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## Extratropical intrusions and their role in tropical flood events: A South Pacific perspective

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Extratropical Rossby waves are a potential source of instability for driving convective disturbances in the tropics. In the South Pacific, island nations are subject to flooding associated with such convective disturbances, yet these have not been conclusively linked to any large-scale processes. Using an object-based approach, this study specifically explores in particular how Rossby waves propagating into the tropics can contribute to the formation of extratropical-tropical cloud bands, which can cause flooding events. These cloud bands are associated with substantial precipitation events and serve as easily detectable proxies to identify when such intrusions occur. Building upon this foundation we use ERA5 reanalysis along with a detection analysis for tropical-extratropical cloud bands and potential vorticity streamers and cutoffs to establish a climatology of such intrusions and cloud bands. This allows us to demonstrate the statistical association of extratropical intrusions with intensified deep convection, in particular over the tropical central South Pacific. We find that these intrusions contribute significantly to the occurrence of floods in the Polynesian islands. In summary, this study allows us to connect the interaction between the extratropics and the tropics with flood events in the South Pacific.