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Short-range acoustic propagation through non-linear internal waves

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During the Shallow Water 2006 Experiment (SW06), mid-frequency acoustic transmission data were collected on a vertical array over a continuous 7-hour period at range 550 m. The relatively short range was deemed desirable for studying the effects of internal waves; individual waves in a packet of non-linear internal waves might be isolated between the acoustic source and receiver. Of present interest are data immediately before, during and after the passage of a non-linear internal wave on 18 August 2006. Among other features, the data show a new acoustic path being generated as the internal wave passes the acoustic source. A ray-based model is developed for the observed effect that uses as input nearby oceanographic measurements. [Work supported by ONR.]