

SEA SURFACE CURRENT MODELLING BY ALONG TRACK INTERFEROMETRY OF TANDAM-X SAR DATA

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Abstract: This work has revealed a method for regaining sea surface flow using such high-resolution satellite data of TanDEM SAR-X. Along-track interferometry (ATI) technique is implemented to retrieve sea surface current movement. To this end, the multichannel MAP height estimator algorithm is used to model sea level variation. Then the inverse algorithm is used which based on the Doppler Frequency model to retrieve sea surface current. The results reveal that the sea surface flow pattern is dominated by a low velocity of less than 0.3 m/s which corresponding to lower sea level variation of 0.4 m. The study confirms that multichannel MAP height estimator algorithm is proficient to regain the sea surface flow rate from ATI TanDEM-X with extraordinary precision of ± 0.09 m/s. In conclusion, the approximation algorithm of multichannel MAP height conceivably can be a tremendous practice for repossessing sea surface flow pattern and sea level fluctuations from ATI TanDEM-X satellite data.

Keywords: TanDEM SAR-X, Along-track interferometry, Doppler Frequency, multichannel MAP height, current movements