An Exception to the Internal Dynamics Method:
21 February 2005 Tornadoes in the Southern Sacramento Valley

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ABSTRACT

On 21 February 2005, three tornadoes formed in the Sacramento Valley of northern California. These tornadoes caused nearly one million dollars in damage to residential and commercial property in the Sacramento metropolitan area. The infrequency of tornadoes in California has been well established; however, the Sacramento Valley is one of two sub-regions within the state that has been identified as having a greater potential for tornadoes than the remainder of the state. On this day, sufficient wind shear and instability provided the necessary ingredients for severe weather in the Sacramento Valley. Photographic evidence, in conjunction with WSR-88D radar data, indicates that two of these tornadoes were spawned from low-topped supercells. As is commonly observed with supercells, these storms deviated to the right of the mean flow. A modification to the Internal Dynamics Method was conducted to explain the deviant motion observed by the supercells that traditional methods failed to accurately predict.