Lanyu (Island) Station – New Horizons of the Western Pacific Ocean in Background Atmospheric Chemistry and Radiation Observations

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The Lanyu meteorological station (22.04°N, 121.56°E; 324 m) is located on the peak of Lanyu Island, approximately 70 km offshore of eastern Taiwan. Because of its special geographic location, the site is characterized by a clean maritime environment and being the front line of the typhoon watch. The weather station was built by the Japanese in 1940 for typhoon monitoring. Later in 1947, the Central Weather Bureau (CWB) started to take routine meteorological observations, which continue to this day. Since 1995, the CWB made initial *in situ* measurements for atmospheric chemical compositions (i.e., carbon dioxide (CO_2), nitrogen oxide, ozone, sulfur dioxide, and carbon monoxide) in order to respond to the WMO's recommendation. The review of the 20-year long data record from the Lanyu site will be presented in this presentation. In general, the data quality is good and the magnitudes are within a reasonable range. The CO_2 trend shows a good agreement with other background stations (i.e. Lulin, Dongsha Island). Occasionally, the influence of anthropogenic sources, such as ship emissions, has also been observed in the data set. In order to remove outliers, we performed a statistical method to remove the contamination from pollution events and calculated the baseline values for each species. The baseline values provide us with the preliminary understanding of background atmospheric conditions in the western Pacific Ocean. For future plans, we propose to upgrade *in situ* measurements and to set up a high quality radiation observation at the Lanyu site. The site will continue provide high standard data and serve as an international collaboration platform in the science community.

Figure 1. Geographic location of Lanyu Island (Captured from Google Maps).

Figure 2. The Lanyu weather station taken from quadcopter.