone season and take heed of all weather alerts and warnings. Contact the respective Pacific Island National Meteorological Service for detailed national level information.

Figure 1: Total number of tropical cyclones forecasted for the Regional Specialized Meteorological Centre Nadi - Tropical Cyclone Centre (TCC) Area of Responsibility (AoR).

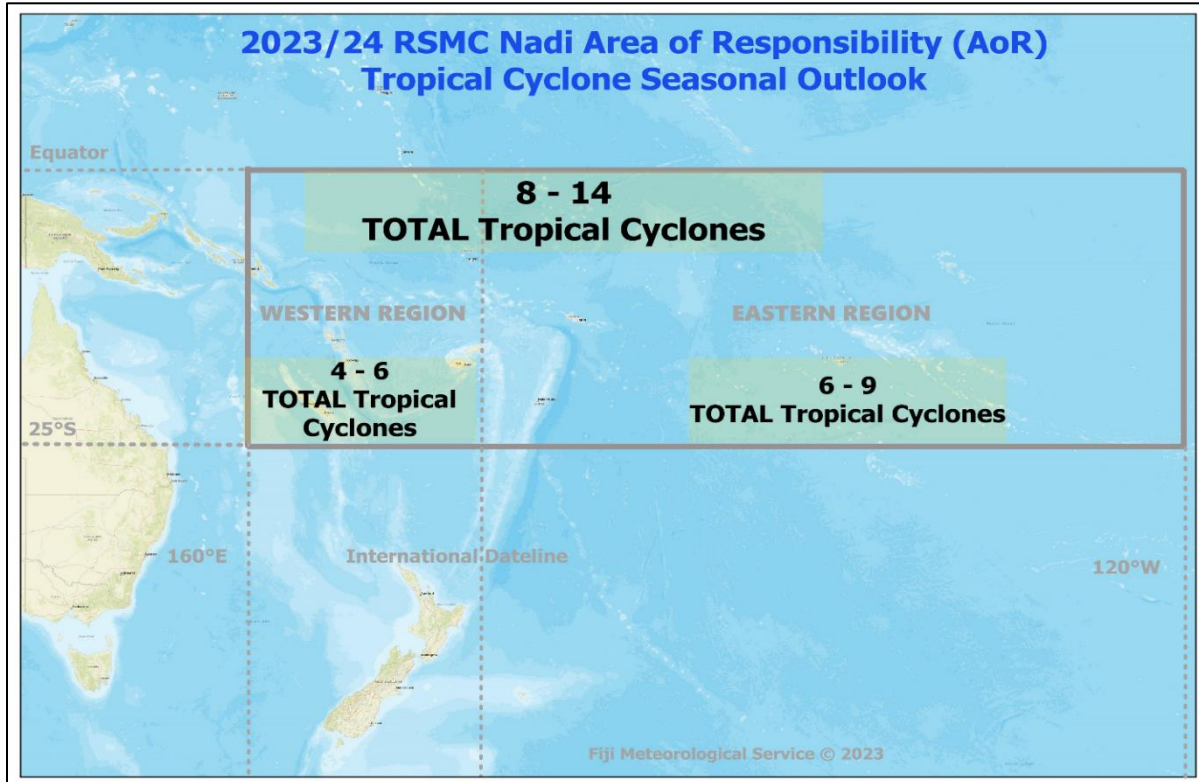


Figure 2: Number of severe tropical cyclones forecasted for the Regional Specialized Meteorological Centre Nadi - Tropical Cyclone Centre (TCC) Area of Responsibility (AoR).

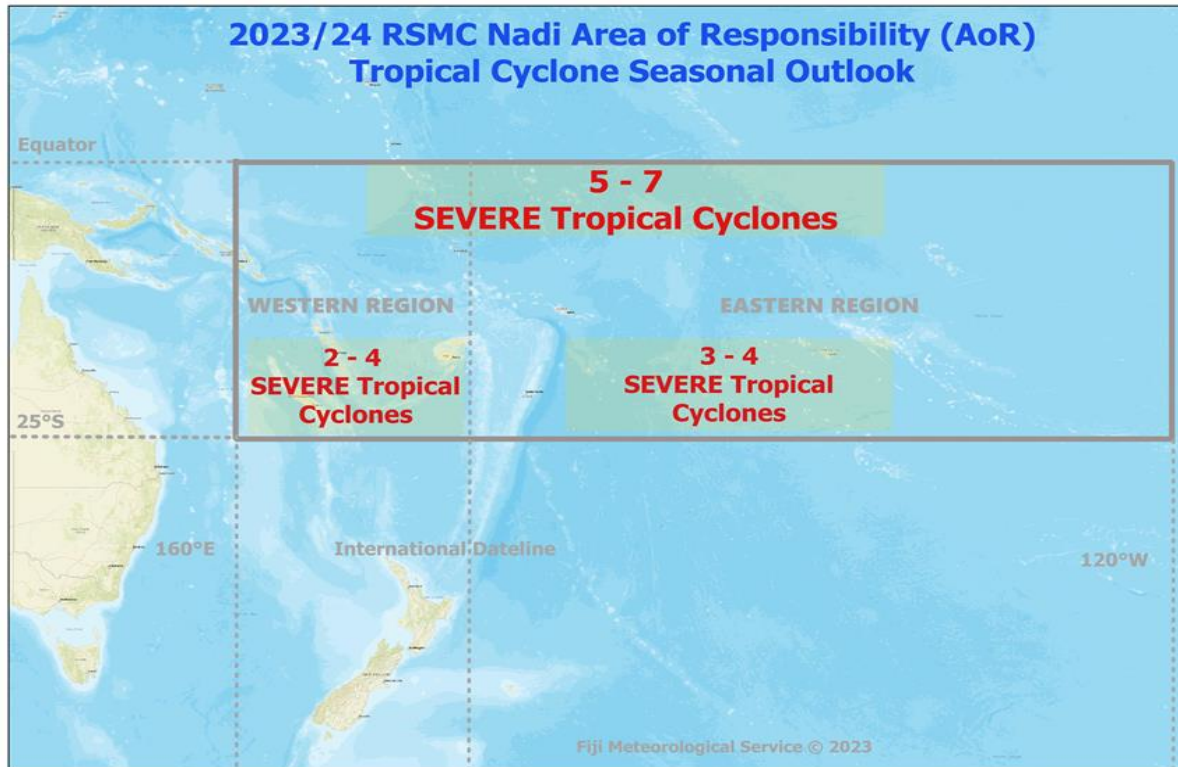


Figure 3: Total number of tropical cyclones forecasted for the Fiji region.

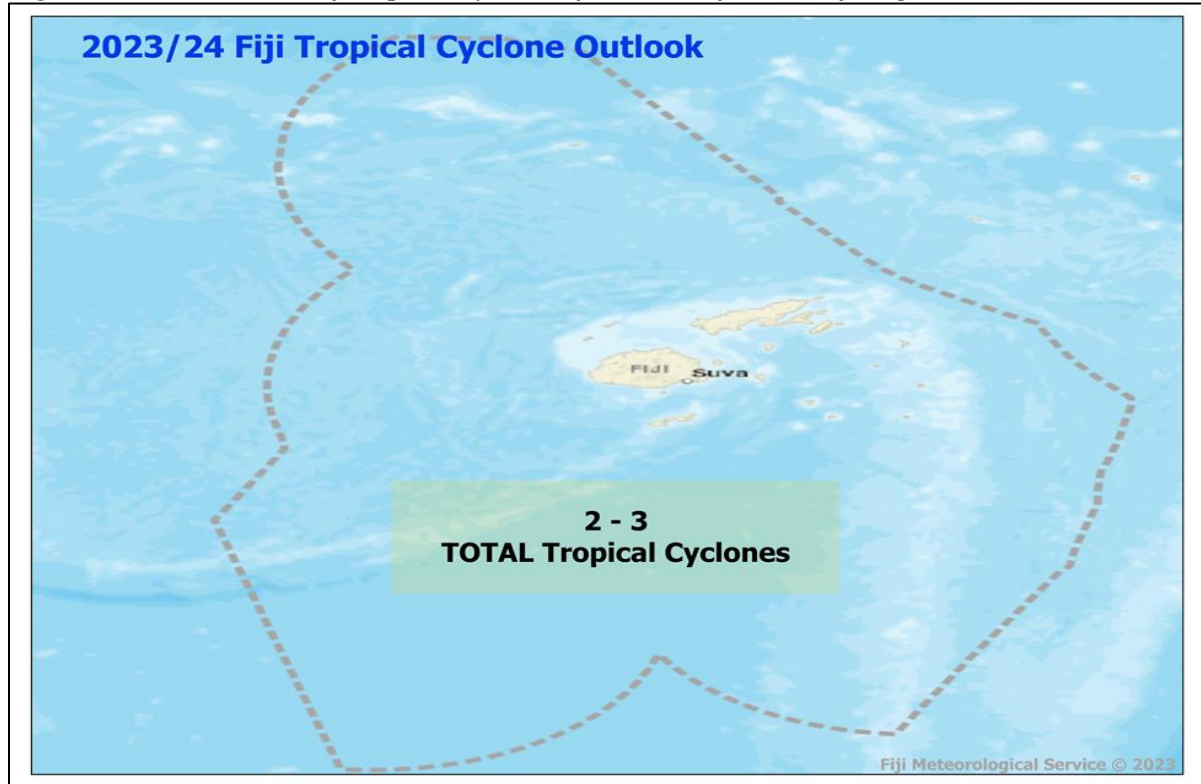


Figure 4: Number of severe tropical cyclones forecasted for the Fiji region.

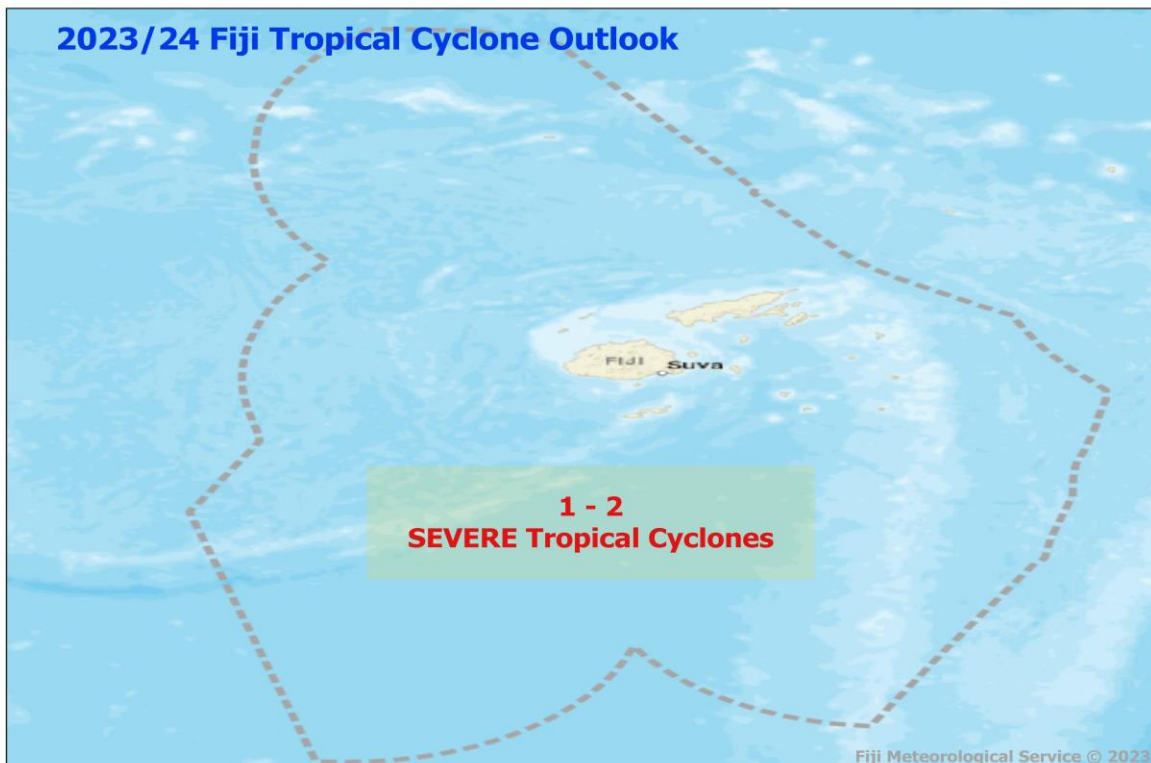


Figure 5: Analogue season track map – 1982-83 season

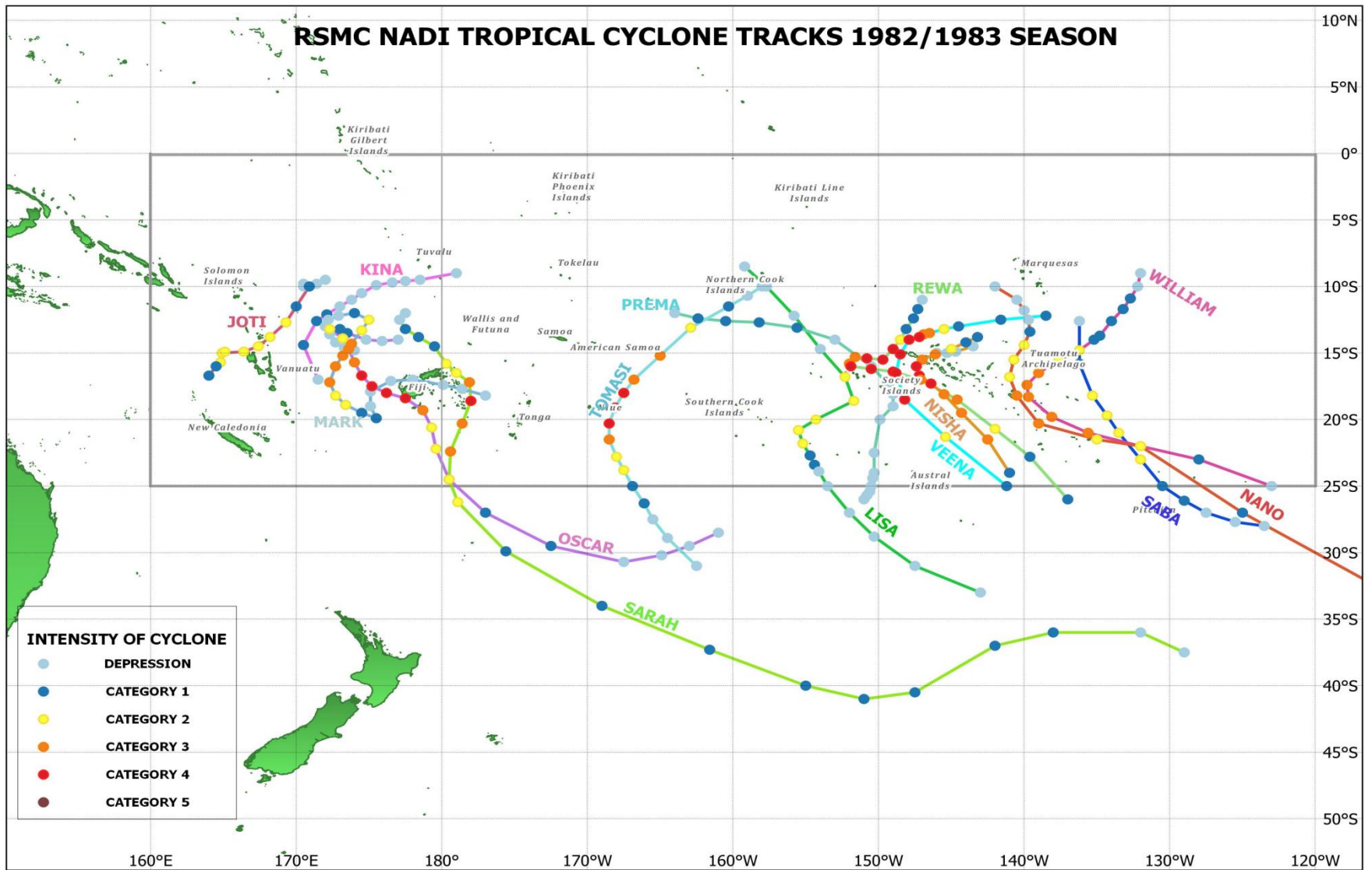


Figure 6: Analogue season track map – 1987-88 season

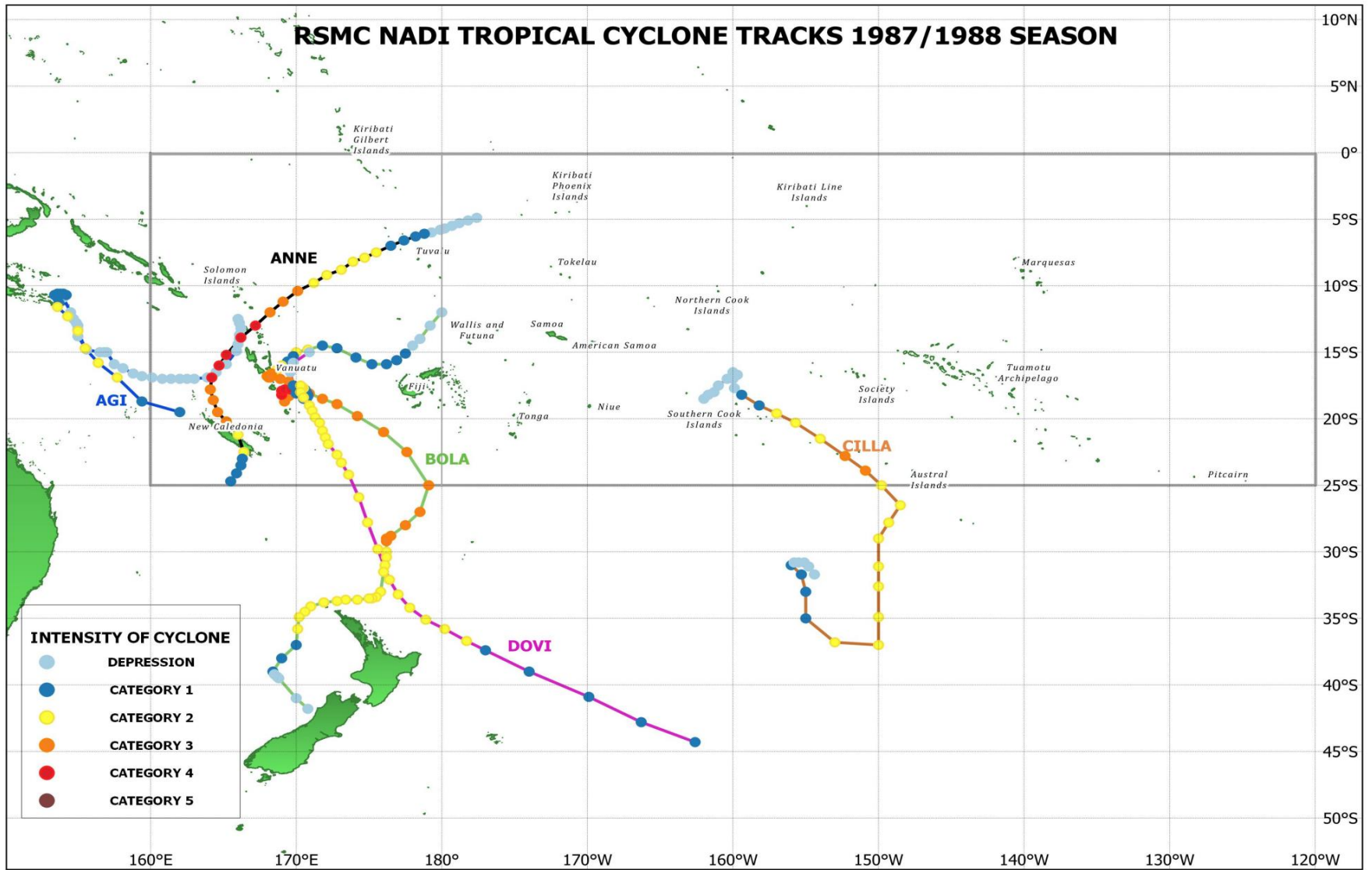


Figure 7: Analogue season track map – 1991-92 season

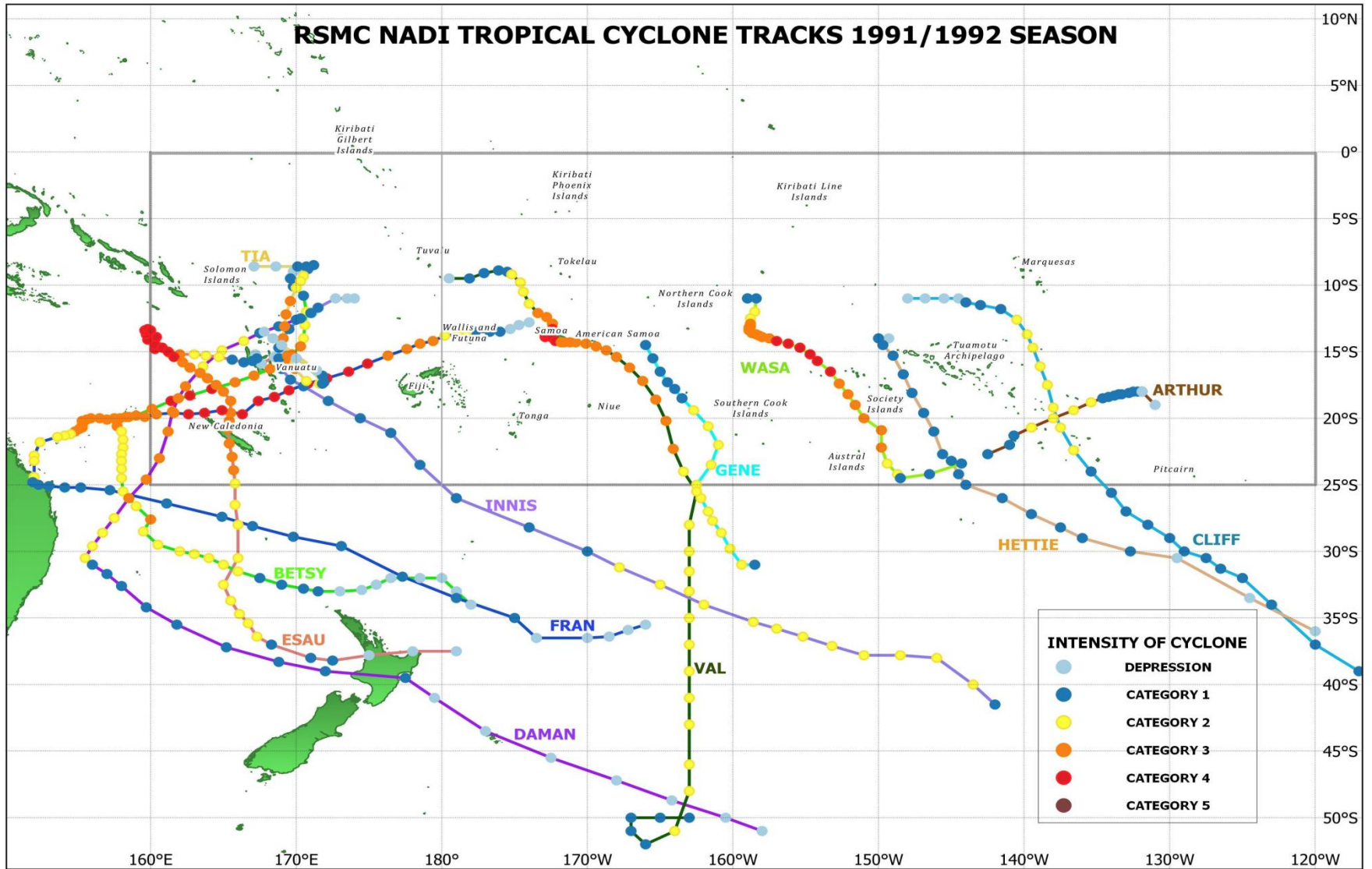


Figure 8: Analogue season track map – 1997-98 season

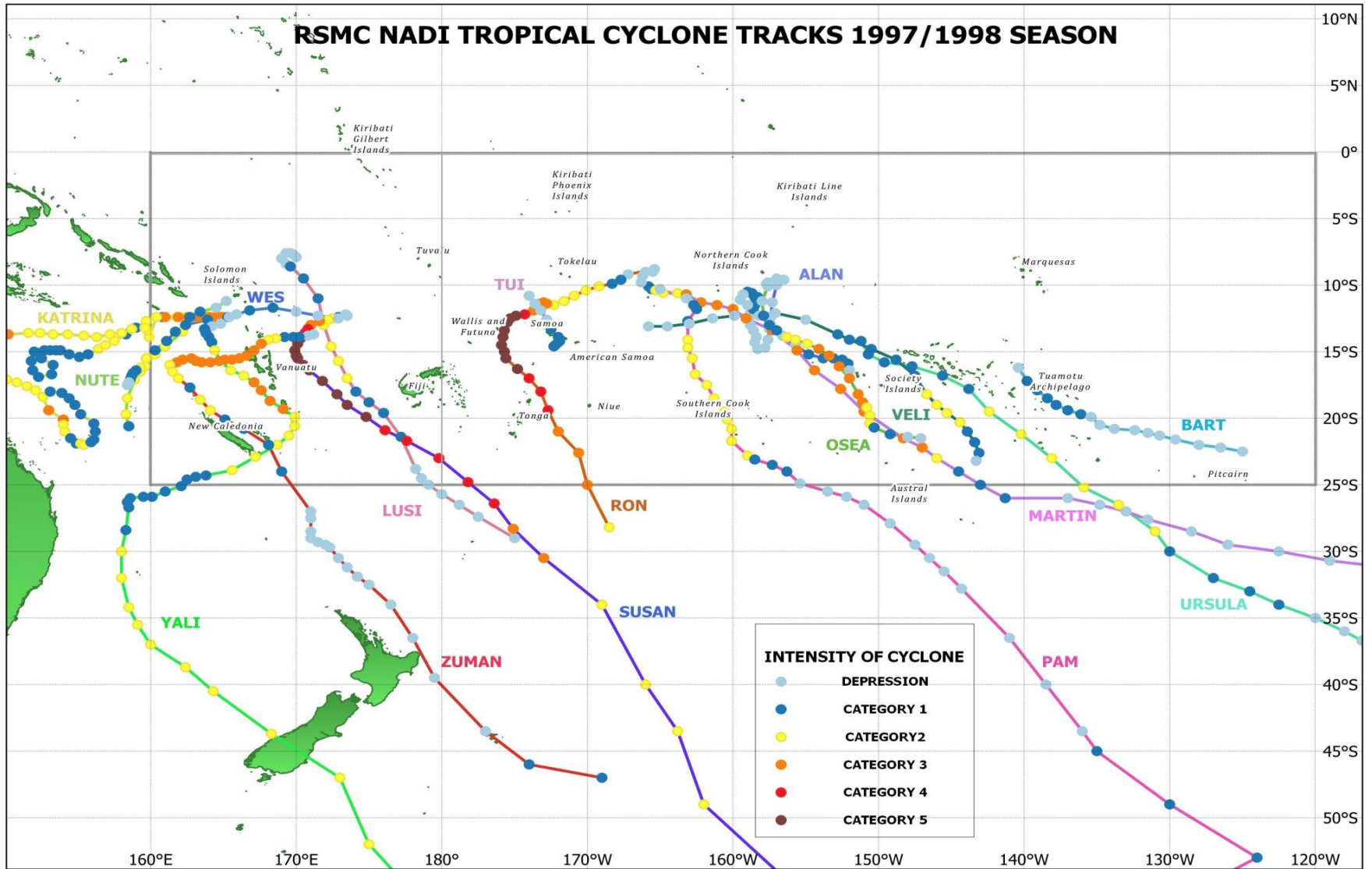


Figure 9: Analogue season track map – 2009-10 season

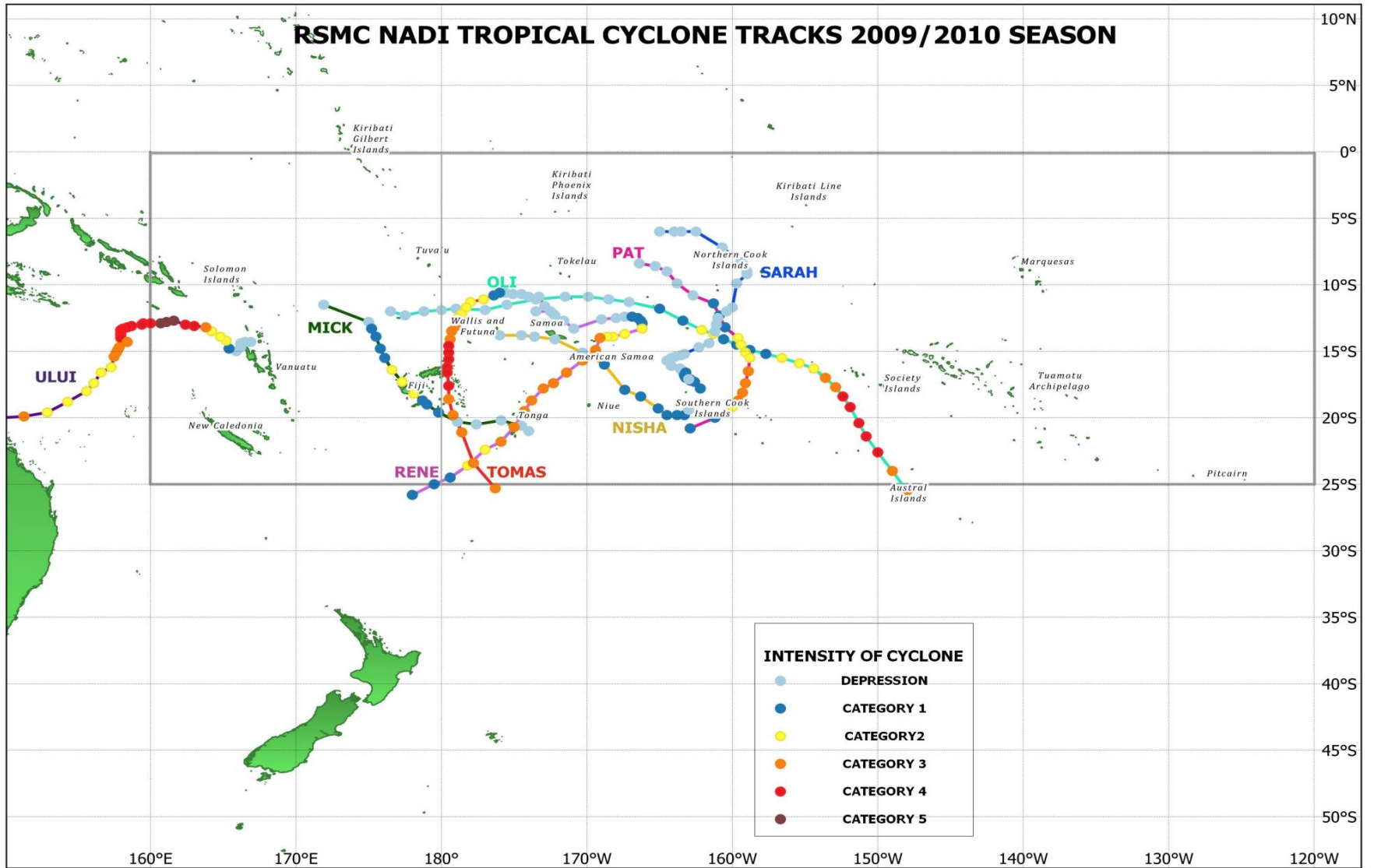
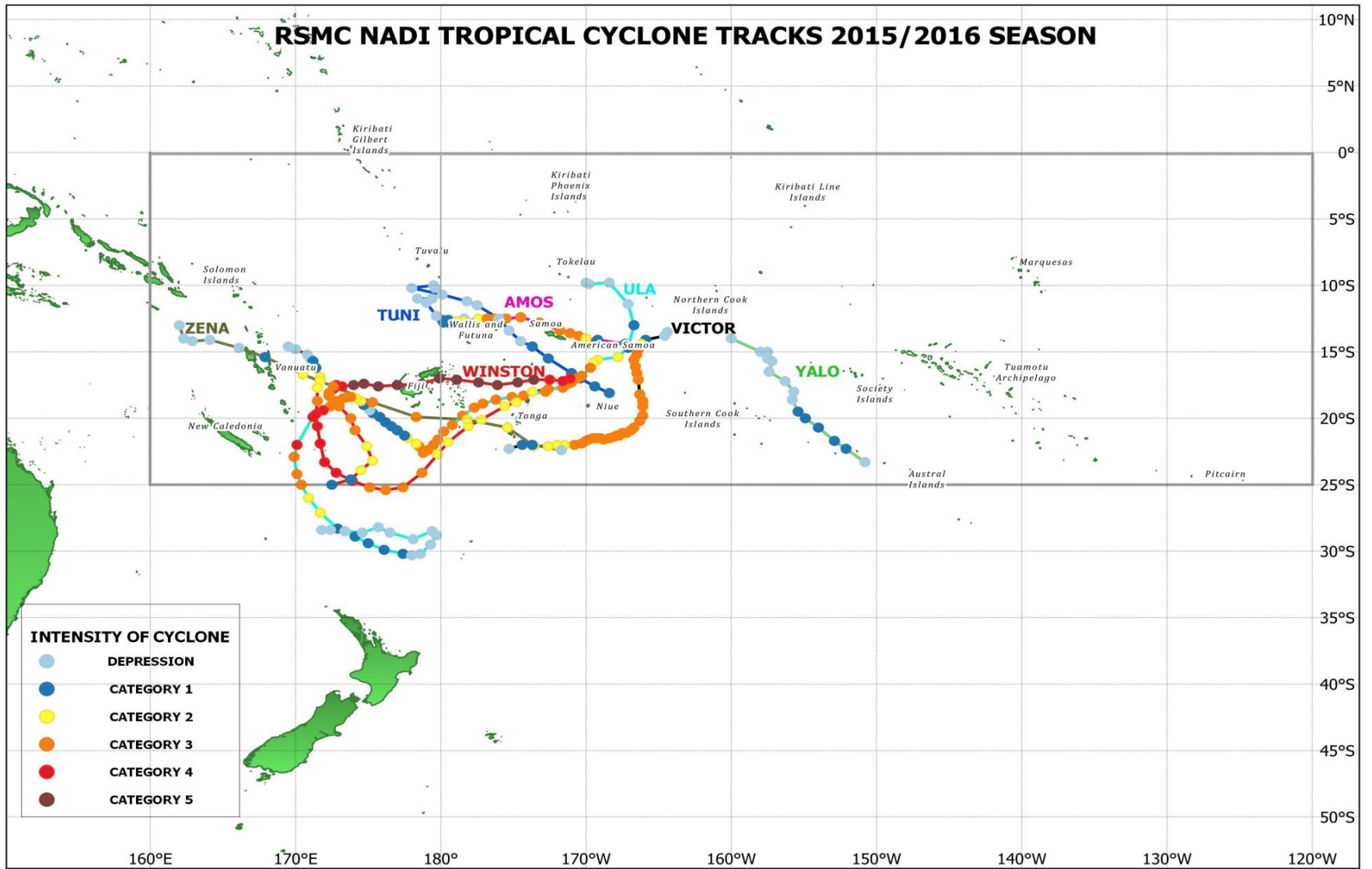


Figure 10: Analogue season track map – 2015-16 season



End...