

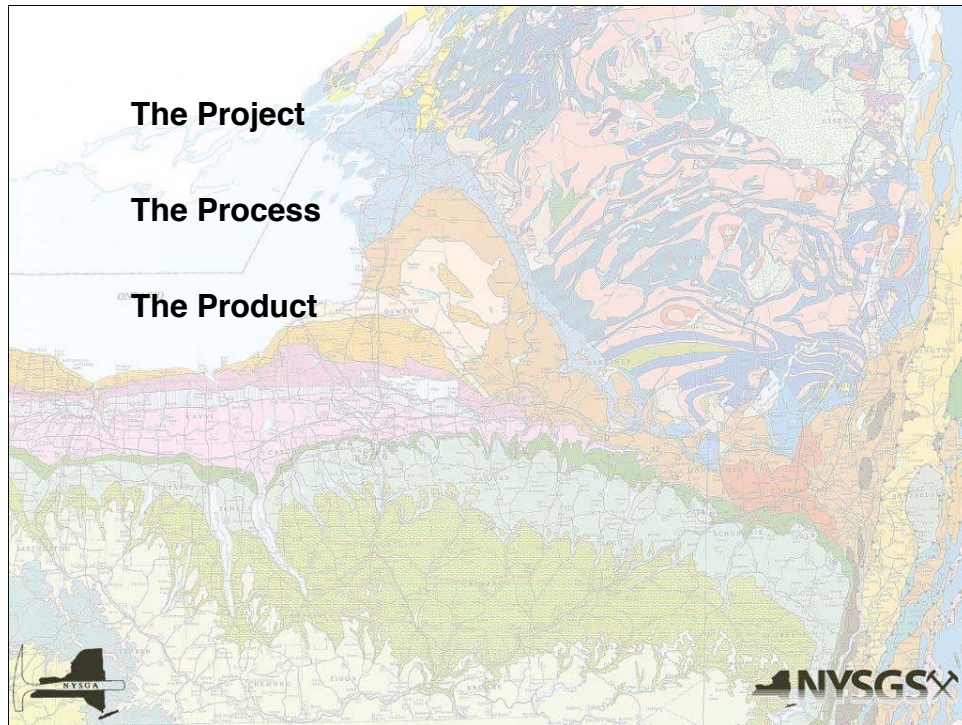
## Bringing NYSGA Guidebooks to Google Earth

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Executive Secretary, New York State Geological Association  
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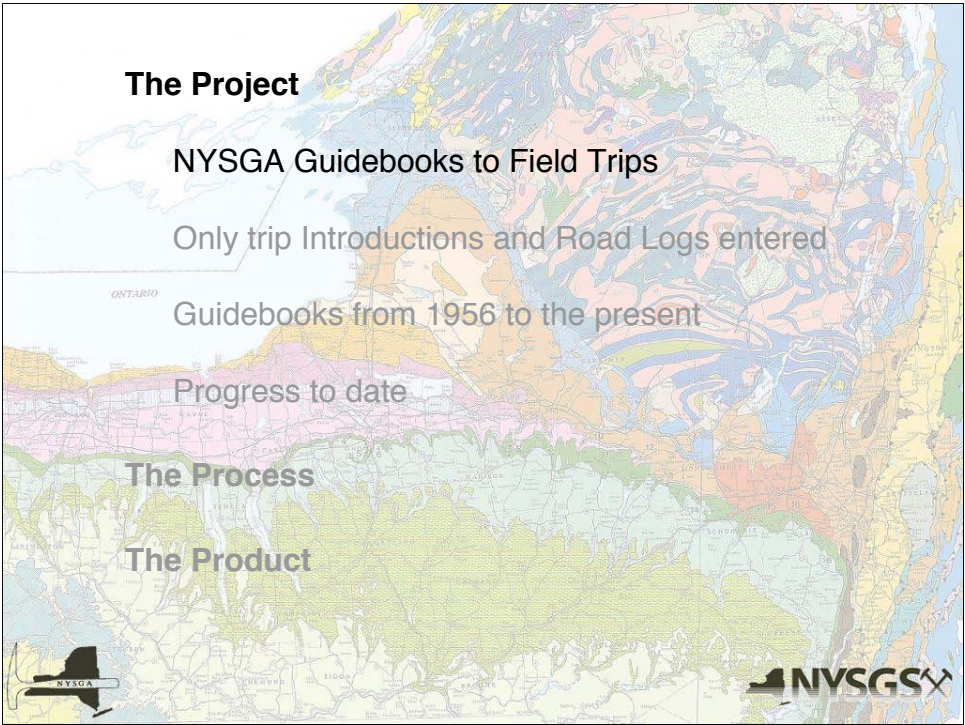
William Kelly  
State Geologist, New York State Geological Survey, Retired  
kellygeol@msn.com





Today, I want to focus on the Product, and let you see how it can be accessed and used by anyone with an interest in New York State Geology.

To understand the limitations in the Product, as well as likely sources of error, I will go over the Process used to derive it. And to see why that process has evolved as it has, I will begin with a brief overview of the Project as we see it.



**The Project**

NYSGA Guidebooks to Field Trips

Only trip Introductions and Road Logs entered

Guidebooks from 1956 to the present

Progress to date

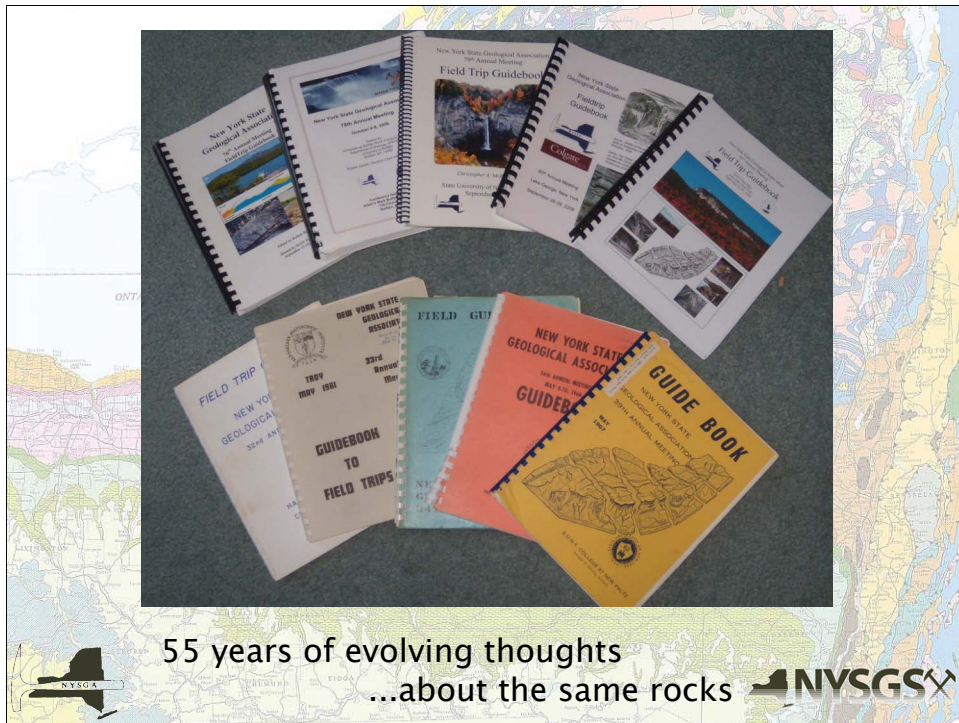
**The Process**

**The Product**

ONTARIO

NYSGA

NVSGSX



The New York State Geological Association (NYSGA) has been organizing Field Conferences since 1928. Usually two days long, they consist of field trips led by volunteers. Some, particularly the earlier ones, had only a few trips, while others have a few dozen trips.

The Guidebooks represent "grey literature," in that, although usually reviewed by colleagues and the editors, rejections have probably not been common. Furthermore, the trip leaders will often take participants to troublesome outcrops, or toss out some speculative ideas, with the hope that helpful discussions will develop.

Field descriptions, often in more detail than permitted in most journals, can be printed in these guidebooks, and thus be made available to others.

Because the supply of informative, accessible, outcrops is limited, the same places are often revisited. Sometimes a different geologist may lead a trip, but sometimes it is the same geologist, with a few more years of experience, and new interpretations of the same rocks.

All in all, these trips provide a fascinating window into how geology is done, with many of its flaws exposed, perhaps, but also abundant evidence of conscientious effort, and, let's face it, love of rocks!

**The Project**

NYSGA Guidebooks to Field Trips

Only trip Introductions and Road Logs entered

Guidebooks available from NYSGA

Free PDF files online for 1956 - 1969

Others available in hard copy, ~ \$30 each

Guidebooks from 1956 to the present

Progress to date

**The Process**

**The Product**

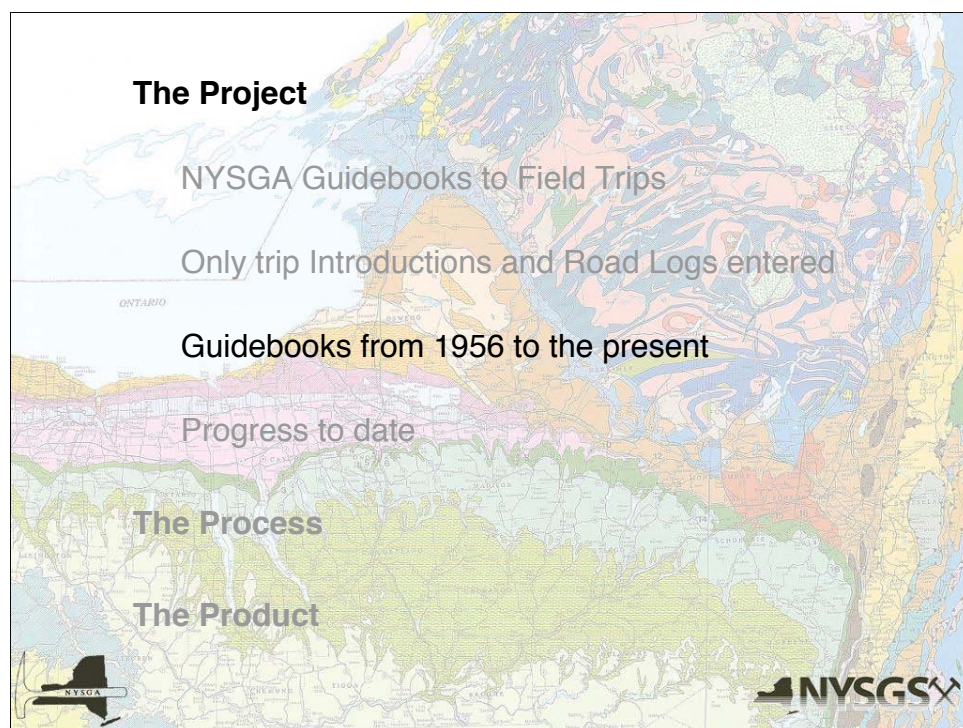
NYSGA

NYSGS

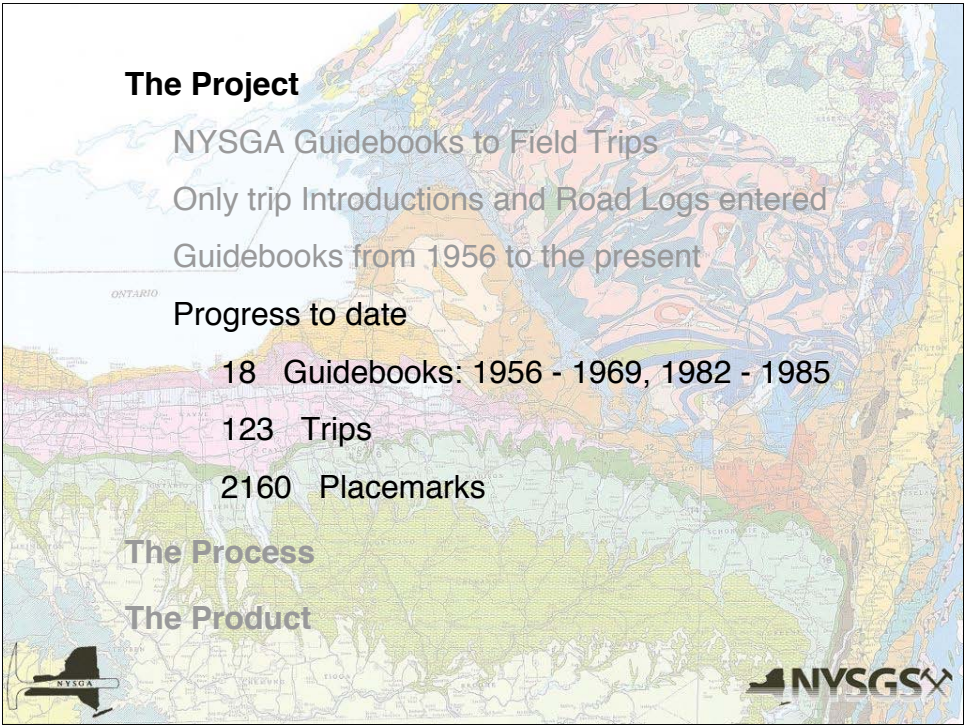
The goal of the Project is to make it possible for people to see much of what was seen on the Field Trips. In the case of trips focused on Geomorphology or Glacial Geology, the views possible on Google Earth (GE) may surpass what can be seen in person. Other trips may not be as useful as being there, however the field descriptions are often in sufficient detail, with stratigraphic thicknesses, structural attitudes, fossil content, etc., to help the user decide if a road trip is warranted.

To accomplish this goal, the Road Logs and Introductions have been converted into Google Earth readable kml files. Most of the material in the Guidebooks, probably well over 90%, has not been included. The NYSGA makes these available at a very reasonable cost, and we encourage users to purchase the whole Guidebook, which will put the field trips into perspective as well as providing many maps, stratigraphic sections, diagrams, references, etc.

Free PDF files for 1956 - 1969 are currently available, and there are plans to make others, from the 1970's, available, also.





With all of the revolutions in Earth Sciences, paradigm shifts, etc., we felt that going back beyond 1956 was unlikely to be very useful to geologists. Folks interested in the history of geology, however, can find earlier Guidebooks in many academic libraries.



**The Project**  
NYSGA Guidebooks to Field Trips  
Only trip Introductions and Road Logs entered  
Guidebooks from 1956 to the present

**Progress to date**  
18 Guidebooks: 1956 - 1969, 1982 - 1985  
123 Trips  
2160 Placemarks

**The Process**  
**The Product**



Year	Host Institution	Location	Pages	Price	Year	Host Institution	Location	Pages	Price
1956	University of Rochester	Rochester	121	Free pdf	1984	Hamilton College	Clinton	352	\$30.00
1957	NY State Museum	Wellsville	66	Free pdf	1985	Skidmore College	Saratoga Springs	268	\$25.00
1958	City College of CUNY	Peekskill	51	Free pdf	1986	Cornell University	Ithaca	279	\$30.00
1959	Cornell University	Ithaca	136	Free pdf	1987	SUNY New Paltz	Kingston	350	\$30.00
1960	Hamilton College	Clinton	61	Free pdf	1988	SUNY Plattsburgh	Plattsburgh	278	\$30.00
1961	R.P.I.	Troy	96	Free pdf	1989	OCCC	Middletown	302	\$30.00
1962	Brooklyn College	Port Jervis	90	Free pdf	1990	SUNY Fredonia	Fredonia	437	\$30.00
1963	SUNY Binghamton	Binghamton	116	Free pdf	1991	SUNY Oneonta	Oneonta	488	\$30.00
1964	Syracuse University	Syracuse	126	Free pdf	1992	Colgate (2 Volumes)	Hamilton	258	\$30.00
1965	Union College	Schenectady	111	Free pdf			Saranac Lake	75	
1966	SUNY Buffalo	Niagara Falls	116	Free pdf	1993	St Lawrence Univ.	Canton	271	\$30.00
1967	SUNY New Paltz	Newburgh	128	Free pdf	1994	U. of Rochester	Rochester	590	\$30.00
1968	Queens Coll. CUNY	Flushing	260	Free pdf	1995	Union College	Schenectady	425	\$30.00
1969	SUNY Plattsburgh	Plattsburgh	183	Free pdf	1996	Coll. of Staten Island CUNY	Staten Island	178	\$25.00
1970	SUNY Cortland	Cortland	139	\$25.00	1997	Hamilton College	Clinton	264	\$25.00
1971	SUNY Potsdam	Potsdam	150	\$25.00	1998	SUNY Binghamton	Binghamton	135	\$25.00
1972	Colgate; Utica College	Utica	222	\$25.00	1999	SUNY Fredonia	Fredonia	412	\$30.00
1973	SUNY Brockport	Rochester	177	\$25.00	2000	Hobart & William Smith Colleges	Geneva	178	\$25.00
1974	SUNY Fredonia	Fredonia	187	\$25.00	2001	LDEO/ Columbia University	Lower Hudson Valley	204	\$25.00
1975	Hofstra University	Hempstead	327	\$30.00	2002	Colgate University	Lake George	375	\$30.00
1976	Vassar College	Poughkeepsie	297	\$30.00	2003	SUNY-Oneonta + Hartwick College	Oneonta	292	\$30.00
1977	SUNY Oneonta	Oneonta	455	\$30.00	2004	SUNY-Potsdam	Potsdam	283	\$30.00
1978	Syracuse University	Syracuse	385	\$30.00	2005	SUNY-Oswego	Oswego	125	\$30.00
1979	RPI	Troy	457	\$30.00	2006	SUNY- University at Buffalo	Buffalo	478	\$30.00
1980	Rutgers at Newark	Newark, NJ	400	\$30.00	2007	SUNY-Cortland	Cortland	187	\$30.00
1981	SUNY Binghamton	Binghamton	282	\$30.00	2008	Colgate University	Lake George	154	\$30.00
1982	SUNY at Buffalo	Amherst	385	\$30.00	2009	SUNY New Paltz	New Paltz, NY	254	\$60.00
1983	SUNY Potsdam	Potsdam	103	\$20.00	2010	College of Staten Island/CUNY	Staten Island, NY	190	\$60.00

To order guidebooks, visit:  
<http://www.nysga.net/Guidebooks.html>

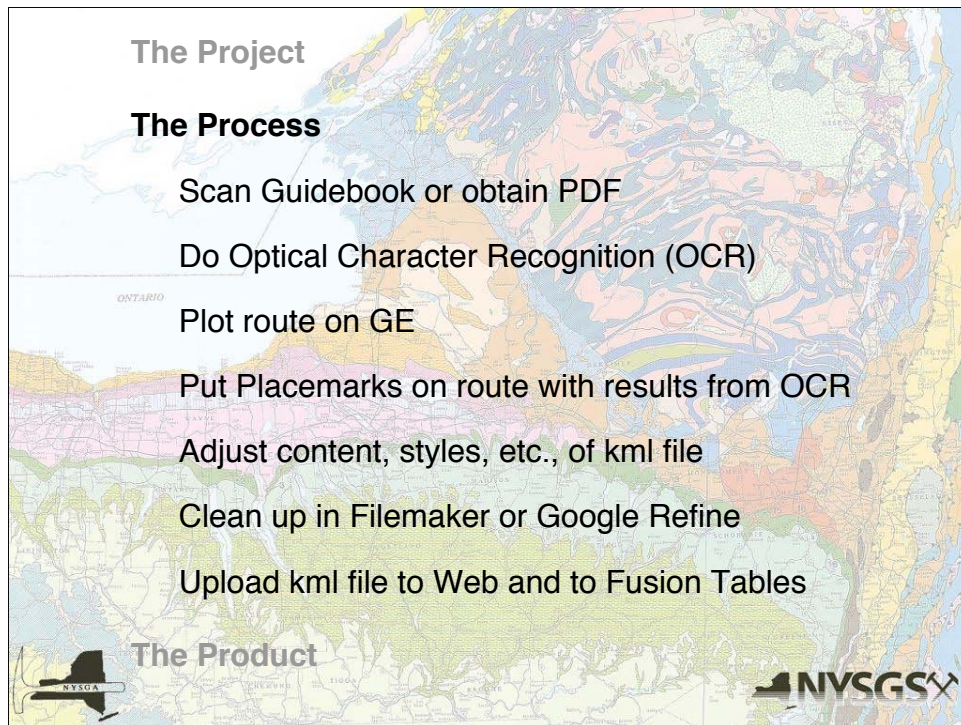


Those in yellow have been done. There is plenty of work left to do.

I am particularly keen on getting electronic versions of the text for those Guidebooks where they might exist.

We began with those for which free PDF files exist. Then we jumped up to the 1980's, to make certain the system would work with scanned images of the hard copies of the Guidebooks.





The Process is labor intensive and time consuming, but not particularly difficult.

Optical Character Recognition is usually faster than re-typing everything. Sometimes, however, correcting all of the errors can take nearly as long.

Plotting the route is considerably more interesting. As someone who has lived in the state for a long time, I quite enjoy wandering through old haunts.

Putting in the Placemarks can be easy, if Road Log directions are good, or frustrating, if they are not. (Leaders expected to be on the trip, and did not necessarily envision their directions being used forty years later!) GE version 6 has extensive Street View coverage, often letting us check to see where a roadcut is.

Placemark descriptions vary from a sentence or two to several pages, complete with tables of data. Often reformatting in html is necessary. A set of styles has been developed, and we've made an effort to keep our output reasonably consistent.

The kml files produced by Google Earth usually need some cleaning up, and we have used Filemaker for this, although Google Refine should suffice, and it is free.

Finally, we upload our results to both our website and Fusion Tables.

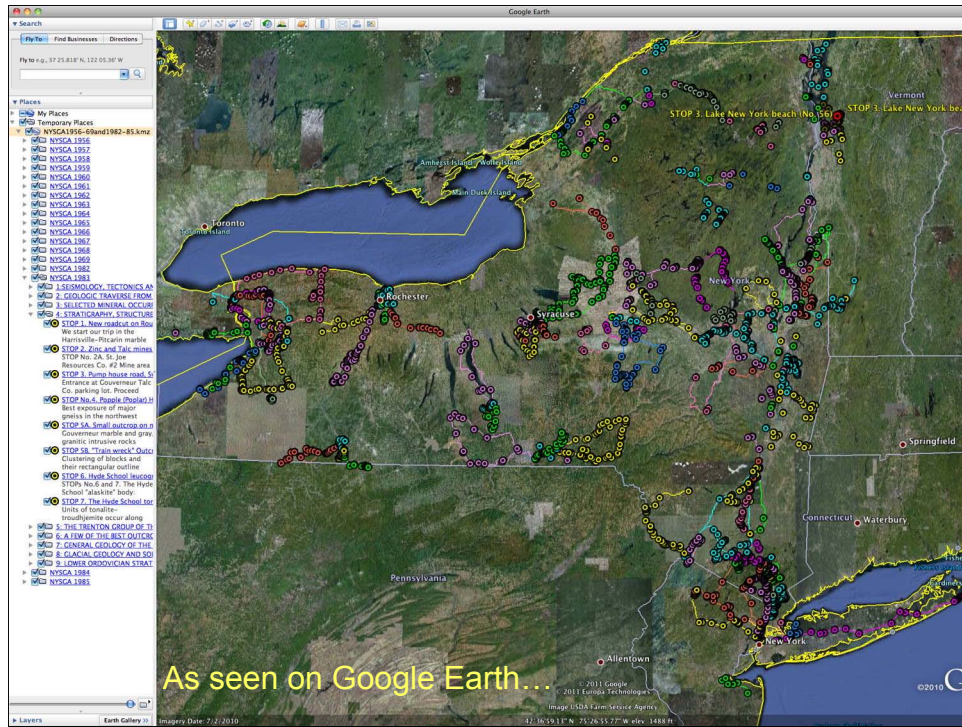




You can download our results from our website as kmz files.

If you are interested in files for specific guidebooks, this is probably what you will want to do.

Or, you can download the whole collection, which will have each year in a different folder.



Here you see the complete file, with a hierarchical structure.



Files on the website have prefatory material which is not available on the Fusion Tables portal.

**4: STRATIGRAPHY, STRUCTURE, AND GEOCHEMISTRY OF GRENVILLIAN ROCKS IN NORTHERN NY**

by  
James D. Carl  
S.U.N.Y. Potsdam  
and  
William F. deLorraine  
St. Joe Resources Company

Introduction

The geology of the northwest Adirondack lowlands is characterized by northeast-trending belts of highly deformed rocks, chiefly marbles and gneisses, all metamorphosed to upper amphibolite facies grade during the Grenvillian Orogeny. A clear picture of the structure and stratigraphy of this region has proven elusive due to effects of recrystallization, multiple folding, anatexis and magmatism during metamorphism.

Several different structural and stratigraphic models have been proposed which illustrate the diversity of opinion surrounding these rocks. Engel and Engel (1953) believed the stratigraphy to be part of the overturned, southeastern limb of a regional anticlinorium whose upright limb lay to the northwest in Canada. They recognized five major stratigraphic units which, from NW to SE in order of decreasing age, include the following:

1) Black Lake metasedimentary belt; 2) Gouverneur or Lower Marble; 3) Major Gneiss belt; 4) Balmat-Edwards or Upper Marble; and 5) Harrisville-Russell belt (see map, Figure 1 and cross-section, Figure 2).

Amodel by Lewis (1969) included two major marble units, separated by the Major Gneiss, which were continuous across the northwest Adirondacks but repeated in linear, northeasterly belts by light, upright folds. More recently Fossen (1974) and Wiener (1981) postulate that there is but one carbonate horizon repeated by multiply-rebeld nappes.

There seems to be agreement that alaskitic gneisses (leucogneisses) which core domical structures in the northwest Adirondacks constitute a basal horizon over which marble and gneiss precursors were deposited. Geochemical data and recent field mapping reveal a relic stratigraphy consistent with an ash flow tuff origin. Geochemical data from the Major Gneiss are consistent with an origin as slightly reworked, clastic tuff. Results of mapping by St. Joe Resources Company geologists (including deLorraine) are best interpreted as two distinct carbonate units separated by the Major Gneiss. The basal marble, here termed the Gouverneur marble type, directly overlies the leucogneisses and comprises the Engle's Black Lake, Gouverneur (Lower Marble), and Harrisville-Pitcarin marble (part of the Balmat-Edwards, or Upper Marble of the Engles). Major Gneiss overlies this marble and, in turn, is overlain by an upper marble, hereby called the Balmat-Edwards marble type. This model is similar in some respects to that of Lewis (1969).

The purpose of this field trip is to investigate regional stratigraphy and structure from the perspective given here. We will point out numerous areas where further investigation is needed, particularly with regard to the role of magmatism during (before?) metamorphism. We will also discuss the origin of some of the gneissic rocks in view of recent geochemical data.

Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
© 2011 Cnes/Spot Image  
© 2011 Google  
Image USDA Farm Service Agency

40° 58'03.45" N 73° 10'48.09" W elev. 18 ft Eye alt: 547.28 mi

An example of the prefacing comments.

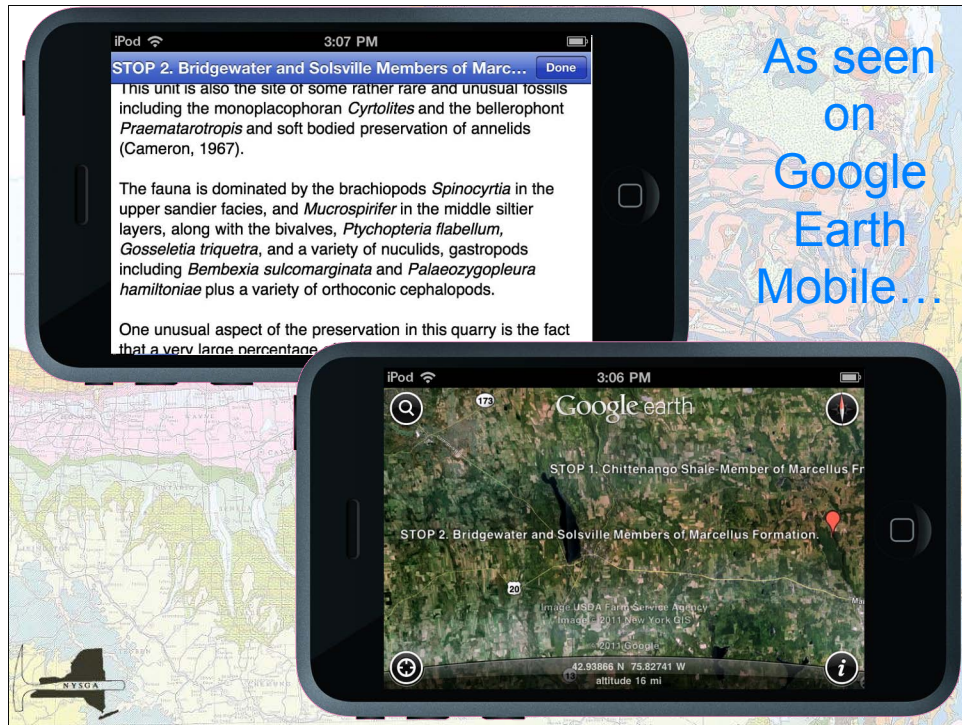
Leaders and their affiliations are always there, and Introductions are included if provided by the leaders.



Styles are different for two sets of files, one for mobile devices (iPhone, iPod, iPad, etc.) and the other for desktop and laptop computers.

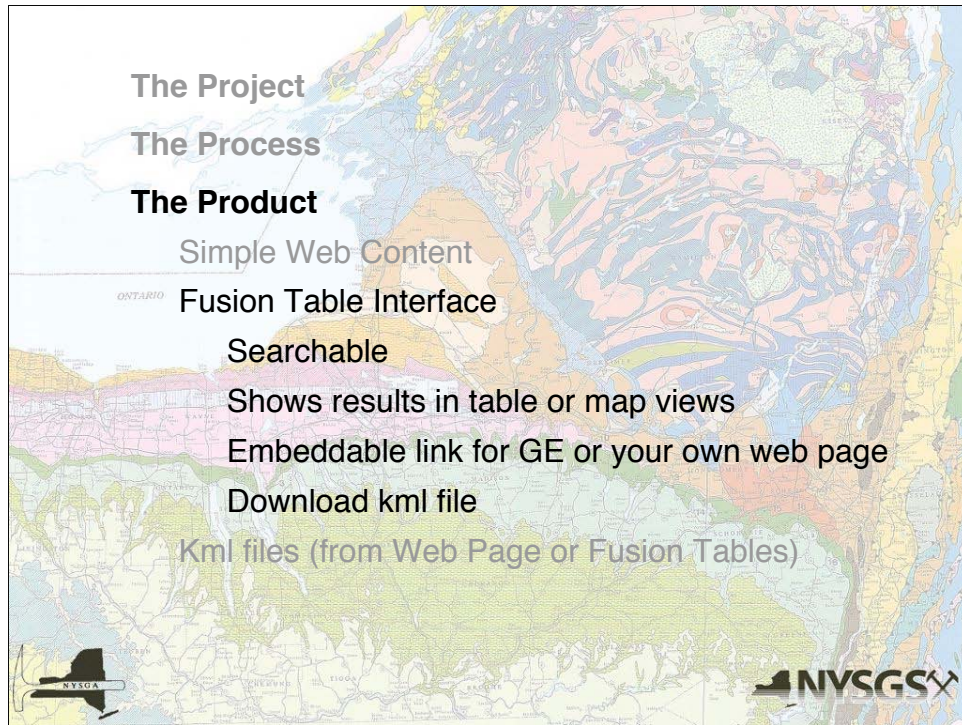
Ironically, the mobile device requires web access, the other does not. The web access is needed to provide Style information to the mobile device, which at this point cannot take that data from the kmz file.

Because much of the area visited by these field trips does not have cell phone coverage, someone trying to use the mobile version in the field may have difficulties. The Stand Alone version will work in the field, however the user must load the Google Earth maps in advance, while having web access, and then access the maps from cache.

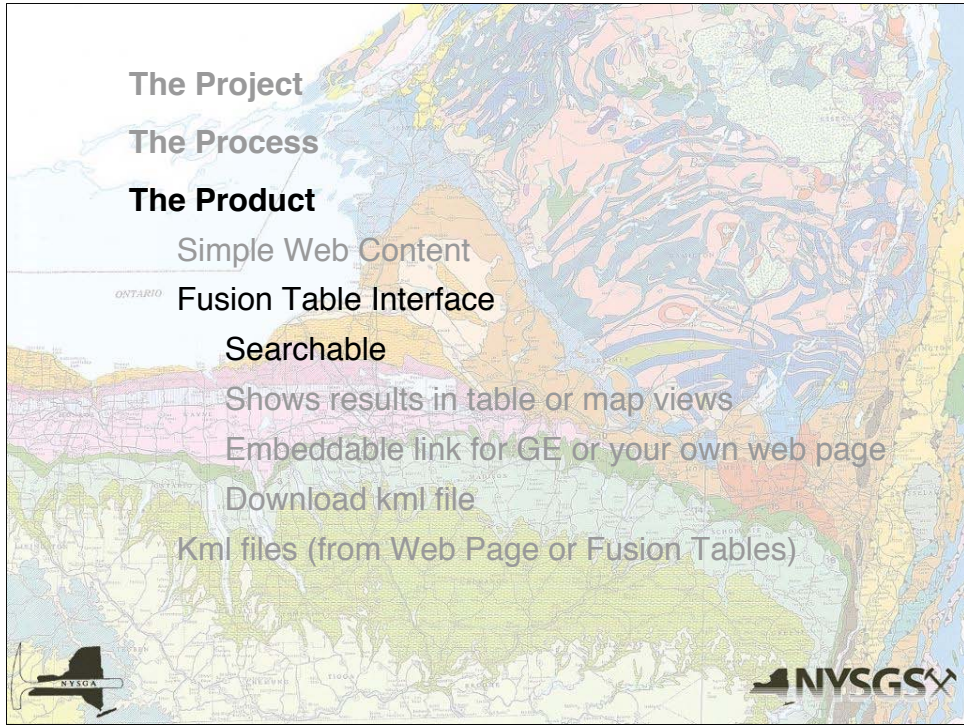


Other than accessing Style information from the web, the mobile version is identical to the Stand Alone version.







A somewhat different portal exists at the Google Fusion Table Interface. Each Placemark and Line is available as a separate record, and the user can be search and display them in a variety of ways. Collections of records can be output as kmz files, and collections of search terms can be exported as either a network link or an embeddable text snippet.



**The Project**  
**The Process**  
**The Product**

- Simple Web Content
- Fusion Table Interface**
- Searchable
- Shows results in table or map views
- Embeddable link for GE or your own web page
- Download kml file
- Kml files (from Web Page or Fusion Tables)

Google fusion tables NYSGA 1956 - 69 and 1982-85 Otto H. Muller

File View Edit Visualize Merge

Filter Aggregate

description leader

Add condition

Apply Clear filter

=  
<  
<=  
>  
>=  
starts with  
ends with  
contains  
contains ignoring case  
does not contain  
not equal to  
matches

<i> Selleck

Current view: **[description contains &leader contains Selleck]** - Hide options

description	name
The contact between the Potsdam Sandstone and lowe...	STOP 3. Basal Theresa Formation and Uppermost Pot...
The contact between the lower Potsdam and upper Po...	STOP 4. Contact between the lower Potsdam and uppe...
Roadcut on left.     Stratigraphy/Sedim...	STOP 1. Chittenango Shale-Member of Marcellus Fm
The basal section of the exposure here consists	STOP 2. Bridgewater and Solsville Members

Searching uses conditions applied to specific fields within the record.

File View Edit Visualize Merge

Filter Aggregate Choose columns

description contains <i></i>

leader contains Selleck

Add condition

Apply Clear filter

Current view: [description contains &leader contains Selleck] - hide options

Location geometry  Display as heat map [Configure info window](#) [Configure styles](#) [Export to KML](#) [Get KML network link](#) [Get embeddable link](#)

Map Satellite Hybrid Terrain

**STOP 2. Bridgewater and Solsville Members of Marcellus Formation.**

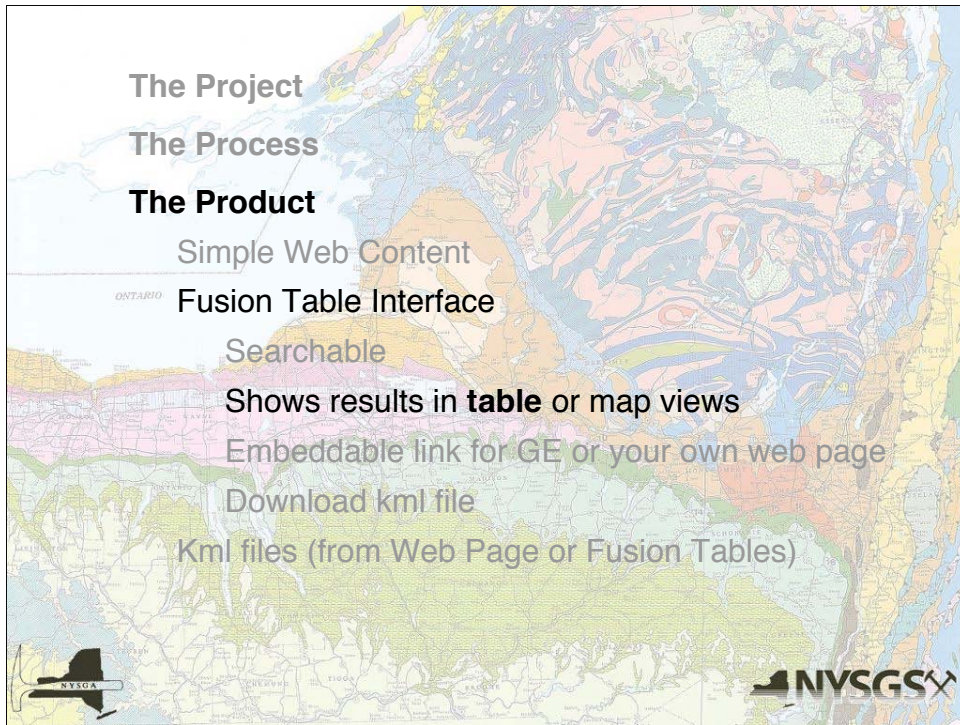
The basal section of the exposure here consists of dark, fissile to blocky silty shales which bear a rather limited fauna. The section coarsens upward, corresponding with gradual increase in faunal diversity. The basal portion of the Solsville Member is difficult to access at this stop, but a fair selection of typical Solsville forms can be found in talus mid-way up the exposure.

The preservation of the fossils at this locality is quite exceptional. Thin sections of the material shows that growth lines are well preserved, suggesting that the calcitic shells preserved here are probably original material. Some aragonite is still preserved, but most has been altered to calcite. Still even the mollusks exhibit good growth lines which suggests that the replacement of aragonite is a very precise molecule for molecule substitution.

This unit is also the site of some rather rare and unusual fossils including the monoplacophoran *Cyrtolites* and the bellerophon *Fraematarotropis*.



As seen on Google Fusion Tables

Search results can be displayed on any of several maps, and Placemarks can be clicked on to reveal additional information, just as on Google Earth.



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Google fusion tables NYSGA Trips 1956-69 and 1982-85 Otto H. Muller, Alfred University Discussions (0) Get link

File View Edit Visualize Merge

Filter Aggregate Choose columns

description contains ignoring case trilobite

Add condition ?

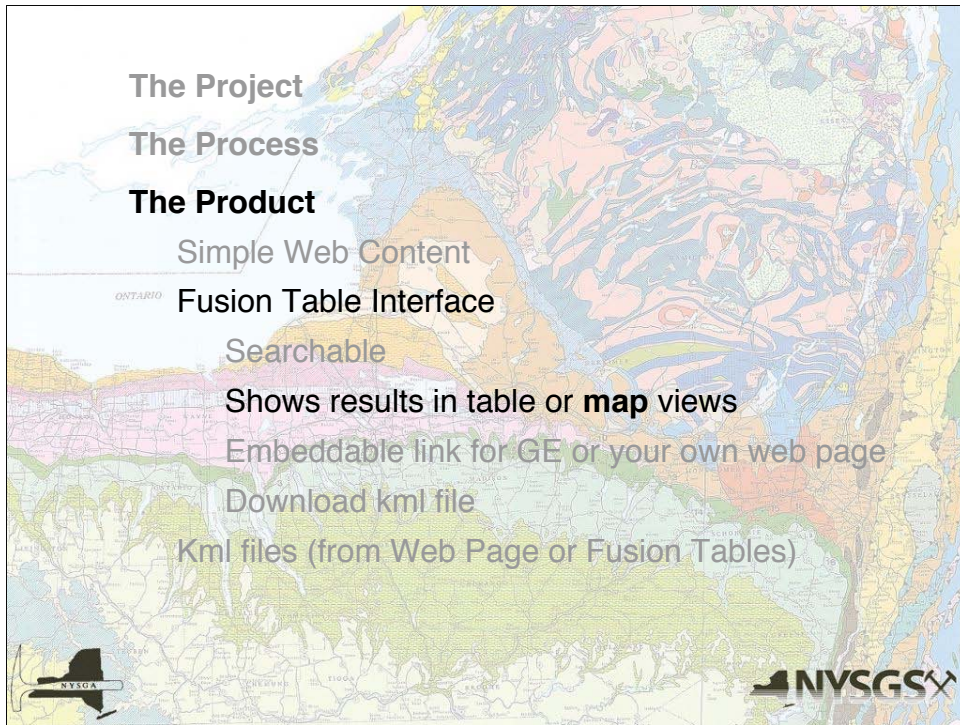
Apply Clear filter

Current view: [description contains ignoring case trilobite] - Hide options 1-

description	name	year	leader	trip	number	geometry
<pre> shale &lt;/td&gt; &lt;td width="125"&gt;portion near top&lt;/td&gt; &lt;/tr&gt; &lt;/table&gt; The accompanying map and perspective sketch indicate the field relations. The letters in the following discussion refer to these illustrations. The Levanna shale (A) is in typical black shale, &lt;i&gt;Leiorhynchus&lt;/i&gt; facies, exposed in the stream bank. The Levanna-Centerfield contact is covered and the actual thickness of the Centerfield cannot be determined. Unweathered blocks occur in place, with horizontal bedding at B, and from here eastward for more than a mile. Most of the material in this outcrop is unweathered Centerfield, and is </pre>		56	U of R Students and Staff	3A	1.00	kml...
		58	K.E.Lowe	D	5.00	kml...
At junction with gravel road, forking downhill to ...	STOP 5 Stratigraphic section on "City Brook"	1960	J.R.Dunn	D	5.00	kml...
Quarry southwest of Route 209 on west side of King...	STOP 4. Ulster County Highway Department Quarry, K...	1962	W.A.Oliver, J.H.Johnsen,J.B.	A	4.00	kml...



Search results can also be displayed in a table, with fields which expand when clicked.

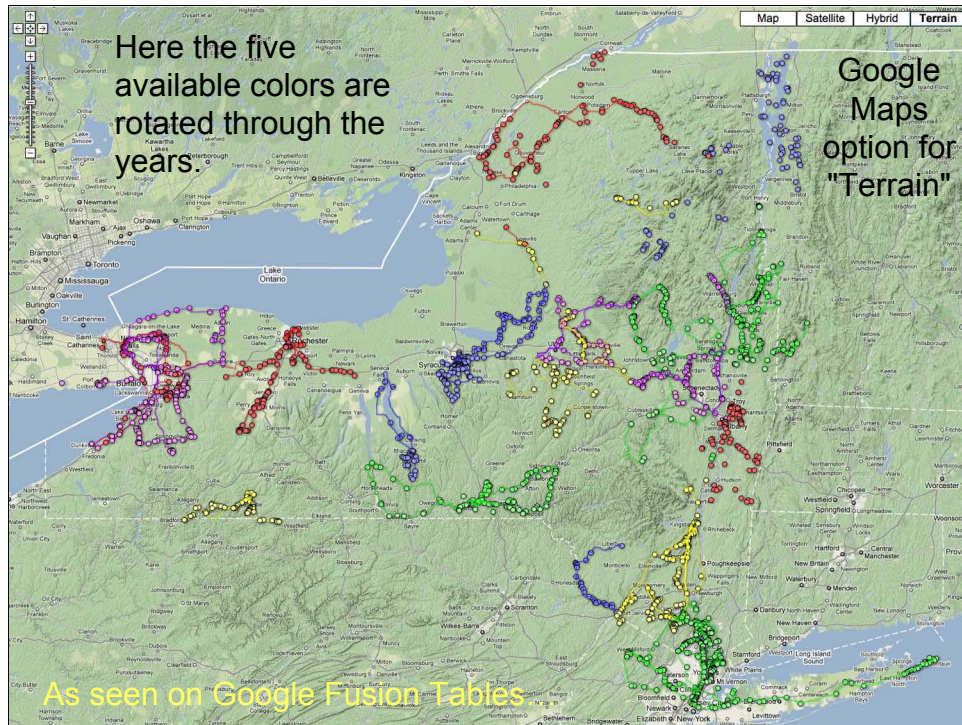
Here you can see some of the html coding with which the description field is constructed.



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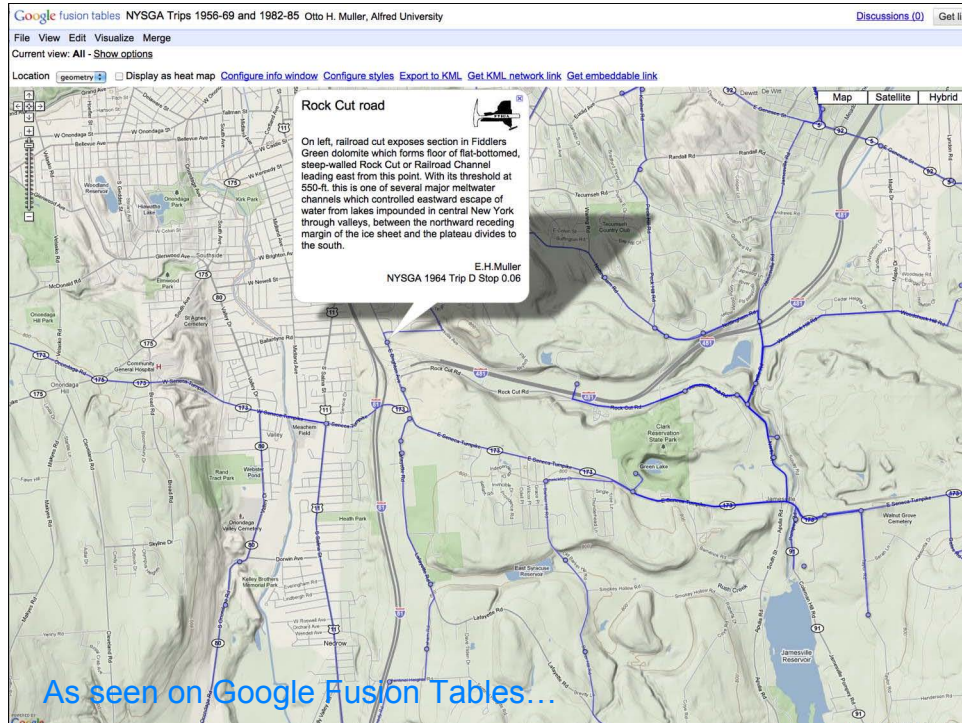
 



Map icons can be adjusted, to a degree.

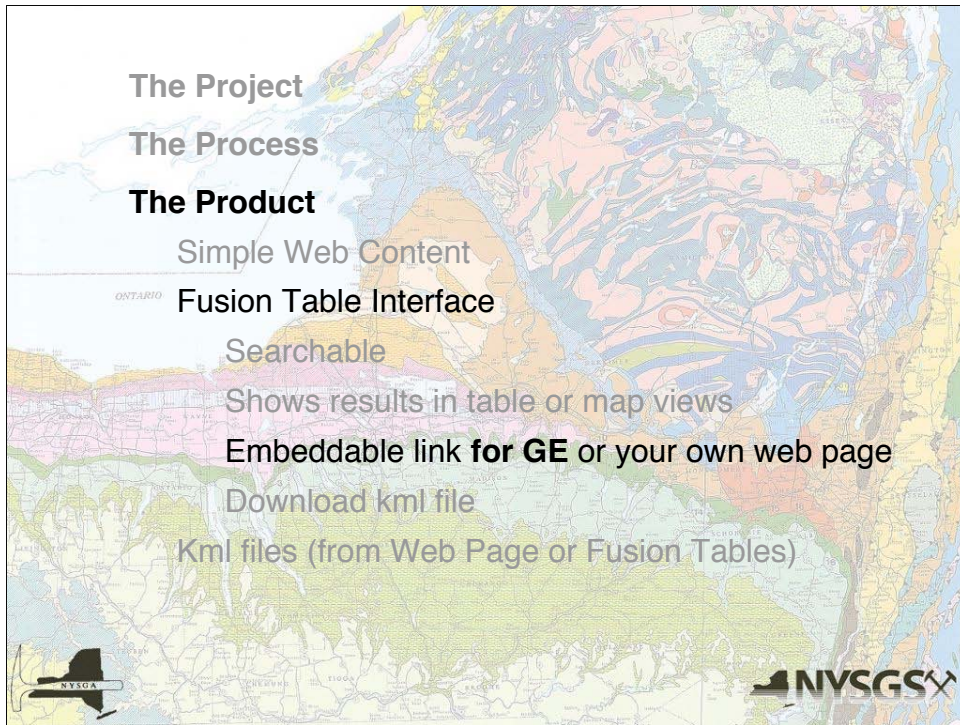
On this map, the Placemarks and Lines from a given year are all the same color. At this time, however, only five colors are available.







The "Terrain" map, available in Google Maps, but not in Google Earth, is present in Google Fusion Tables.

Kml files do not, as a rule, import cleanly into Google Maps.



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Google fusion tables NYSGA Trips 1956-69 and 1982-85 Otto H. Muller, Alfred University Discussions (0) Get link

File View Edit Visualize Merge

Filter Aggregate Choose columns

description contains ignoring case trilobite

Add condition ?

Apply Clear filter

Current view: [description contains ignoring case trilobite] - Hide options

Location geometry  Display as heat map [Configure info window](#) [Configure styles](#) [Export to KML](#) [Get KML network link](#) [Get emb link](#)

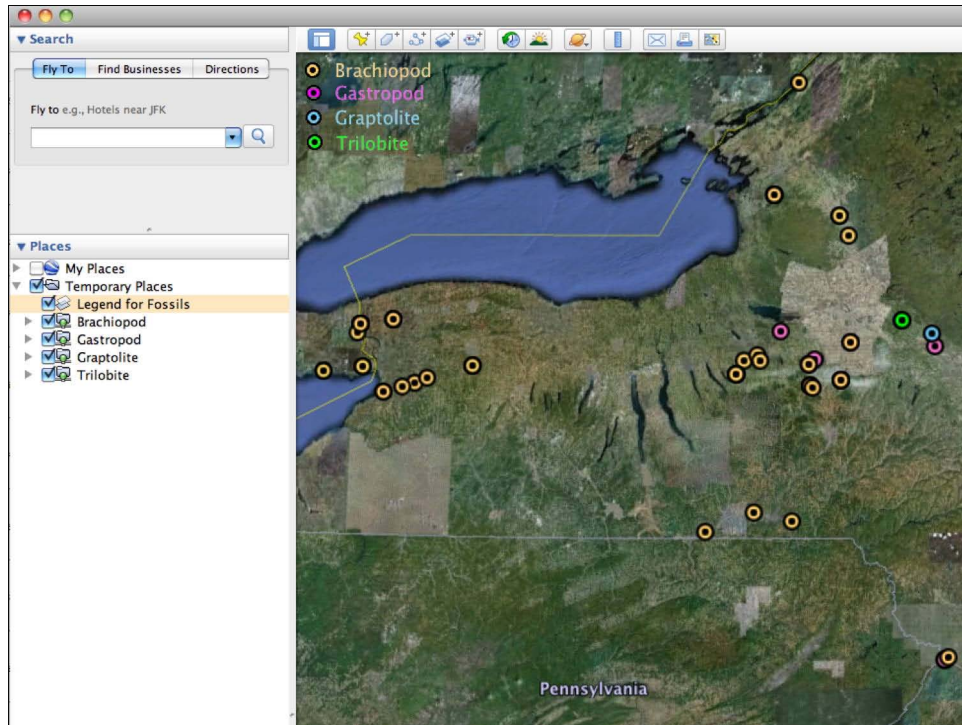
<http://www.google.com/fusiontables/exporttable?query=select+col0%2C+col1%2C+col2%2C+col3%2C+col4%2C+col5%2C+col6+from+564523+where+col0+contains+ignoring+case+'trilobite'&o=kmllink&g=col6>

Search Term Fusion Table srcid

Map Satellite Hybrid

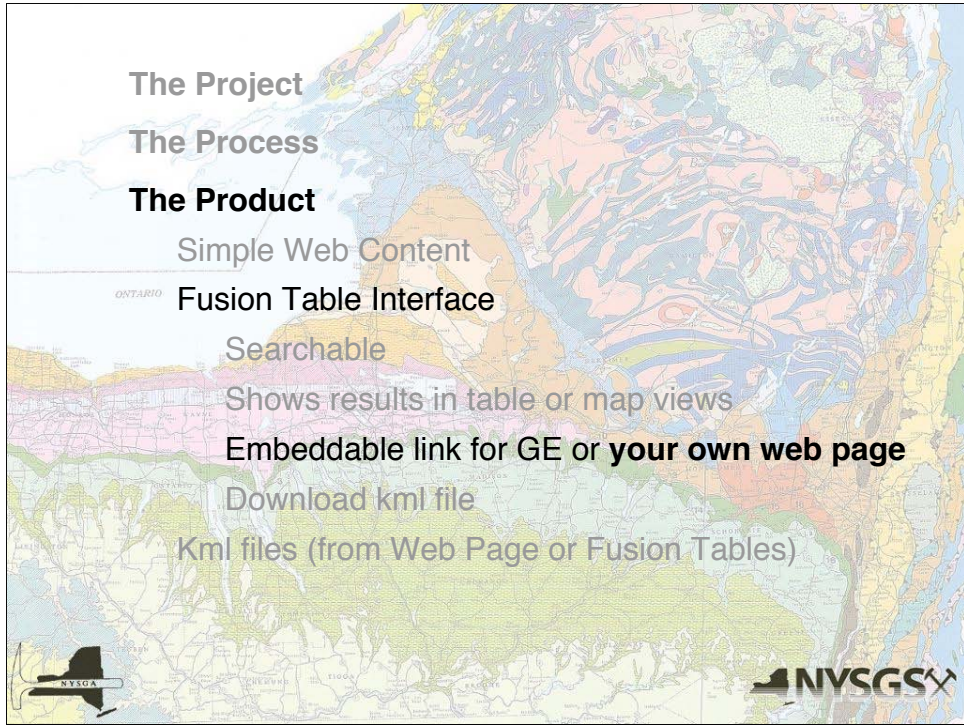
The user can generate a bit of text to copy and paste into a network link in Google Earth.

As this text contains the search terms and conditions, and a link to the relevant Fusion Table, it is a dynamic link and will always return the current version of the data which meet the search criteria.





Here we see color coded icons for Placemarks which include any of a variety of fossils. As our database expands, the Placemarks returned by these links will reflect those changes.

Because many sites which contain one type of fossil will also contain others, icons obscure each other. By deselecting some, more of the others will become apparent.



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File View Edit Visualize Merge

**Filter** **Aggregate** **Choose columns**

description | contains ignoring case | drumlin

Add condition

Apply Clear filter

Current view: [description contains ignoring case drumlin] - Hide options

Location   Display as heat map [Configure info window](#) [Configure styles](#) [Export to KML](#) [Get KML network link](#) [Get embeddable link](#)

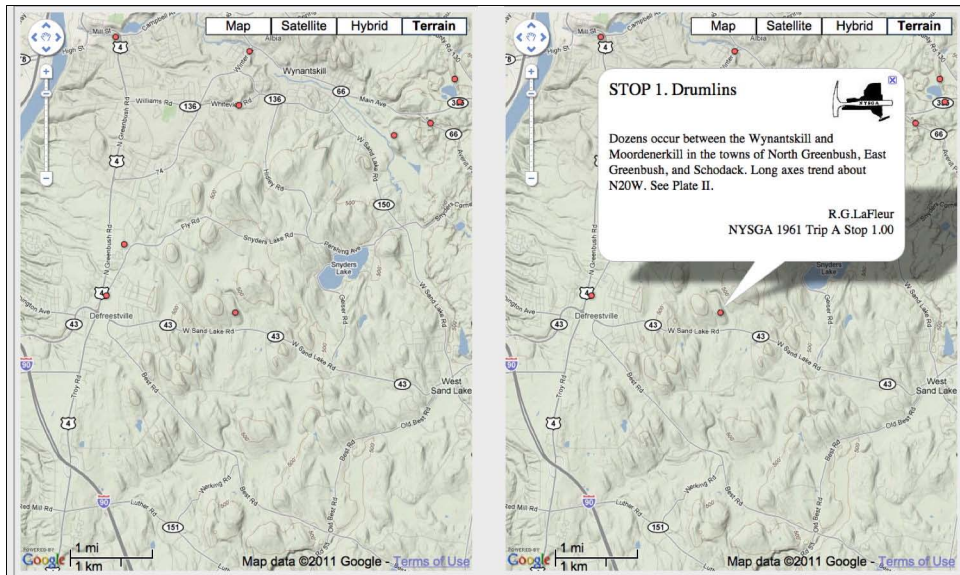
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75.948486328125&z=7&t=1&l=col6"></iframe>
```

Map Satellite Hybrid Terrain

As seen on Google Fusion Tables

The user can also generate a different bit of text to copy and paste into a web page.

As this text, too, contains the search terms and conditions, and a link to the relevant Fusion Table, it is a dynamic link and will always return the current version of the data which meet the search criteria.



Paste the embeddable code into an html page, and you get the Google Maps options, including "Terrain." Click on a dot to see the road log comment.

[As seen on ottohuller.com...](http://ottohuller.com)

Here is an example on our website.

(The map options available on the Fusion Table site are also available here.)

Fusion Tables Map Interface

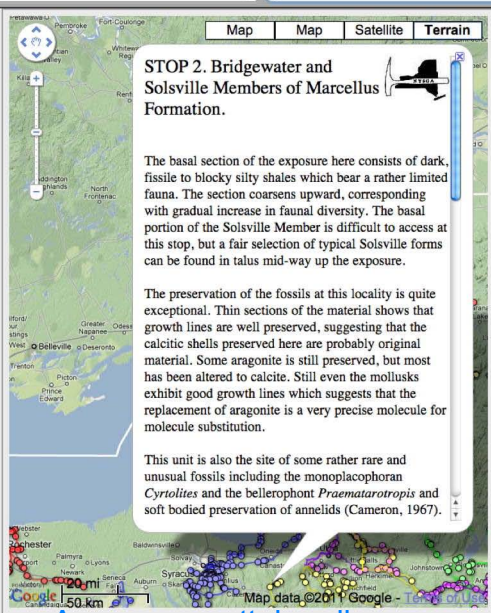
http://ottohmuller.com/nysga2ge/FusionTablesMap.html

**Contents**

- [Front Page](#)
- [Project Overview](#)
- [The Team](#)
- [Files](#)
- [Google Fusion Tables Interface](#)

**External Links**

- [NY DEC site on Unique Geological Features](#)
- [NYSGA Organization](#)
- [NYSGA Guidebooks](#)



**STOP 2. Bridgewater and Solsville Members of Marcellus Formation.**

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The preservation of the fossils at this locality is quite exceptional. Thin sections of the material shows that growth lines are well preserved, suggesting that the calcitic shells preserved here are probably original material. Some aragonite is still preserved, but most has been altered to calcite. Still even the mollusks exhibit good growth lines which suggests that the replacement of aragonite is a very precise molecule for molecule substitution.

This unit is also the site of some rather rare and unusual fossils including the monoplacophoran *Cyrtolites* and the bellerophon *Praematarotropis* and soft bodied preservation of annelids (Cameron, 1967).

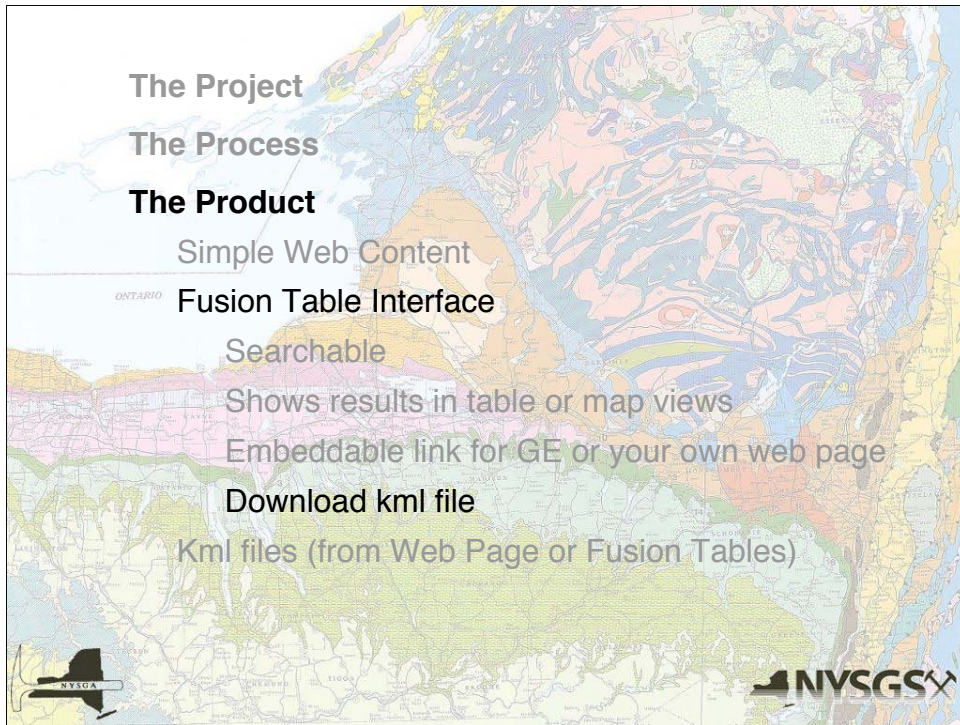
As seen on [ottohmuller.com](http://ottohmuller.com)...

Email: [fmuller@alfred.edu](mailto:fmuller@alfred.edu)

**NYSGS**



Here you see it in context, on our web page.

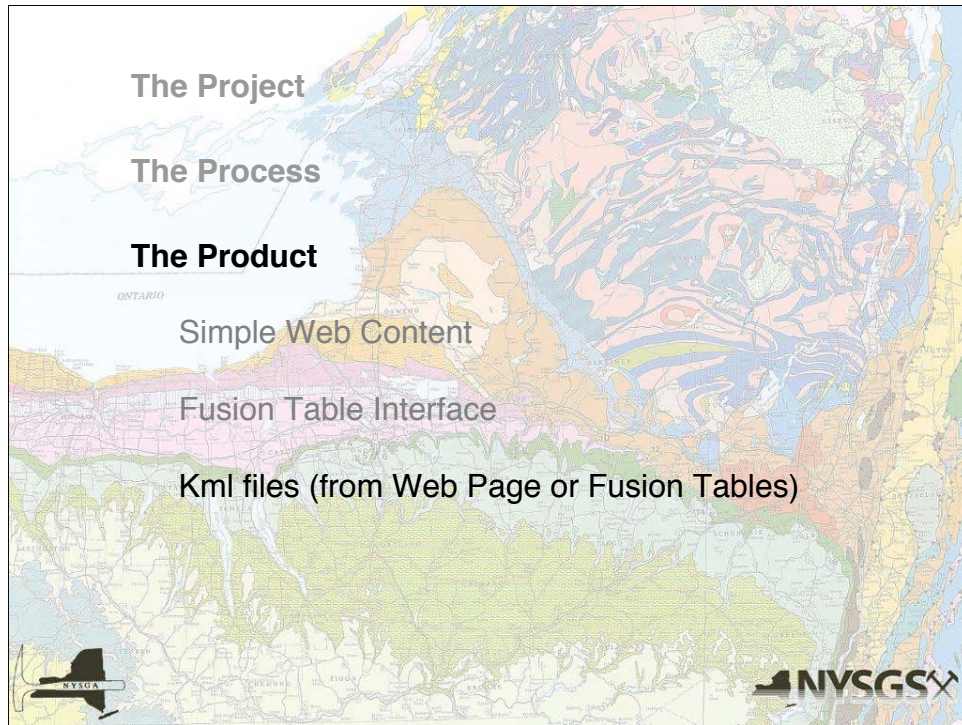




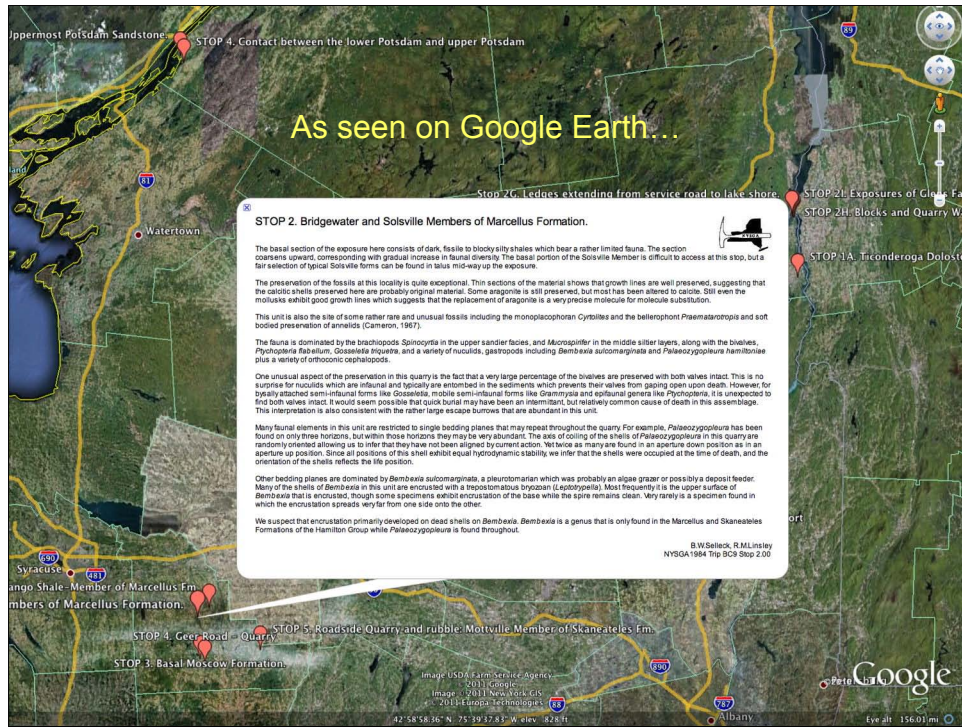
**The Project**  
**The Process**  
**The Product**

- Simple Web Content
- Fusion Table Interface**
  - Searchable
  - Shows results in table or map views
  - Embeddable link for GE or your own web page
- Download kml file**
  - Kml files (from Web Page or Fusion Tables)

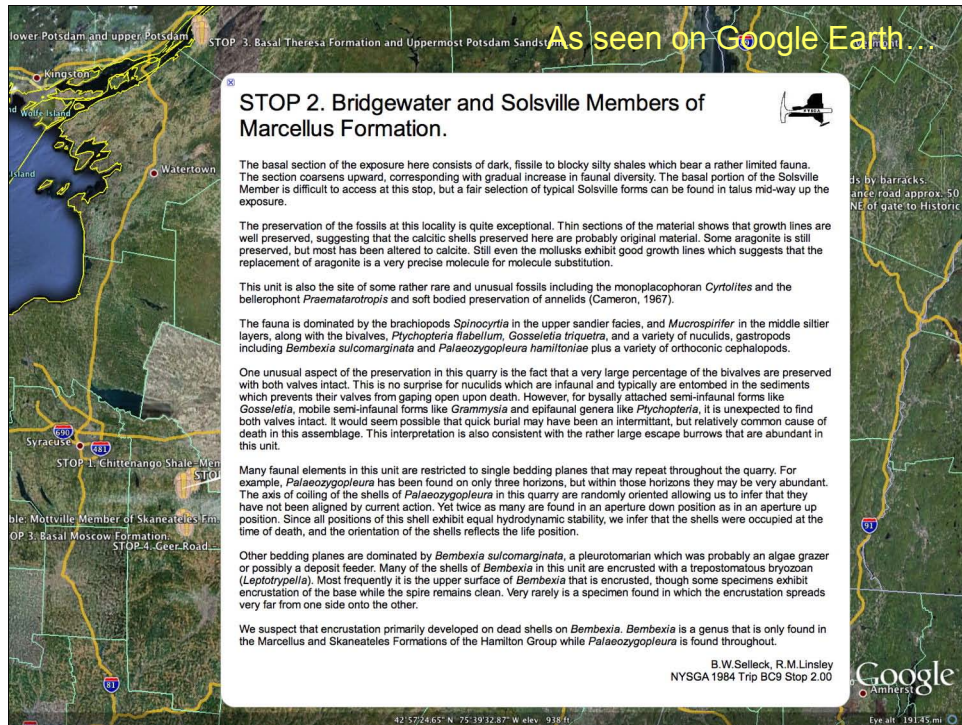


The user can also download the kml (or kmz) files from either our website or the Fusion Table.

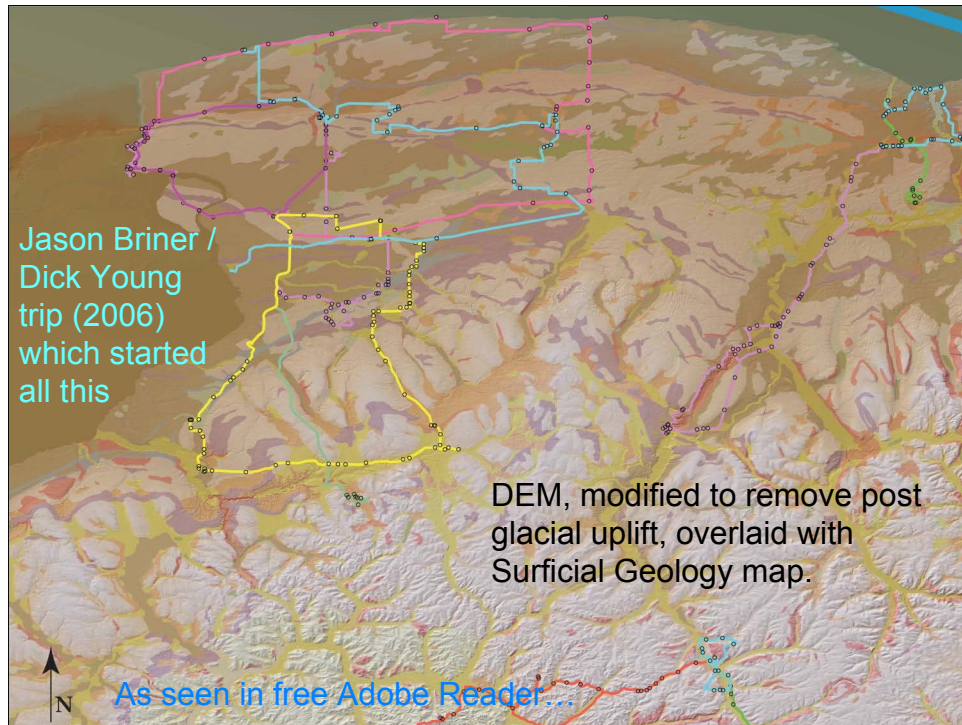


When downloaded from Google Fusion Tables, generic icons are displayed.

But, because it is a simple kml file, the user can change everything.



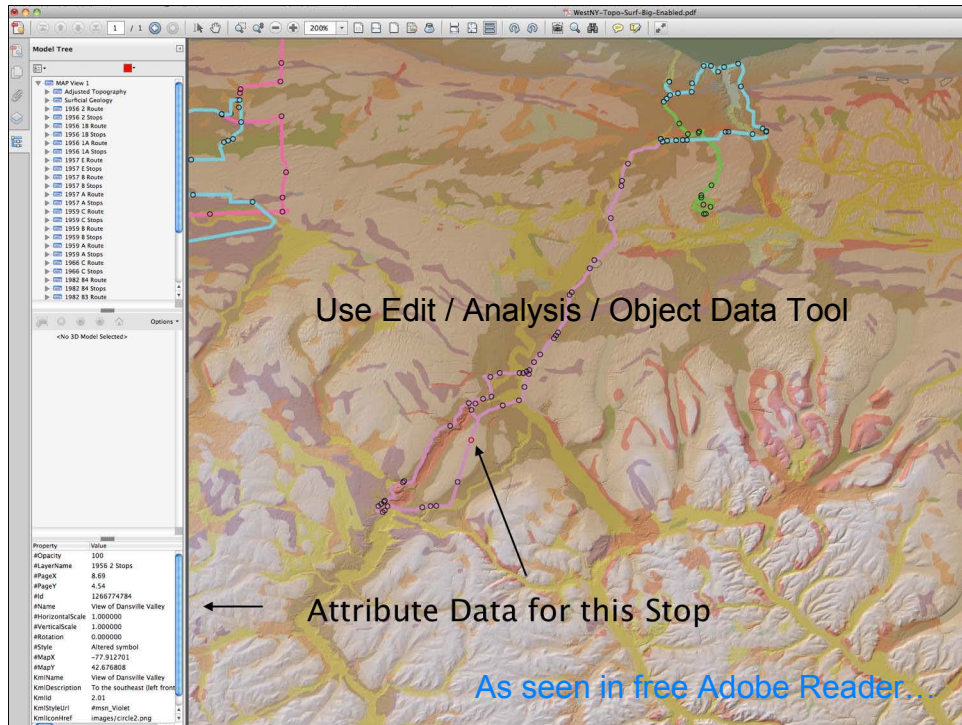
Here the icons have been replaced by trilobites, and the font size of the display balloon has been increased.



Kml files can be used in other software applications.

In this case MaPublisher® imported kml files for the field trips from Western NY into a layer, and added this to a DEM layer and the NY Surficial Geology layer, and output the results as a layered pdf.

This, in turn, was opened in the free Adobe Reader to display the image shown.



The geo-pdf which was produced allows the user to view attribute data by using the Object Data Tool of Adobe Reader to click on a Placemark.

The data are displayed in the Model Tree, as shown.

Relevant URLs:

Guidebooks (including free PDF's):

<http://www.nysga.net/Guidebooks.html>

NYSGA2GE Fusion Tables:

<http://www.google.com/fusiontables/DataSource?dsrclid=564523>

This talk, kmz files, additional information:

<http://ottohmuller.com/nysga2ge/Files.html>

