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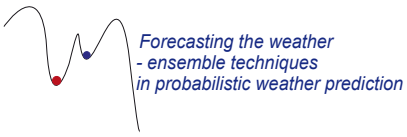

Forecasting and Monitoring of ocean swell fields from space

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Swell energy has gained more and more interest within the past decades because of the growing need for alternate renewable energies. During the very same period, spaceborn Synthetic Aperture Radars (SAR) used in a specific wave mode have proven their capability to provide a global view of ocean swell fields propagating accross ocean basins [Collard et al. 2009]. The concept of a virtual buoy is further developped here with particular focus on the accuracy of the swell parameters: swell significant height, peak direction of propagation and peak period. We show how individual observations of the same swell field can be put together to estimate these parameters at a fixed location, thereby simulating real buoy measurements. Estimated against a moored buoy in the Pacific Ocean over year 2008, partition to partition comparison provides good statistics with root mean square errors of less then 0.5 seconds for the peak period and less than 10 degrees for the direction of propagation. The evolution of the swell forecast with data density is also assessed, especially for past hazardous events. Thanks to 8 year data archive and a near real-time data access, these new methods aim at better estimate of swell energy ressources and early warning of energetic events.