10. Wave Measurements using GPS

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Abstract: Wave measurement using a commonly available and high frequency sampling (over 2 Hz) capable GPS is developed, deployed and compared with conventional wave measuring sensor. The GPS gives x-y-z positions with ten centimeter level accuracy when adequate high-pass filter is used to filter out low frequency positioning error. Most of surface waves have periods shorter than 20 seconds but the GPS positioning error occurs in periods larger than 50 seconds. High pass filter and FFT are developed for onboard microprocessor for ocean observing buoy or drifter. The mooring buoy was deployed in the East China Sea and it produced the comparable significant wave heights, periods and direction to the wave rider moored nearby. The wave measurement by GPS on drifter is under development.