

Seasonal variations of virioplankton and picoplankton in the semi-enclosed and open coastal waters of subtropical western Pacific

An-Yi Tsai<sup>1</sup>

<sup>1</sup> Institute of Marine Environment and Ecology, National Taiwan Ocean University, Keelung 202-24, Taiwan

Viruses are known to be an important agent of prokaryotic loss in diverse environments. However, to date few studies have examined seasonal variations in virus-prokaryote interactions in marine environments.

This study measured viral and prokaryotic abundance between January and November, 2015 to assess seasonal variations in the relation between viruses and prokaryotes (heterotrophic bacteria, *Synechococcus* spp. and picoeukaryotes) in eutrophic semi-enclosed and oligotrophic open coastal waters. Viruses and prokaryotes were found to be significantly more abundant in productive semi-enclosed coastal waters.

Using side scatter and green DNA dye complex fluorescence, we were able to analyze flow cytometry (FCM) data to clearly distinguish two groups of viruses, VLP1 and VLP2. VLP1 was most dominant in the viral community, ranging from 84% to 89% and 67% to 78% in semi-enclosed and open coastal waters, respectively. Lower virus-to-bacteria ratios (VBR) were observed at semi-enclosed coastal waters (0.9 to 6.1), due to turbidity values of these two coastal waters were significantly different (4.5-6.2 NTU and 0.5-1.2 NTU, respectively) in summer, probably a result of higher suspended matter and their removal of viruses from the surface waters.