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THE RAINFALL IN THE MUNICIPALITY OF FLORIANÓPOLIS (BRAZIL): THE CASE OF DECEMBER 2022.

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1. INTRODUCTION

Florianópolis is situated in the State of Santa Catarina, South Region of Brazil. The Municipality contained 537.213 habitants and covers a territorial area of 674,844 km² (IBGE). The economy is based on tourism, technology, commerce, construction, mariculture and aquaculture. Figure 1 illustrates the localization of Florianópolis.

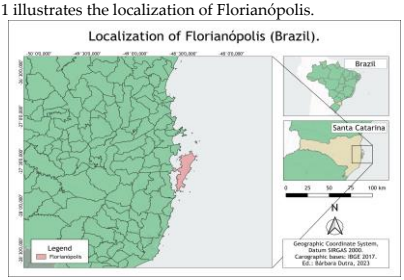

Figure 1: Localization of Florianópolis (Brazil).

According to Monteiro (2001), SC is one of the Brazilian states with the best distribution of precipitation. This is attributed to a series of factors: cold fronts, South Atlantic Convergence Zone, mid-level troughs, maritime circulation, tropical convection, cyclonic vortices and relief.

This article aims to analyze and demonstrate the precipitation responsible for the flooding episodes in December 2022 in the Municipality of Florianópolis. Additionally, it aims to compare this with other extremes situations previously recorded.

2. METHODS

Rainfall data and information were collected from the National Institute of Meteorology (INMET) and processed using Excel Software. Additionally, satellite images, Defense Civil website, photographs, and images from state and municipal newspapers. Furthermore, the Atlas of Natural Disasters in the State of Santa Catarina.

3. RESULTS AND DISCUSSION

In December 2022, rainfall reached 477 mm. This was higher than the monthly average of 177 mm, with a deviation of 299,8 mm. The intense rainfall occurred at the beginning of the month and between the 19th and 20th (INMET, 2023).

Precipitation in South Region was attributed to a hot and humid mass of air, especially in Santa Catarina at the beginning of the month. On the 20th, was related to a low-pressure system with high humidity levels, resulting in expressive rainfall in the cities of Itajaí and Florianópolis.

Figure 2 illustrates the accumulated precipitation in Brazil for December 2022, with areas in blue indicating the highest volumes and areas in yellow/green the lowest volumes.

Figure 2: Accumulated rainfall for December 2022 in Brazil. Source: INMET, 2023.

Figure 3 illustrates the annual rainfall for the Municipality of Florianópolis. The month of December had the highest rainfall, exceeding 400 mm, followed by March. In December, some days experienced intense precipitations, while on other days, no precipitation was recorded.

Figure 3: Annual total precipitation for 2022 in Florianópolis. Source: INMET, 2023.

Figure 4 represents two photographs of Florianópolis. The first one (A) is from December 1st and illustrates the damage caused on a street. The second photograph (B) is from December 19th and shows Highway SC-401, and has flooding points, impeding traffic.

Figure 4: Damages caused from rainfall. Source: G1 Santa Catarina.

4. CONCLUSIONS

Based in the information about the precipitation, it is evident that heavy rainfall occurred during December 2022, exceeding 450 mm and being three times above the historical average. The Mayor of Florianópolis declared a state of emergency. In addition, the precipitation also had adverse effects on other cities in the North of the State, Baixo and Médio Vale of Itajaí.

Additionally, to the recent event, the Municipality of Florianópolis has experienced other situations during the years, as demonstrated in the Atlas of Natural Disasters. Sometimes, intense rainfall can lead to new incidents, such as landslides and slips.

5. REFERENCES

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