Trimble

eCognition ® Developer 9.0

Release Notes

Trimble Documentation

eCognition 9.0

Release Notes

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Dear User,

Thank you for using eCognition software. We appreciate being of service to you with image analysis solutions. At Trimble we constantly strive to improve our products. We therefore appreciate all comments and suggestions for improvements concerning our software, training, and documentation. Feel free to contact us via the web form on www.eCognition.com/support. Thank you.

Legal Notes

Acknowledgments

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1 Overview

1.1 Overview 9.0

eCognition 9.0 is a comprehensive image analysis platform for multi-dimensional image analysis. It contains all the client and server software needed to extract information from any digital image in a fully-automated or semi-automated way.

1.2 About eCognition 9.0.2

eCognition 9.0.2 is an update to eCognition 9.0.1 and includes a number of new functionality and bug fixes. Trimble recommends customers review these release notes to plan any update. If you have questions please contact us via the web form on www.eCognition.com/support.

eCognition Products

1.3 eCognition 9.0 Highlights

1.3.1 Native Vector Handling

The new release introduces Native Vector Handling for more efficient GIS data management inside eCognition. This includes common GIS functions to visualize, inspect, create, manipulate, update and export vector data. Furthermore, GIS layers and image objects can be synchronized dynamically.
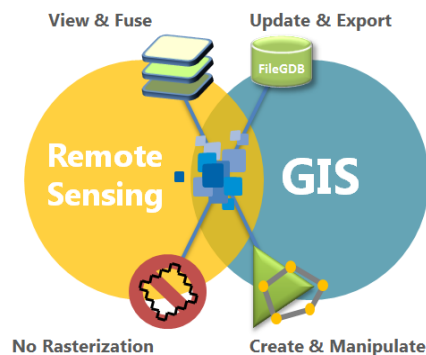
Native Vector Handling

The new spatial and contextual GIS data modeling capabilities can be performed inside eCognition, without the requirement for a link or bridge to GIS. This improved integration of GIS techniques into remote sensing workflows is further bridging the gap between the two domains.

1.3.2 Template Matching

eCognition 9.0 extends the existing knowledge-based and supervised classification methods with computer vision based object detection. The new Template Editor Window allows users to easily collect samples to define the search template that is applied over the imagery data. Additionally, a template matching algorithm is available to create a correlation coefficient layer used to detect objects. This provides additional value for remote sensing experts by improving classification results and extending eCognition to new fields of use inside and outside the remote sensing domain.
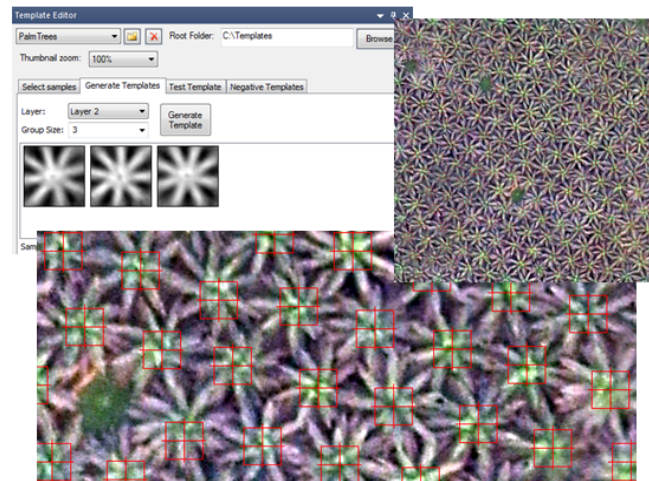
Template Matching

1.3.3 Point Cloud Viewer

To manage the complexities associated with creating information from LiDAR or dense image matching point clouds, eCognition 9.0 introduces a 3D point cloud viewer.
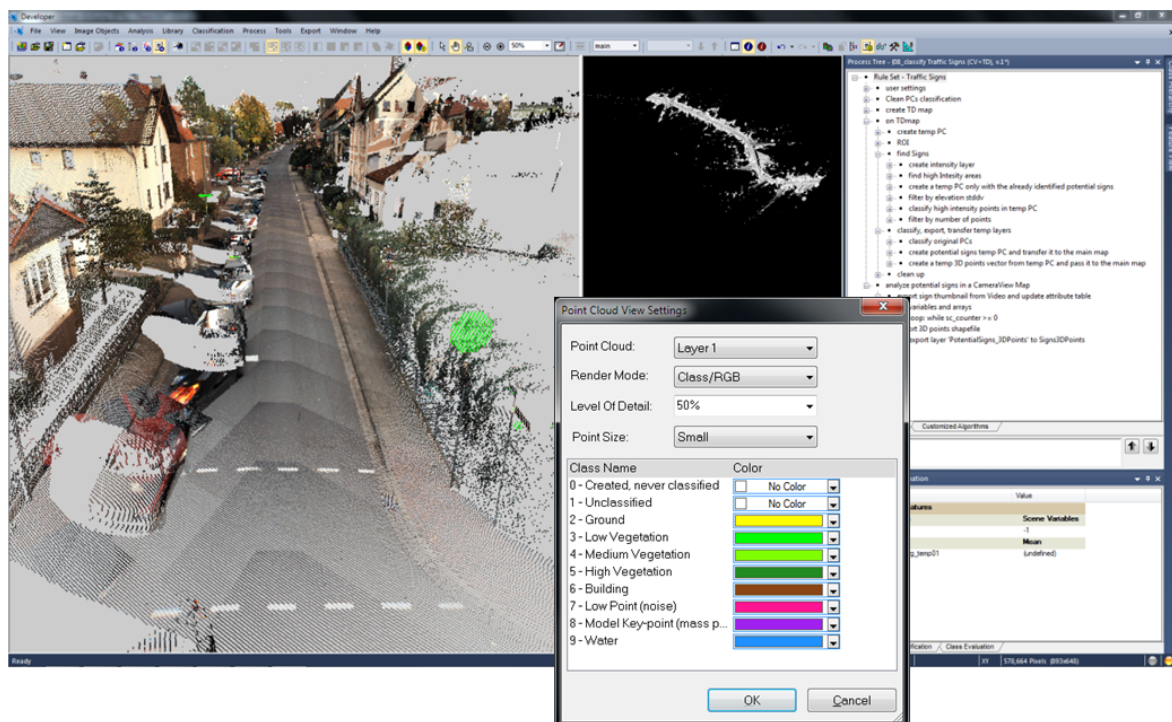
Point Cloud Viewer

Users can visualize points by classification, intensity, RGB values for an easier and better data and result assessment.

This can significantly increase the productivity of creating rule sets as well as improving the classification quality. This opens new application fields for instance in the mobile mapping domain.

1.3.4   JPEG2000 Support

eCognition 9.0 allows loading of compressed JPEG2000 image data with geocoding and resolution information which offers faster turnaround times for projects using the latest set of earth observation sensors like Pleiades satellites.

By direct access to this latest compression technology, no additional conversion operation is necessary.

Support of JPEG2000 Image Data

1.3.5   Trusted Storage

The license handling based on license files is replaced in eCognition 9.0 with Trusted Storage. The new approach provides a secure environment for online license management. Users can easily activate and re-host eCognition licenses online which reduces bottlenecks due to necessary communication loops with the license vendor.
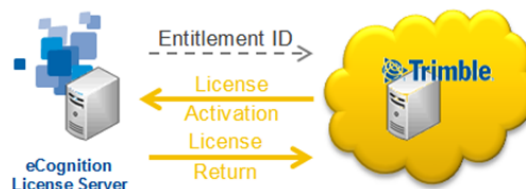
eCognition Licensing based on Trusted Storage

1.4 Key Features

- Available rule-based eCognition clients for application developers and end users:
    - eCognition Developer
    - eCognition Architect
- eCognition Server: A scalable, server-based batch processing environment for multidimensional analysis.
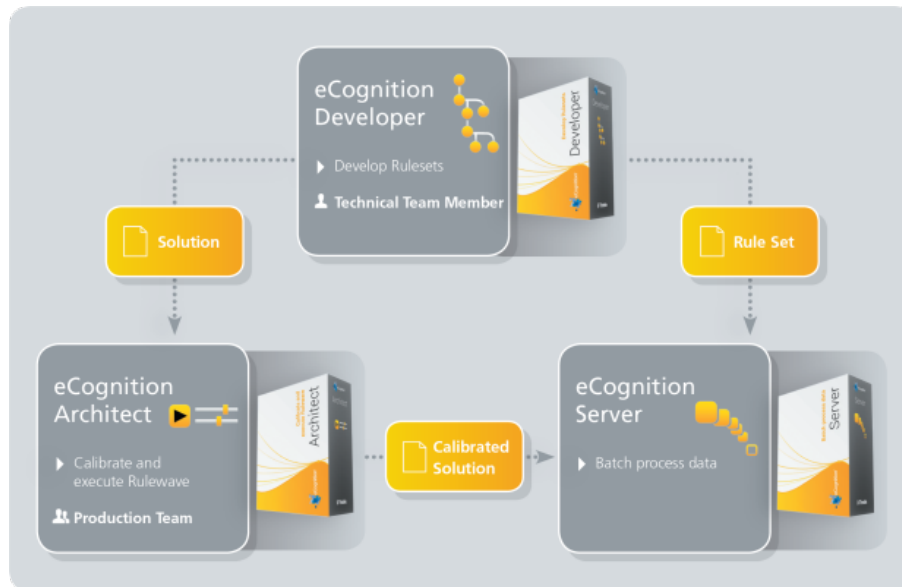
Key Features - eCognition multi-dimensional image analysis software

2 New Features - Bug Fixes and Limitations

2.1 New Features

New Features in eCognition 9.0:

Story	Feature	Description
Native Vector Handling	Improved 2D visualization: vector layer support	Visualize vector data keeping the original geometry: display vectors without snapping vertices/nodes to pixel corners and without rasterization of lines and polygons
Native Vector Handling	New Dialog: 'Edit Vector Layer Mixing'	Control how vector data is displayed: set layer order, outline color, fill color, transparency and auto update of vector layers
Native Vector Handling	New Process Domain: 'vectors'	Addressing the scope of an algorithm to vector layer(s) or specific vector objects (defined by vector features)
Native Vector Handling	Introduce temporary vector layer concept	Create temporary vector layers to enable efficient data access to focus the analysis on areas of interest or to extract a copy for processing
Native Vector Handling	Improved Algorithm: 'create temporary thematic vector layer'	Create a copy (temporary vector layer) of an existing vector layer for further vector analysis steps
Native Vector Handling	New Algorithm: 'convert image objects to vector objects'	Convert image objects to polygon, line or point vector objects (temporary vector layer) for further vector analysis
Native Vector Handling	New Algorithm: 'vector boolean operation'	Perform an overlay analysis on specified operations: union, intersection, subtract or difference
Native Vector Handling	New Algorithm: 'vector simplification'	Simplify the shape of selected vector layers using the Douglas-Peucker algorithm
Native Vector Handling	New Algorithm: 'vector smoothing'	Smooth straight edges and angular corners of lines or polygons based on Polynomial or Cubic Bezier interpolations

Native Vector Handling	New Algorithm: 'vector orthogonalization'	Generalize polygons into rectilinear (orthogonal) polygons at specified granularity
Native Vector Handling	New Algorithm: 'vector integration'	Integrate polygon layers with each other to create a new layer with identical or coincident lines/vertices that are within a certain distance of one another
Native Vector Handling	New Algorithm: 'vector dissolve'	Merge vector objects based on specified attributes
Native Vector Handling	New Algorithm: 'vector remove intersections'	Remove intersections in vector layers (polygons)
Native Vector Handling	New Algorithm: 'delete vector objects'	Delete vector objects from vector layers, defined in the vector domain
Native Vector Handling	New Algorithm: 'modify thematic attribute column'	Update , add, remove or rename attribute columns of thematic layers
Native Vector Handling	Improved Algorithm: 'write thematic attributes'	Generate an attribute column entry from an image object feature to update vector layers
Native Vector Handling	Improved Image Object Information Window: vector feature support	Display vector feature values in the Image Object Information Window, i.e. vector object attributes
Native Vector Handling	New Object Feature: 'Vector object attribute'	Shows attribute table values of selected vector objects
Native Vector Handling	New Object Feature: 'Minimum overlap [%] with thematic polygons'	Computes the minimum value of the overlap between an image object and a vector object in percent
Native Vector Handling	New Object Feature: 'Maximum overlap [%] with thematic polygons'	Computes the maximum value of the overlap between an image object and a vector object in percent
Native Vector Handling	New Scene Feature: 'all existing temporary thematic layers'	Shows a dynamic list of existing temporary thematic layers in the project to initialize layer arrays
Native Vector Handling	Improved FileGDB driver	Loading and exporting point and line feature classes from/to FileGDBs
Native Vector Handling	Improved Algorithm: 'export vector layer'	Export vector layer into an existing FileGDB

Native Vector Handling	Improved Algorithm: 'export existing vector layer'	Export a temporary thematic vector layer to a file (saving vector analysis results)
Template Matching	New Dialog: 'Template Editor' - Sample Selection	GUI to collect and optimize template samples
Template Matching	New Dialog: 'Template Editor' - Template Generation	GUI to compute templates or template groups based on collected template samples
Template Matching	New Dialog: 'Template Editor' - Test Templates	GUI to test templates and to collect automatically additional template samples
Template Matching	New Algorithm: 'template matching'	Perform a template matching procedure to create a correlation coefficient image layer for object detection
Point Cloud Viewer	Improved Viewer: 3D point cloud rendering support	Visualize point clouds in 3D coming from LiDAR or dense image matching
Point Cloud Viewer	Improved Viewer: 3D mouse navigation	Mouse navigation to interact with the 3D point cloud viewer: left mouse button or scroll wheel = Zooming, right mouse button = rotating, both mouse buttons = panning
Point Cloud Viewer	New Menu Button: 'Point Cloud View or Image View'	Toggle between 3D visualization mode and 2D image view
Point Cloud Viewer	New Dialog: 'Point Cloud View Settings'	GUI to define 3D point cloud setting: input layer, level of detail, point size and different rendering modes (intensity, classification, RGB)
JPEG2000	New JPEG2000 driver	Support of compressed JPEG2000 images (*.jp2) with geocoding and resolution information
Trusted Storage	New License Management Tool	GUI for license handling based on Trusted Storage: online license Activation and online license Return
Usability	Improved Algorithm: 'classifier' - importance values support	Optionto query and store importance values and corresponding features from a trained CART classifier into arrays
Usability	Improved Algorithm: 'classifier' - feature space	Use features from a feature array instead of selected features to train a classifier

	array support	
Usability	Improved Algorithm: 'classifier' - export variable support	Export variable support (i.e. {:Workspc.OutputRoot}) for query export paths (plot, parameter)
Usability	Improved Algorithm: 'LiDAR file converter'	Enabled Process Domain to execute algorithm on defined maps
Usability	New Algorithm: 'calculate random number'	Calculate a random value and store it in a variable
Usability	New Algorithm: 'create/update class'	Creates object classes based on features and allows to change class names, class color, class comments and class scope
Usability	Improved Feature: 'distance to line'	Scene variable support for input parameters of "distance to line" feature
Usability	Improved Algorithm: 'set custom view settings'	Extension to define thematic layer mixing (layer order, outline color, fill color, and transparency)
Usability	New MX8 Predefined Import Routine	"MX8 - All Camera View - AVI+LAS All" create projects where all available Camera perspectives are stored in separate maps

New Features in eCognition 9.0.1:

Story	Feature	Description
Trusted Storage	Virtual Machine Support	eCognition License Server runs on a virtual machine based platforms (e.g. VMware)
General	Windows 8.1 Support	eCognition Developer & Architect run on Microsoft Windows 8.1 client operating system
Usability	Image Proxy Server 64-bit Support	Native 64-bit Edition for Image Proxy Server
Usability	Improved Mouse Navigation	Zoom at the location of the mouse cursor: Roll mouse wheel forward or away for zooming on the map at the location of the mouse cursor
Usability	Improved vector layer support	Support of GeoJSON files as vector layer import

Usability	Improved PNG export	Enable world file export with .png

New Features in eCognition 9.0.2:

Story	Feature	Description
Native Vector Handling	Improved Algorithm: 'export vector layer'	Support of â€œfeature listsâ€ for the "attributes" parameter. This will allow a Action Library user to select the features to be included in the Attribute Table of a shapefile export.
Classification	New Algorithm: 'unsupervised classification'	Perform an ISODATA classification directly in eCognition.
Usability	Improved Algorithm: 'set rule set options'	Inserted brightness layers option. Executing a process saves time to set up the configuration.
Template Matching	Improved Algorithm: 'template matching'	Perform a rotation invariant template matching.
Template Matching	Improved Algorithm: 'template matching'	Allow generation and utilization of template masks. Not all pixels in rectangular samples may be critical part of the template (e.g. the cross in a scanned map).
Template Matching	Improved Dialog: 'Template Editor'	Allow defining rectangular-shaped templates and sample angle.
Usability	New Scene Feature: 'All column names'	Show a dynamic list of existing attribute table column names in the project to initialize string arrays.
Analysis Builder	New toolbar for Widgets	Permanently visible and configurable toolbar for Widgets (independent from Action in Analysis Builder window). Allows flexible Architect Solutions.
Usability	New Dialog: 'Process Properties'	GUI to see all parameters of a process without opening it into the Edit Process dialog. It is an extension to the Process Tree window.
Usability	Improved Zoom functionality in Viewer	Zoom in and out works now on the location of the mouse cursor
Analysis Builder	Improved Widgets Radio Button Row and Drop-Down List	Widgets can display tooltips
Analysis	New widget: create	Can be used to allow architect user to create and

Builder	class	modify classes
Analysis Builder	Improved Widget: Slider and Editbox with Slider	Display of text on both sides of slider possible
Analysis Builder	Improved Widget: Drop-Down List	Drop down list can display array values of any array type
Analysis Builder	Improved Widget: Select image layer	Option to display filenames instead of layer alias
Analysis Builder	Improved Window: 'Analysis Builder'	Drag and drop of action bars is now possible
InShpere Market Place	New Dialogs: 'Data Marketplace' and 'Data Marketplace Orders'	Search, order and download geospatial data from the Trimble InSphere Data Marketplace and import them directly into eCognition.

2.2 Bug Fixes

Bug Fixes in 9.0:

Reference	Description
ECOG-00115	eCognition GRID 64 uninstall: Au_.exe has stopped working
ECOG-00376	Action Library: Loading solution from outdated eCognition version pops up error message
ECOG-00563	GRID: license problems when installing new packages
ECOG-00853	Missing 'Feature View' button in 'View Settings' toolbar
ECOG-00855	Import Image Layer dialog: 'File Name Filter' do not work if 'Search Subfolders' is active
ECOG-00856	Areas in shapefiles without polygons is not segmented and classified correctly
ECOG-00881	Export results from *.las file does not contain projection information
ECOG-00892	Encrypted customized algorithms are not showed in Process Tree
ECOG-00916	Shapefile rasterization creates holes between polygons
ECOG-00918	Synchronize map algorithm: rounding problems when resolution is increased
ECOG-00920	Wrong calculation of Quantile 100 feature

ECOG-00957	Export point cloud algorithm: shift when exporting from las 1.1
ECOG-00962	Crash when zooming based on data in different resolutions
ECOG-00963	Zoom factor display does not update
ECOG-00980	Crash when using 'transfer layer' algorithm with different resoluted maps
ECOG-00986	Threshold condition' dialog: using feature as threshold not allowed when using other operator than "="
ECOG-00987	Slow calculation of quantile object features
ECOG-00993	Layer arithmetics algorithm: rounding issues when using large numbers in parameters
ECOG-01016	Stripes in display and classification when loading frames or slices
ECOG-01042	Crash when loading very large LAS v1.2 files (>32 GB)
ECOG-01126	Shapefile: "Red", "Green", "Blue" attribute columns are not supported
ECOG-01152	Assign class by thematic layer algorithm do not support feature variables as thematic layer attribute

Bug Fixes in 9.0.1:

Reference	Description
ECOG-00415	Wrong display of shape file extent in subset selection dialog
ECOG-00668	Export Classification View has to work only for selected classes
ECOG-01019	Temporary point cloud export has no elevation information
ECOG-01169	Expired licenses are listed in license management tool
ECOG-01181	Template Matching: Optimize performance for extrema search
ECOG-01191	Missing features based on temporary image layers in Feature Selection dialog
ECOG-01232	Cancel button do not work during opena point cloud projects
ECOG-01247	Slow performance using 3D point cloud viewer
ECOG-01250	License Managment tool has to show only 9.0 licenses
ECOG-01251	Slow license activation using License Management Tool

ECOG-01265	Feature Variables are not available in Image Object Information window
ECOG-01266	FileGDB class do not contain all attribute from source layer using "export existing vector layer" algorithm
ECOG-01268	Crash when trying to float template editor docking bar
ECOG-01269	Mouse wheel problem when scrolling window which floats on image view
ECOG-01273	Features "Max/min overlap [%] with thematic polygons" do not work
ECOG-01274	Developer 9.0 do not start (Windows Languages Support issue)
ECOG-01288	Vector integration algorithm removes existing vector objects
ECOG-01292	Stddv object features disappeared using classifer algorithm
ECOG-01293	Crash when using delete map algorithm based on viewed map
ECOG-01429	Transfer image layer algorithm hanging when using different spatial resolutions
ECOG-01437	Image is not exported when using export image algorithm with 8-bit and 16-bit png settings
ECOG-01451	Set default unit type and coordinate system type for Soap API to meters

Bug Fixes in 9.0.2:

Reference	Description
ECOG-01505	Mean Scene Values include no data areas
ECOG-01723	FileGDBAPI.dll conflicts in eCognition Developer and Geomatica 2014
ECOG-01967	Developer at Windows 8.1 VM brings up error message
ECOG-00313	Fix ArcSDE Geodatabase vector driver
ECOG-01233	Predefined import for MX8: Inconsistent view in Workspace window
ECOG-01911	Crash after creating image subset for JPEG2000 image
ECOG-01558	Search for image layer variables doesn't work
ECOG-01055	Rule Sets (*.dcp) gets very large when Ö– or Ä„ in Author name
ECOG-01541	Crash when choosing: manage array from menu
ECOG-01354	Vector export fails if no Attributes are selected

ECOG-00668	Export a classification view for only one of the classes doesn't work
ECOG-01266	Export existing vector layer: not all attributes from source layer available
ECOG-01800	Chessboard segmentation: use thematic layer does not work with thematic layer variable
ECOG-01437	Export image: 8-bit and 16-bit (png) image will not exported
ECOG-01230	Distance map (algorithm) on objects: distance > 1 Pxl has incorrect values
ECOG-01417	"Scene bit depth" feature has incorrect value
ECOG-01525	Feature Number of Overlapping Thematic Objects gives incorrect results
ECOG-01323	Manual Editing toolbar: second created thematic layer has no alias
ECOG-01265	"feature variables" are not available in Image Object Information window
ECOG-01264	Copy and Paste content doesn't work in customized features
ECOG-00168	Escape (Esc) button do not work for all dialog boxes
ECOG-00172	Incorrect display image in center position
ECOG-01638	Error on adding new columns to thematic layer attribute table
ECOG-01630	Missing scroll bar for long texts in comment window
ECOG-01331	Side-by-side display at specific zoom levels does not line up right
ECOG-01231	Ruleset name not deleted during roll-back all
ECOG-01990	Create project dialog is not updated correctly while adding a huge .las file
ECOG-01232	Cancel button appears ineffective during opening point cloud project
ECOG-01337	Trusted Storage conflict with ArcGIS
ECOG-00981	Service stop error in eCognition License Server for Linux

2.3 Known Issues and Limitations

In eCognition 9.0 it is not possible to create and use 3D raster stacks based on point cloud data, because the Z resolution of LAS files is not supported by the LAS driver anymore.

The new Trusted Storage based license system does not support license borrowing, so that the eCognition License Borrowing functionality is removed in eCognition 9.0. Customers can use local license activation instead.

2.4 Additional Information

eCognition Quick Map Mode - a feature of eCognition Developer and Architect - reached end-of-life in September 2014. It is no longer supported and is no longer available in eCognition products. Customers can download the Quick Map Solution from the eCognition Community: http://community.ecognition.com/home/Generic Action Library.zip/view

3 Acknowledgments

Portions of this product are based in part on the third-party software components. Trimble is required to include the following text, with software and distributions.

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3.3 Geospatial Data Abstraction Library (GDAL) Copyright

3.3.1 gcore/Verson.rc

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3.3.2 frmts/gtiff/gt_wkt_srs.cpp

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