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Variation of the Talweg Superior (TSUP) location with the ENSO

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The ENSO impact is global in French Polynesia. During warm phase, frequency of tropical cyclone increase and rainfall are more important on Marquesas archipelago and less important on Australes Islands. Tahiti is on transition area. During cold phase, frequency of trade winds and storms increase, more particularly in Marquesas Islands. The Talweg Superior (TSUP) characteristic of synoptic climate in Marquesas is mainly tracer of storms activity. The formation of Super Cells and frequency of storms from Marquesas until Society islands depends on TSUP position. The Empirical Orthogonal Functions (EOFs) and time spectral analysis are used to characterize TSUP position in French Polynesia and its variability. The results are based from upper air data (geopotential at 200hPa-Z200 and at 500hPa – Z500) from radio soundings of Atuona synoptic station (9°48'5"S/1139°2'1"W) and Faa'a synoptic station (17°33'4"S/149°36'8"W). The data from ECMWF reanalysis ERA15 and ERA40 completed the results. In warm phase we observed positive anomalies for Z200. The position of TSUP is at the extreme East of French Polynesia, unfavourable to an intense stormy activity. In cold phase we observed negative anomalies for Z200. The position of TSUP at the West of French Polynesia entrains increase in the stormy activity