

TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Room 617 Wachman Hall

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Automatic Weather Front Detection

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Abstract.

Historically, attempts at automatic front detection have involved differential operators of order two or higher. When applied to discrete data sets which frequently include noise, approximations of these operators may be unreliable for various reasons. We present a simplified model involving level curves of the norm of the temperature gradient. We then isolate the pieces of the level curve which correspond to the warm edge of the frontal zone. Classification of warm and cold fronts is accomplished using thermal advection. Further improvements may be made using derived temperature variables.