

The Pilot Aeroclipper Campaign in North Pacific Cyclones (PACNPac)

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Tropical Cyclones (TCs) are a major threat for many tropical and subtropical coasts. Their monitoring and forecasting are thus of great importance to deliver accurate early warnings. Most of the real time data available for operational centers is however coming from satellite observations. For example, the Dvorak technique gives an indirect estimate of the wind intensity based on the structure of the cyclone cloudiness. Yet, there is no device able to measure continuously the surface pressure in the eye of the TC that is critical to follow the evolution of its intensity. The Aeroclipper developed by the French Space Agency (Centre National d'Études Spatiales, CNES) is a quasi-lagrangian device (small streamlined balloon) drifting with surface wind at about 20-30m above the ocean surface. It is a new and original device for real-time and continuous observation of air-sea surface parameters in open ocean remote regions. This device enables the sampling of the variability of surface parameters in particular under convective systems toward which it is attracted. The Aeroclipper is therefore an ideal instrument to monitor TCs in which they are likely to converge and provide original observations to evaluate and improve our current understanding and diagnostics of TCs as well as their representation in numerical models.

We will present the challenges of the test Aeroclipper flight during the Pilot Aeroclipper Campaign in North Pacific Cyclones (PACNPac) that will take place from Palau, an archipelago situated in the most cyclonic region on Earth, during next northern hemisphere cyclonic season. This campaign aims at obtaining the first continuous observation of surface parameters in a TC. It should provide a crucial first step toward an operational use of Aeroclippers in real-time operations to improve the reliability of TCs forecasts and warning procedures.

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