The shape of extreme wave-groups on the open ocean

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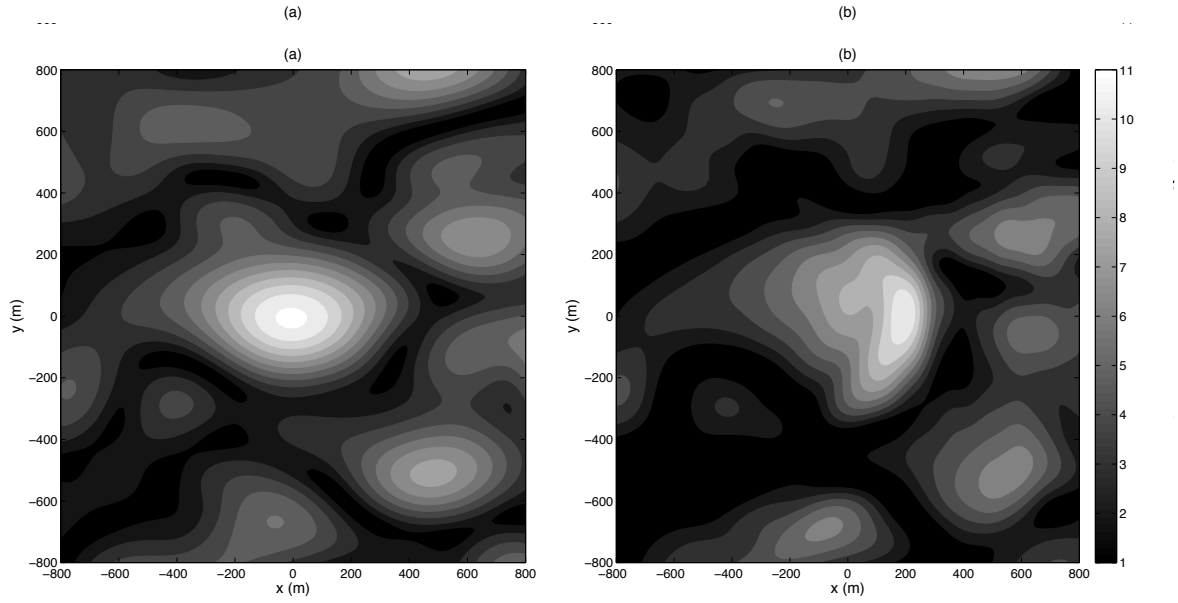
In this study we investigate how non-linearity modifies the shape and structure of large wave-groups in the open ocean. We investigate how non-linearity changes the shape of large wave-groups in random seas over the timescale of a few periods.
We start by considering a random linear sea-state over a patch of ocean over an hour. From this we extract the largest wave crest. We extract the surface around this crest and propagate this back in time by 10 wave periods using linear evolution. We then propagate this forward again under non-linear evolution using the broadbanded non-linear Schrödinger Equation [1] which shows good agreement with potential flow



References

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