TITAN USERS GUIDE

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Overview

Background

The Thunderstorm Identification, Tracking, Analysis and Nowcasting (TITAN) project began in 1982 as an effort to objectively identify and analyze thunderstorms for the purpose of evaluating cloud-seeding activities aimed at rain enhancement in South Africa. TITAN originally referred just to the applications which identified and tracked the storms, and which analyzed their properties.

Over time users have come to view TITAN as the entire software system which supports the storm analysis, rather than just the storm-specific applications. This system includes applications which ingest data, convert data formats, perform analysis, display results and make the data available for use on other systems. It also includes the infrastructure which allows users to start and run the applications in a real-time project.

What does TITAN do?

As mentioned above, TITAN started as a tool for the evaluation of cloud seeding programs, but since then has grown in scope. The TITAN system now has components which perform the following types of task:

- ingest of data from various types of weather radar;
- ingest of other types of data such as aircraft tracks, lightning, satellite and model data;
- remapping of radar data into Cartesian coordinates;
- merging of individual radars into a 3-D mosaic;
- clutter and AP identification and removal;
- filtering of bright-band echo;
- storm and echo tracking and forecasting;
- precipitation estimation;
- computation of VIL and storm severity.

The TITAN system has the capability of running in real-time mode. In this mode it processes new data as it arrives. The system has high-reliability features such as an auto-restart mechanism to restart processes which die for any reason.

TITAN also has an analysis mode, in which applications can be run on data sets which were collected during real-time operations, or obtained from an outside data source.

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How to use this users guide

This document is organized in major sections. The intention is that you can use the sections individually, in any order, without having read the other sections.

You will find sections covering the following aspects of the system:

- downloading and installation;
- the TITAN data system;
- running TITAN in real-time and analysis modes;
- a catalog of TITAN applications;
- data flow diagrams for some of TITAN's common tasks.