An international scientific field campaign over the Pacific, called T-PARC, was carried out by international communities and institutions, to improve typhoon track forecasts and to study extratropical transition (ET) and downstream impact. During T-PARC, there were several targeting guidance products available for adaptive observations by airplanes to improve typhoon track. The results show that the adaptive observations on average improve the typhoon track forecast, although the amount of improvement differs between the models. Also we learned that in some cases the forecasts strongly degraded, mainly due to inadequate data assimilation of airplane observations near the typhoon centers.

During the field phase of T-PARC, several tropical disturbances moved poleward and underwent a transition into the mid-latitudes. The character of these disturbances included a weak circulation associated with widespread deep convection, a midget tropical cyclone, a typhoon, and a super typhoon. A three-aircraft mission was conducted into what was thought to be a weakening TY Sinlaku. However, Sinlaku re-intensified to a typhoon and then began ET 24 h later. The result shows that the role(s) of the vertical distribution of vorticity was found to be critical to the re-organization of the tilted vortex to an upright circulation. TY Jangmi also provided a source of reduced predictability, but this was related to modification of the mid-latitude jet stream due to outflow from Jangmi. Numerical simulations with potential vorticity (PV) diagnosis showed that most of the lifting of tropical air to the jet level occurs in a small band at the baroclinic zone.