

National Weather Service Standards Description Document

KML/KMZ - Keyhole Markup Language

Part I - Mission Connection

1. Standards Description- The National Oceanic and Atmospheric Administration's (NOAA) [Policy on Partnerships in the Provision of Environmental Information](#) commits NOAA and NOAA's National Weather Service (NWS) to the use of open standards:

“To advance the environmental information enterprise, NOAA will provide information in forms accessible to the public as well as underlying data in forms convenient to additional processing, to the extent practicable and within resource constraints. NOAA will make its data and products available in internet-accessible, vendor-neutral form and will use other dissemination technologies, e.g. satellite broadcast, NOAA Weather Radio, and wireless, as appropriate. Information will comply with recognized standards, formats, and metadata descriptions to ensure data from different observing platforms, databases, and models can be integrated and used by all interested parties.”

Many NWS products use text formats to describe geographic areas. Other NWS products, such as radar data is geographic in nature. Offering NWS data in a standard, open, and mature geospatial format provides users a graphical method to display geographic data.

An XML grammar and file format for modeling and storing geographic features such as points, lines, images, and polygons for display in GIS applications is Keyhole Markup Language (KML). KML language is used by a variety of GIS and mapping applications and the specifications are freely available to the public and available to the user community without charge or restriction.

To reduce file size, KML files may be compressed using standard compression tools. These compressed (or “zipped”) files are stored with the file extension KMZ (zipped KML files).

KML/KMZ file formats represent a standard which is mature, open, and appropriate to adopt as an NWS standard.

2. Purpose/Intended Use – Data in a standard KML/KMZ format allows Geographic Information System (GIS) users are able to display and use potentially life saving and property damage reduction information from the NWS in a more efficient and user friendly manner. The KML/KMZ file formats are used by client software applications. KML/KMZ files will be disseminated via Internet only.

3. Audience – The current audience for KML/KMZ file formatted data is large volume users of observed/forecast/warning information, utilities, emergency managers,

businesses/industry, academia, and any others who wish to decode and explore various potential applications of the NWS digital data.

4. Presentation Format - The file required by the GIS software is written in KML which internally references the hydrometeorological data (e.g., radar and warning images) through a URL tag. The KML file uses the world file reference information provided for each of the images to plot the image overlay. Point, line, and polygon information can be made available as well within the KML file.

Below is a partial list of major software packages (If you are a commercial vendor of GIS software or applications that support the KML/KMZ file format and wish to be added to this list, please contact w-nws.webmaster@noaa.gov) that currently or will soon support KML/KMZ.

- <http://earth.google.com/> Google Earth (free software) that reads KML
- <http://www.keyhole.com/body.php?h=products&t=keyhole2EC> Keyhole's Application that reads and plots from KML
- <http://www.esri.com/software/arcgis/explorer/index.html> ESRI's ArcGIS Explorer (Free) which will support KML
- <http://worldwind.arc.nasa.gov/> NASA World Wind viewer (Free)
- <http://www.worldwindcentral.com/wiki/Add-on:KMLImporter> NASA World Wind plug-in to support KML until release 1.3.4 of NASA World Wind
- <http://www.safe.com/products/fme/index.php> FME (Feature Manipulation Engine) that converts data in one format to another (KML support)
- <http://www.kmler.com/> ArcGIS extension that allows ESRI software to read KML until the next full release of ESRI software that will natively support KML/KMZ

5. Feedback Method - User feedback is extremely important in our effort to improve the quality and usefulness of products and services. Comments on providing NWS GIS data in standard KML/KMZ file formats will be collected through December 31, 2006. Please submit your comments on the openness, maturity, and appropriateness of using this standard on NWS datasets at:

http://www.weather.gov/cio/policy/kml_comments.htm

Experimental products in a KML file format are available. Some experimental products include:

- Individual and composite radar images: <http://www.srh.noaa.gov/ridge/kmzgenerator.php>
- Warning Polygons: <http://www.srh.noaa.gov/ridge/kmzgenerator.php>
- Fire Weather Spot Data: <http://www.wrh.noaa.gov/firewx/firekml/firekml.php>

For general questions regarding KML/KMZ formatted NWS products, please email: [NWS Webmaster](mailto:w-nws.webmaster@noaa.gov) at w-nws.webmaster@noaa.gov

Technical questions regarding specific products in KML/KMZ file formats should be addressed to the contact points identified in the Product Description Document for that specific product.

Part II - Technical Details of Standard

Format and Science Basis - The definitions and technical information for KML tags and specifications are posted at: http://earth.google.com/kml/kml_tags_21.pdf