Application of the SCIT Algorithm to South Korea Storm Data

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1. INTRODUCTION

There are numerous reasons why severe weather detection is a key element of the weather radar system. One of the severe weather detection algorithms is the Storm Cell Identification and Tracking (SCIT) algorithm developed by the National Severe Storms Laboratory (NSSL). SCIT is a storm centroid tracking algorithm included in the Open Radar Product Generator (ORPG) software of the WSR-88D Build (Johnson *et al*., 1998). Since 2000, the Korea Meteorological Administration (KMA), in cooperation with NOAA's Forecast Systems Laboratory (FSL), has been developing the Forecaster's Analysis System (FAS), an AWIPS-like (Advanced Weather Interactive Processing System) forecaster workstation.

The System for Convective Analysis and Nowcasting (SCAN) is an integrated suite of multisensor applications that detect, analyze, and monitor convection, and generate short-term probabilistic forecast and warning guidance for severe weather automatically within AWIPS. Basically, the SCAN uses CZ (Composite Reflectivity), VIL (Vertically Integrated Liquid), and SCIT information as its input data. During 2003, efforts have been made to produce several products for SCAN input data using the ORPG routine with Korean radar data. The data have been tested using the SCIT algorithm, observed during spring 2003 in southwestern Korea.

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2. DATA SETS AND METHODOLOGY

In this work, S-band radar data collected at KMA's Jindo Weather Forecast Office S-band was used to verify the applicability of the ORPG SCIT algorithm to KMA's data. In the spring 2003 season, there were 5 cases of heavy rainfall near the Jindo radar site, located in Jeonranamdo Province in the southwestern part ofthe Korean peninsula. The KMA radar data, stored in Universal Format (UF), were converted to Archive II (AR2) format for the ORPG tests.

3. PRELIMINARY RESULTS

Figures 1 and 2 show examples of reflectivity data and storm tracking information (STI). Since there were steady southwesterly winds, predicted storm tracks coincided well with wind direction observations.

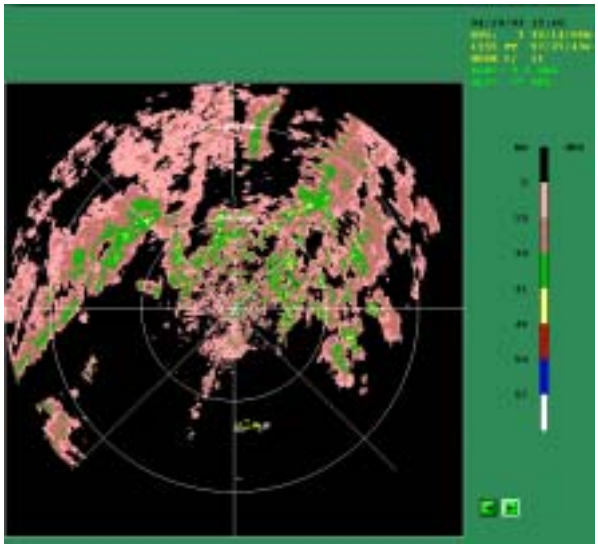

Fig. 1. Radar reflectivity observed 1540 UTC 18 April 2003 at Jindo, South Korea.

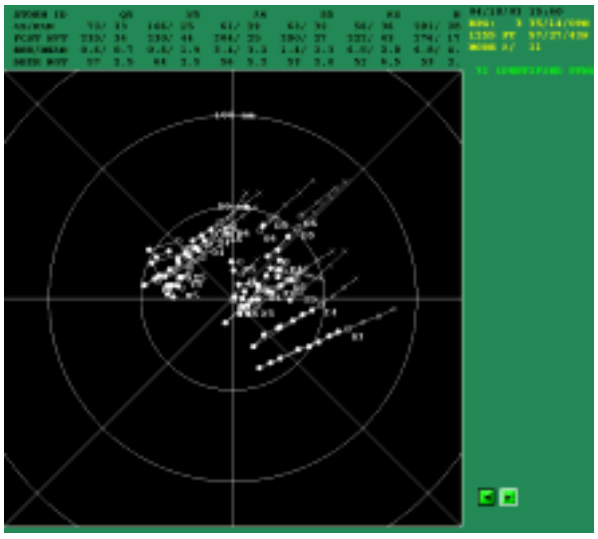

Fig. 2. Storm Track Information shown for the storm cells identified from the reflectivity data shown in Fig. 1

The topography is not complex and is not a factor in tracking storms in this region. We can see that the algorithm shows good performance in this case.

4. FUTURE WORK

The lifetime and significant features of these storms will be investigated along with the SCIT algorithm's ability to detect and track them. The results of the algorithm's performance in detecting and tracking storms will be also compared to improvements in radar data quality.

5. ACKNOWLEDGMENT

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6. REFERENCES

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