MTIF Specification

DRAFT 1.0

Prepared By: Doug Gentges, CSC

Introduction to the Draft Copy

This Document represents my best understanding of the current state of MTIF as being used by FNMOC/NRL. The whole point of this is to create a standard that is interoperable within the METOC community. Any questions, comments, suggestions, inclusions, or errors should be sent to the author via e-mail at Doug.Gentges@metnet.navy.mil.

Introduction

Background

The Metoc TIFF (MTIF) specification was originally drafted as a simple specification for the storage and transfer of geo-referenced meteorological satellite data. The format is based on the TIFF 6.0 specification.

Scope

This document only describes the MTIF extensions to the TIFF format. It is in no way intended to fully describe the TIFF format. Developers attempting to write MTIF encoders and decoders should also retrieve a copy of the TIFF format specification.

The TIFF format was originally create by Aldus, and is now owned and maintained by Adobe. As of the time of writing of this document, the complete TIFF 6.0 specification can be retrieved from the Adobe web site at the following URL: http://www.adobe.com/supportservice/devrelations/PDFS/TN/TIFF6.pdf . The Adobe TIFF 6.0 specification will be referred to within this document as the "TIFF 6.0 Specification" or the "TIFF specification".

Purpose

The purpose of this document is to address compatibility issues that have arisen with the MTIF specification. The goal is to provide developers with a single, authoritative source for information on the MTIF format.

In the interests of maximum compatibility, there are differing requirements for MTIF readers and writers. In general, an MTIF writer should adhere strictly to all requirements and recommendations. A reader, however, needs to be flexible enough to handle images that may not entirely comply with the specification.

Notation

Numeric Format

Unless otherwise specified, all numbers in this document are in Decimal (Base 10) format.

Syntax

Is and *Shall* indicate mandatory requirements.

Should indicates a recommendation.

May indicates an option.

Part 1 – General Format

A MTIF file is a TIFF file with additional geo-location information included. As such, any valid MTIF file is also a valid TIFF file, and shall adhere, at a minimum, to the Baseline TIFF format as described in Section 1 of the TIFF specification.

The TIFF specification provides for the definition of Private Tags for storing application specific information within a TIFF file. The MTIF format makes use of a series of Private Tags to store the additional information necessary to properly reference and exploit a meteorological satellite image. It is possible that specific applications will further extend the MTIF format by using additional tags to store image exploitation data. To maximize compatibility, MTIF readers should be able to handle images with additional unknown tags.

The tags listed in Part 2 are all required. MTIF writers must include all of the listed tags. MTIF readers, however, should be able to function and display images which are missing some of the specified tags.

Part 2 – Specific Tags

The table below lists the names, tag ID's, TIFF Type, and a short description for the MTIF specific tags. The Type refers to the TIFF Type parameter, as described on page 15 of the TIFF specification.

Table 1 – MTIF Tags

Tag Name	Tag ID	Type	Description
WAprojection	33000	SHORT	Projection. 1 = Polar Stereographic 2 = Lambert Conformal 4 = Mercator 8 = Normal
WAstandard_1	33001	LONG or SLONG	Standard Lat 1 for Lambert Conformal Projection.
WAstandard_2	33002	LONG or SLONG	Standard Lat 2 for Lambert Conformal Projection.
WAhemisphere	33003	SHORT	Hemisphere 1 = north 2 = south
WAupper_left_lat	33004	LONG or SLONG	Latitude of upper left pixel X 100000
WAupper_left_lon	33005	LONG or SLONG	Longitude of upper left pixel X 100000
WAlower_left_lat	33006	LONG or SLONG	Latitude of lower left pixel X 100000
WAlower_left_lon	33007	LONG or SLONG	Longitude of lower left pixel X 100000
WAupper_right_lat	33008	LONG or SLONG	Latitude of upper right pixel X 100000
WAupper_right_lon	33009	LONG or SLONG	Longitude of upper right pixel X 100000
WAlower_right_lat	33010	LONG or SLONG	Latitude of lower right pixel X 100000
WAlower_right_lon	33011	LONG or SLONG	Longitude of lower right pixel X 100000
WAbottom_center_lat	33012	LONG or SLONG	Latitude of bottom center pixel X 100000
WAbottom_center_lon	33013	LONG or SLONG	Longitude of bottom center pixel X 100000
WAupper_center_lat	33014	LONG or SLONG	Latitude of upper center pixel X 100000

WAupper_center_lon	33015	LONG or SLONG	Longitude of upper center pixel X 100000

WAprojection:

A bitmapped SHORT value which describes the projection of the image. The following values are currently supported: 1 = Polar Stereographic, 2 = Lambert Conformal, 4 = Mercator, 8 = Normal

WAstandard_1, WAstandard_2:

These are standard Latitudes and Longitudes for the Lambert Conformal projection. For other projections, these values shall be included, and set to zero. An MTIF decoder should not require these tags to be present for other projections.

WAhemisphere:

The hemisphere of the image. 1 = north, 2 = south [is this only relevant for polar images?]

WAupper_left_lat…WAupper_center_lon:

These 12 values are the latitude and longitude for the corresponding pixels of the image. All latitudes and longitudes are multiplied by 100000 and rounded to be an integer type. Latitudes should be in the range
-9,000,000 to 9,000,000 (South is negative). Longitudes should be in the range
-18,000,000 to 18,000,000. The TIFF type of these shall be either LONG or SLONG. SLONG is recommended, however. MTIF decoders should be able to read these values from any integer type for maximum compatibility.