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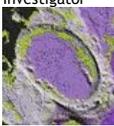
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5,500 Tagged Carolina Bays, and counting.... ★★★★★ [Re: Cintos] #1398526 - 02/01/11 09:11 PM

Cintos

Impactor
Investigator

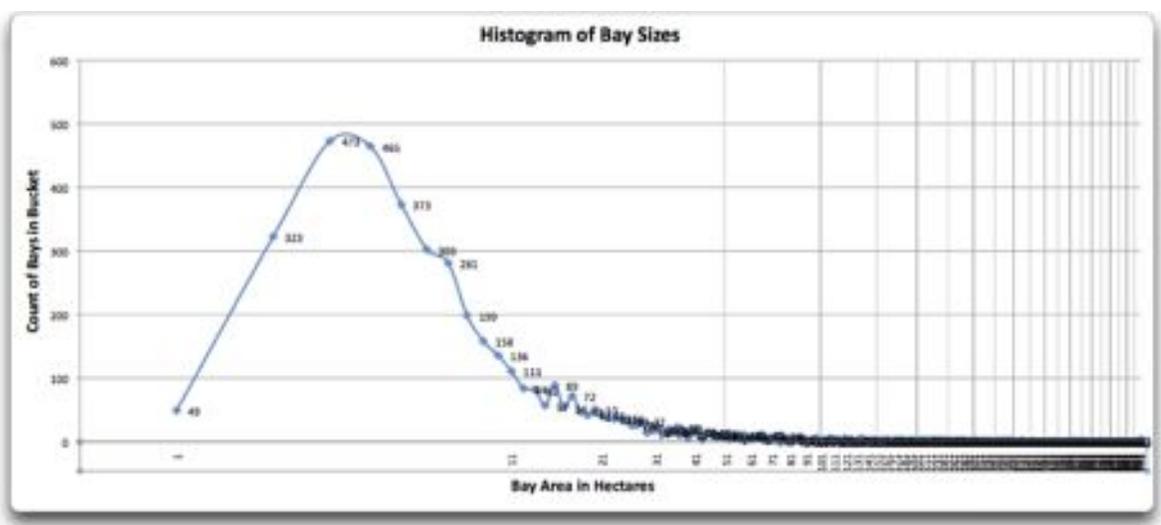


Registered:
01/27/06
Posts: 131
Loc:
Connecticut,
USA

Greetings:

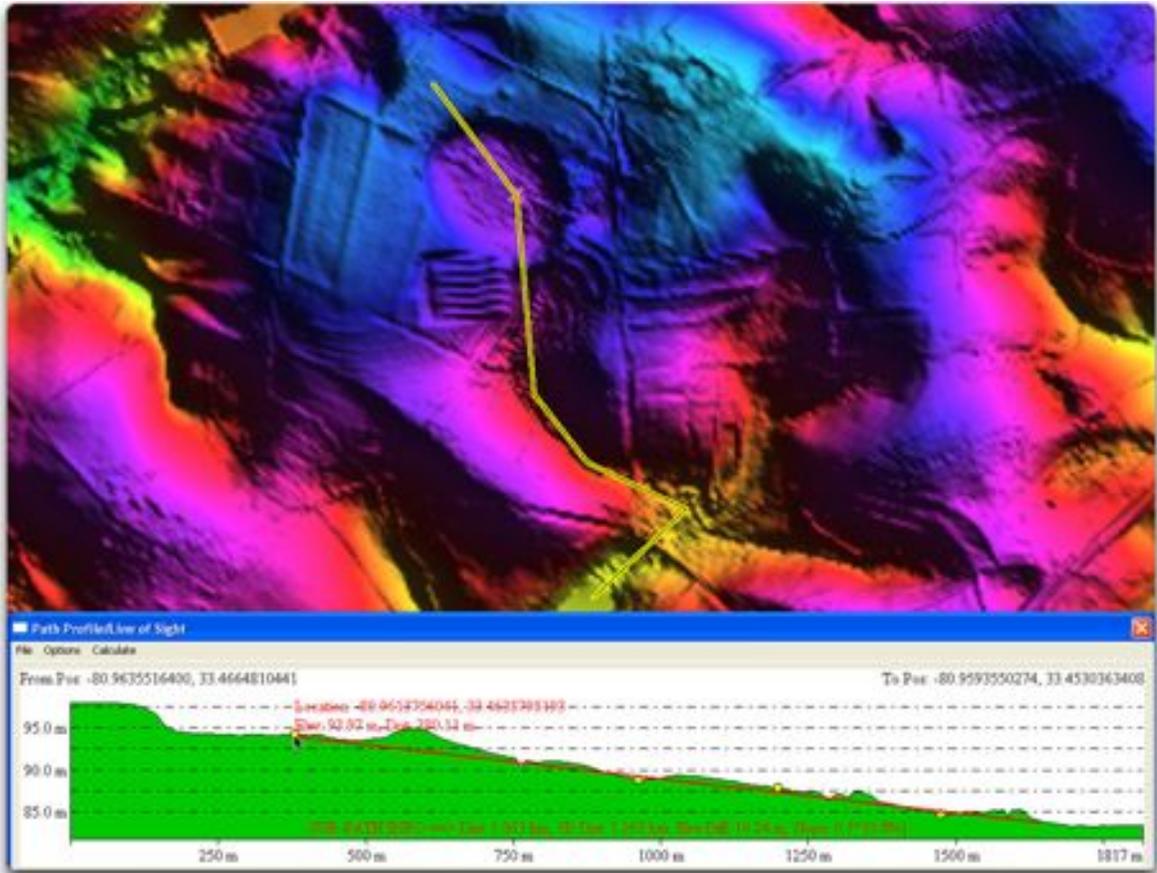
The effort to identify and measure the population of Carolina bays continues. At present, the Fusion Table database contains over 5,500 bays. Each one has been measured for length, breath, and orientation. A Overlay KML element exists for each one, and is linked for download through the visualization placemark on the Virtual Globe. I project reaching over 50,000 bays in the future.

The graph here displays a histogram of bays in 1 hectare buckets. The rendering of a perfect power spectrum is suggestive that a unique process is at work in their formation.



The process is time consuming, even with a number of specialized programs at hand to process the data. Should you have any interest in participating, there is a set of web pages being assembled to provide guidance to volunteers, [HERE](#).

Allow me to share an unusual bay, sitting up on a knoll as if it were a man-made reservoir. How would this hilltop support a water table so high above the surrounding drainage? The wave-shaped oval theories all require open water fetch to generate the required wave action.



The attached kmz file contains the working set for the "139316" Octant, in the USGS Laurinburg 100K Quadrant. This 240 square mile area has 540 bays listed. For more information as to how this is structured, please reference [This Page](#) .

Best wishes,
 michael

Attachments

[139316.kmz](#) (268 downloads)

[Preview this file with the Google Earth Plugin](#) (learn more)Description: 139316 Octant Components for Carolina Bay Survey

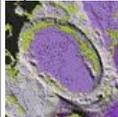
Men occasionally stumble over the truth ... but most of them pick themselves up and hurry off as if nothing had happened.
 Winston Churchill

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10,000 Bays Surveyed! [Re: Cintos]

#1402104 - 02/18/11 11:40 AM

Cintos
 Impactor Investigator



Registered: 01/27/06
 Posts: 131
 Loc: Connecticut, USA

Greetings:

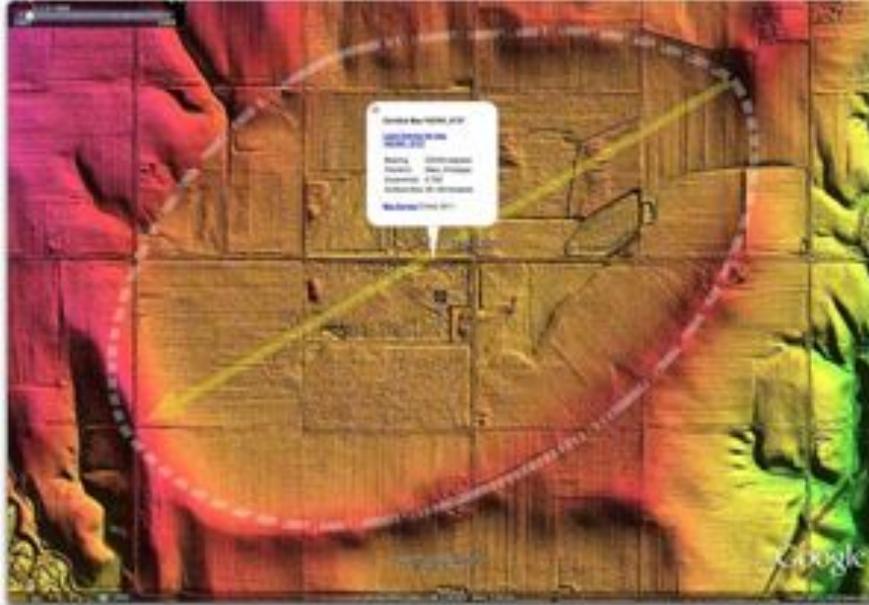
We are celebrating a milestone today: our survey database in the [Google Fusion Table](#) facility has surpassed the 40,000 mark.

UPDATE: As of 4/4/2011, the survey has reached the 20,000 bay mark.

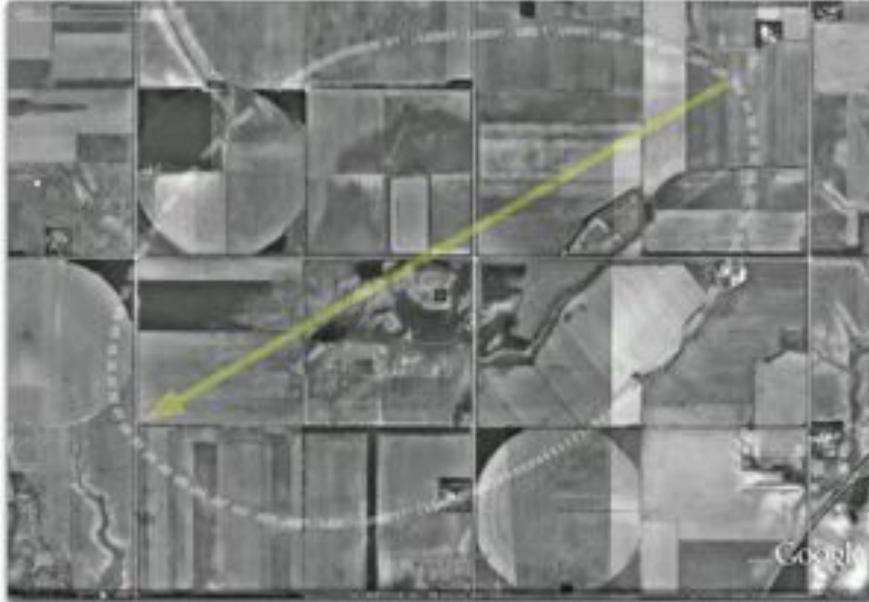
Each bay is represented by a discrete overlay, which is annotated with metrics such as the inferred orientation, eccentricity and the surface area of the bay.

With this post, we have also finalized the survey LiDAR and bays for the State of Nebraska. The survey has most of the south eastern section of the state viewable in 1/9 arc second LiDAR, using data from the NEbraska DNR. The attached kmz file offers links to all this, and more, as there are six USGS 100K quads with LiDAR, and another six with the generally available 1/3 arc second DEM overlays. The file is set to only open one Quadrant at a time, so your machine will not be overwhelmed.

The attached kmz opens to the following image:



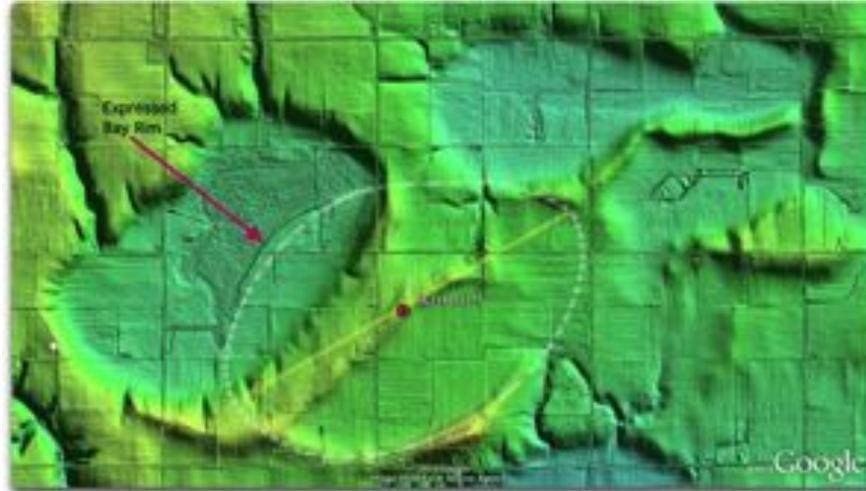
Note that you must select the placemark balloon to see the pop-up and download the survey overlay. The corresponding Satellite image is shown below:



Please note that the LiDAR resolution is super-high resolution, and the GlobalMapper-generated DEM is using 10x elevation exaggeration. These features, although stunning in the LiDAR, are often imperceptible to a viewer on the surface of the earth. As proof, note that the circular irrigation gantry system has no problem traversing these rims, as shown in the satellite view.

We sense that only the largest of the bays survived the intervening 40,000 years of wind erosion and in-filling by wind-blown sand and dust. Those that do still exist (we identify ~500 in the survey) have characteristics very similar to

the Eastern bays, including the overlapping seen in the following slides. What is most exciting to me is the expression of one remnant rim in the floor of an adjacent bay. We interpret the more southerly bay was created moments before the one to its north, as the frothy rain of sand coated the existing terrain and numerous super-heated steam inclusions in the ejecta were "popped".



The 10,00 bays likely represents 10% of the final tally. We could use more help in accomplishing the survey, and to run QA checks on our existing data. I have put a few [MOVIES](#) up on the web site that show the process in action.

Best wishes,
Michael

Attachments

[Nebraska LiDAR Survey.kmz](#) (232 downloads)

[Preview this file with the Google Earth Plugin](#) ([learn more](#)) Description: Nebraska Bay Survey Support KNZ file. Select one 100K quadrant at a time for viewing.

*Edited by Cintos (04/05/11 07:08 AM)
Edit Reason: reduced image sizes & removed video*

*Men occasionally stumble over the truth ... but most of them pick themselves up and hurry off as if nothing had happened.
..... Winston Churchill*

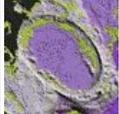
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The Bay-Bells of Maryland, Delaware and New Jersey [Re: Cintos]

#1413274 - 04/09/11 08:25 PM

Cintos

Impactor Investigator



Registered: 01/27/06

Posts: 131

Loc: Connecticut, USA

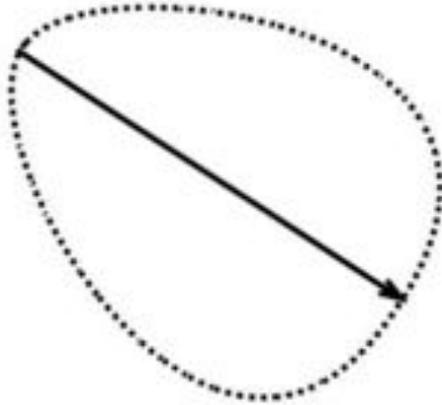
Greetings:

Quote:

NOTE: As of Thursday, June 23, the Google Fusion Facility being used to deliver the bay placemarks is again providing placemarks. The survey has reached ~25,000 bays

Do the Carolina bays extend across the North Carolina border into Virginia, Maryland, Delaware and New Jersey? We believe so, and base our interpretation on LiDAR imagery of various basins across the coastal plains of those states. ~~We have no LiDAR for this area~~ NOTE: we just received LiDAR for Virginia's Eastern Shore, which demonstrates, along with the imagery presented in Google Earth, a continuation of the basins across the NC border into VA. We now see the [Eastern Shore of Virginia](#) dotted with over 700 symmetrical oval shaped bays, vs the slightly skewed (s/w side flattened) in North Carolina.

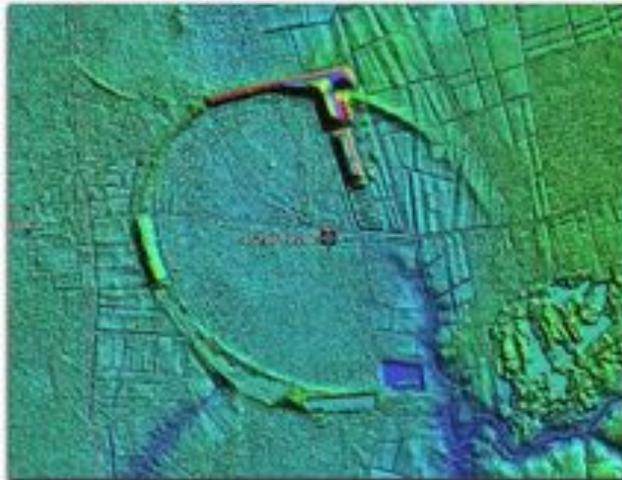
Once into Maryland (moving northward along the coast) we see a new planform slowly evolve. We have nicknamed this the "bellBay_Prototype", and it continues to persist northward, across New Jersey, and right up to the Late Wisconsin glacial moraine and outwash tills. A representation of the overlay used in our Survey is shown here rotated to a generic orientation:

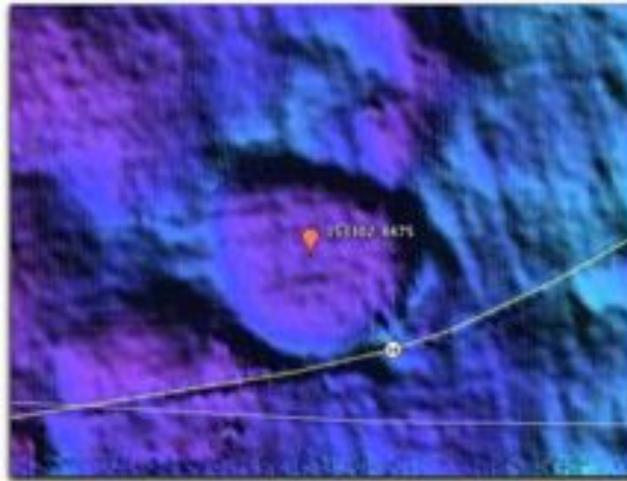
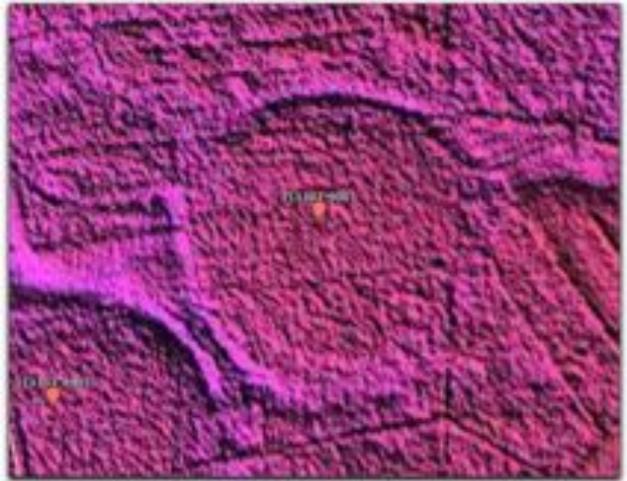
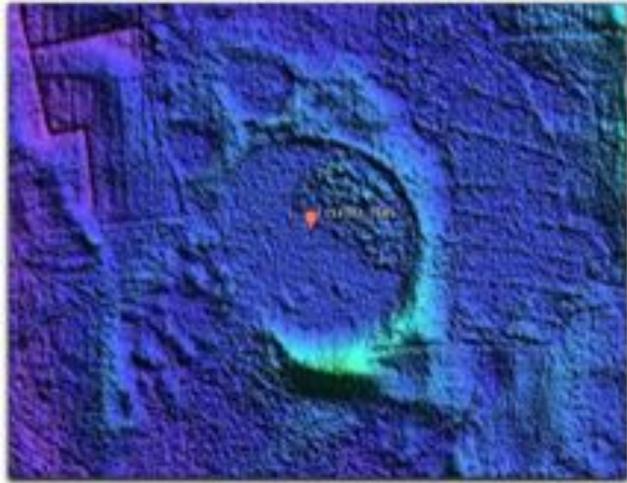


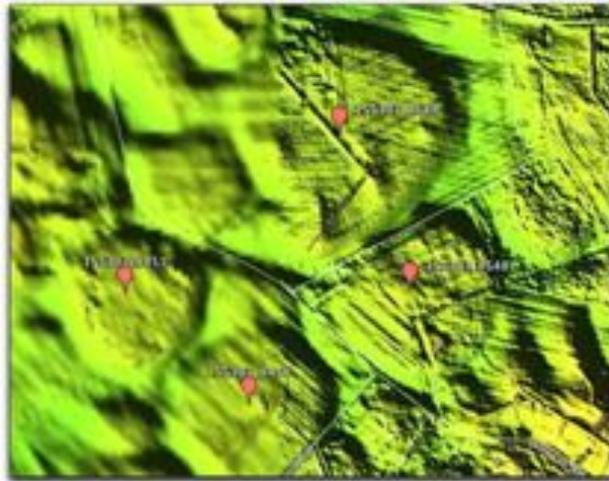
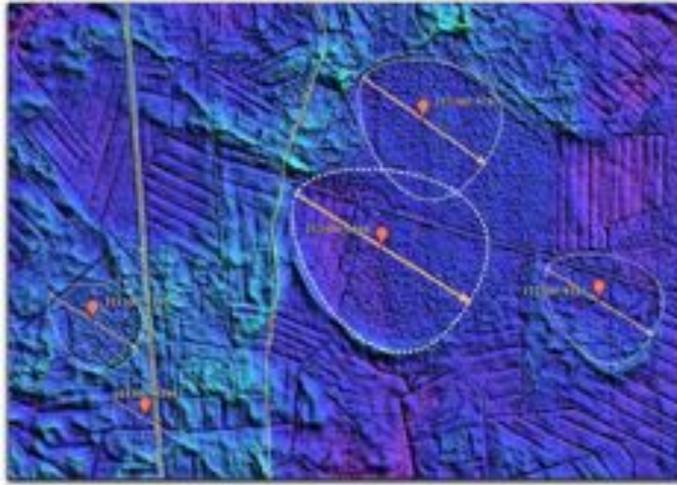
Until the advent of LiDAR, the odd shape these planforms present in aerial imagery did little to help identify their lineage. Indeed, when these were identified as Carolina bays by others, they have interpreted the orientation as due north. This is especially true as the bays become squatter and more oval. In New Jersey, these landforms are considered to be thermokarst features formed during thaw of permafrost after the last glacial maximum 20,000 years ago. Our working hypothesis suggests that the bays - as "burst bubbles" within a superheated sandy ejecta blanket - will generate planforms based on the skewing generated by the ejecta's velocity vector and that of the earth at the landing site. This changes based as a function of the cosine of the latitudes of impact site and the ejecta's eventual emplacement location, as discussed in an [earlier post in this thread](#) .

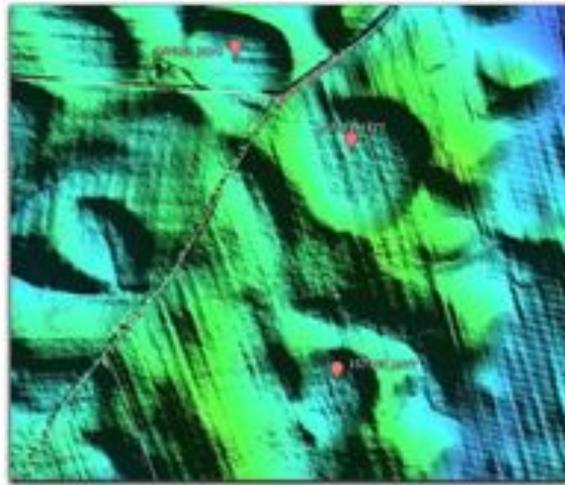
The area we consider here is often covered with extensive sheets of sand dunes, likely created during dry periods over the millennia. We see in some areas where these dunes and our bay-Bells interact, but as in the Carolinas, the two planforms are quite distinct and very easy to discriminate between. See my [Dunes & Bays Post](#).

The LiDAR images below progress northward from southern Maryland, and we see the bays become less oval and more pointed on the NW end, even squatter, and - most importantly - flatter on the southeastern side. The attached KMZ file contains placemarks for about 1500 bays contained in our survey

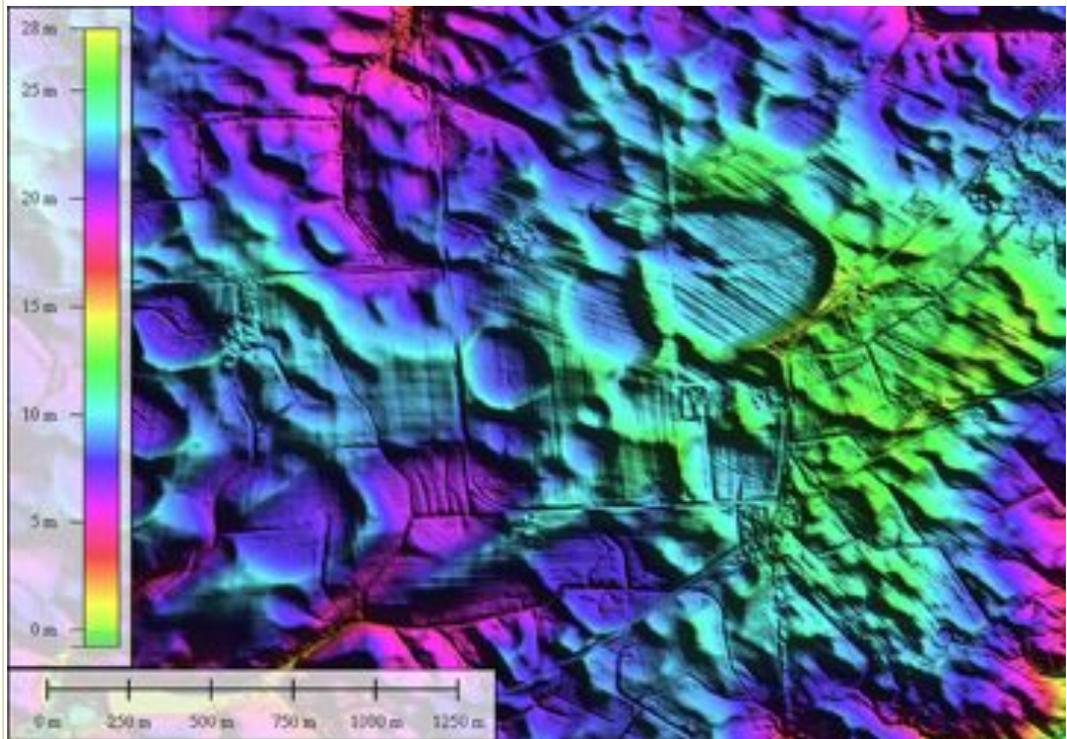




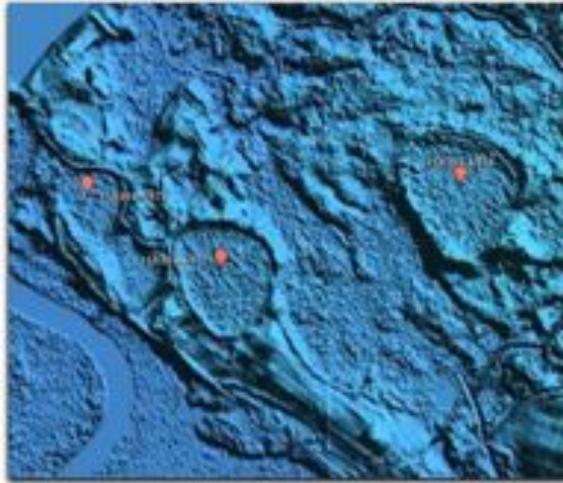




Here is an area in central Maryland presented as an Elevation map:



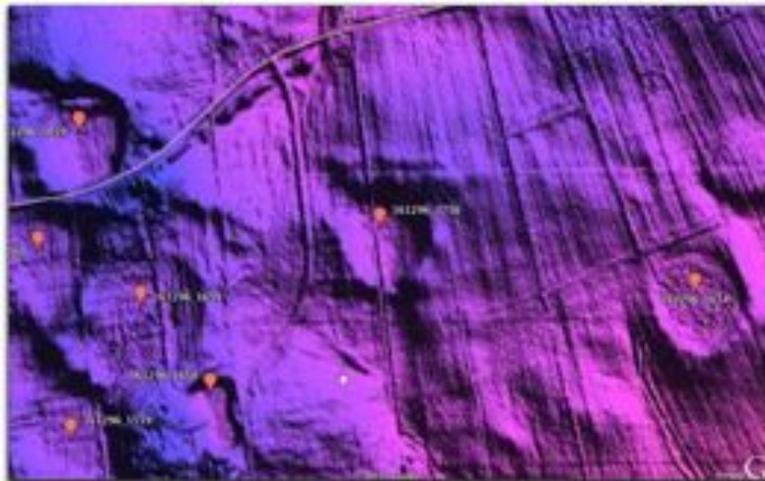
The examples continue into the state of New Jersey, the first here is immediately east of the Delaware Memorial Bridge...



We reach up into the scholarly Princeton, New Jersey area:



Our most Northerly bay complex is in Mammoth County, just north of the US Navy's Weapons Station Earl.



161296_1859

The area covered by the above imagery extends across multiple 100K Quadrants. The KMZ files for these are linked to

their USGS names, below, listed from south to North:

[Salisbury](#)

[Seaford](#)

[Dover](#)

[Wilmington, DE](#)

[Hammonton](#)

[Trenton](#)

An alternative to the direct KMZ links above and attached to the thread, you might have a look at the map generated by a Google Fusion Table [HERE](#), to open a new browser window and load directly from Google's site. Please note that our survey is far from complete in this region, due to a lack of LiDAR coverage and time resources.

Best wishes,
Michael

Attachments

[bayBell_evolution.kmz](#) (186 downloads)

[Preview this file with the Google Earth Plugin](#) ([learn more](#))Description: KMZ with 13 bay overlays to support the post imagery

*Edited by Cintos (06/23/11 01:18 PM)
Edit Reason: update FT problem status to OK*

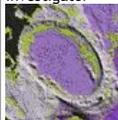
*Men occasionally stumble over the truth ... but most of them pick themselves up and hurry off as if nothing had happened.
..... Winston Churchill*

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SW Alabama - Carolina Bays or Karsts? [Re: Cintos]

#1432347 - 07/17/11 08:15 PM

Cintos
Impactor
Investigator

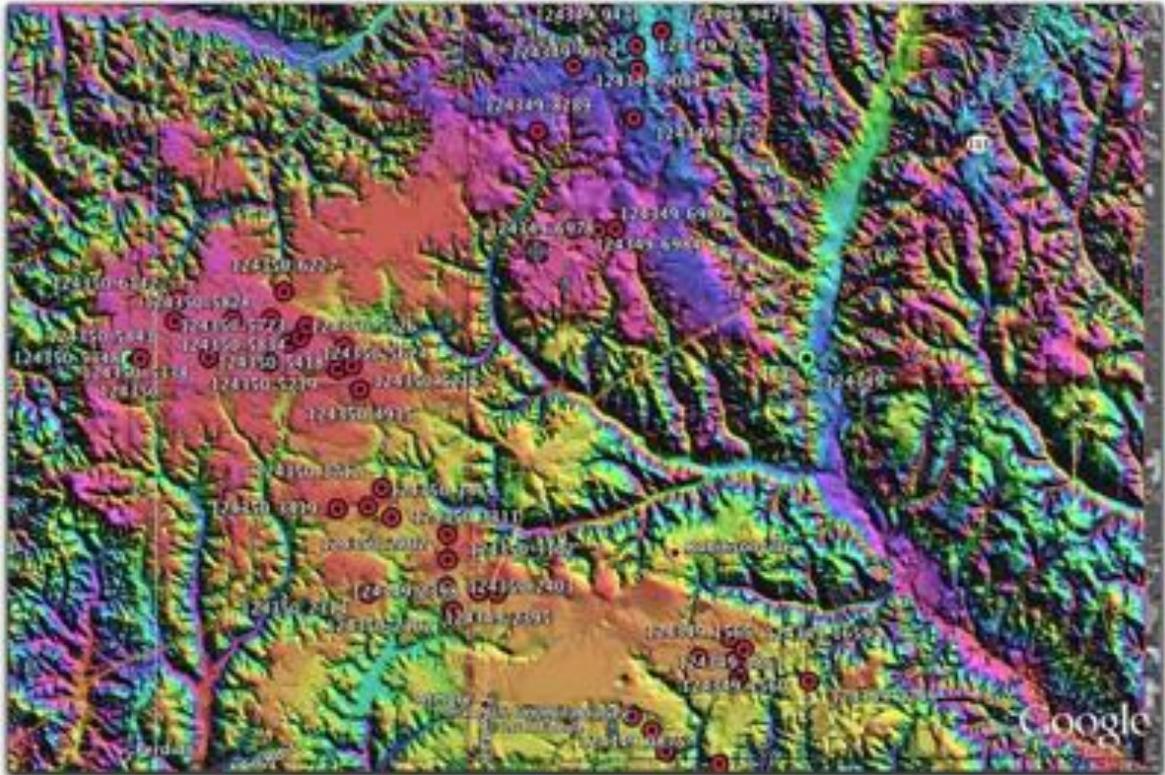


Registered:
01/27/06
Posts: 131
Loc:
Connecticut,
USA

Greetings:

Our search for bays in additional locations continues, even as we measure more bays in areas already identified. Our Survey total is now over 25,000 bays. Each of these has been documented with numerous metrics and can be reviewed through this [Google Earth Fusion Table](#) visualization.

Our distal ejecta sand sheet hypothesis suggest that bays will only be created on level terrain. Our first look in new areas is always to find the level spots on the digital elevation maps. In southwestern Alabama, that led us to the smooth areas seen in the Atmore 100K quad, shown in the image below.



Now, these landforms do not present the typical robust planform and alignment we usually document. Alabama has no LiDAR, however, so all we see is the water/wet areas, not the actual rims. It could be argued that these are simply Karst landforms (formed by the dissolution of a layer of soluble bedrock, typically carbonate). Only ground truthing will tell. Hints of alignment are seen. Since this area is directly south of the Saginaw region, we would expect the bays to be orientated from the north - actually, more from the NNE due to Coriolis steering. Here is a graphic showing the 1997 black and white Google Earth historical imagery of some of these.



We have only attempted to document a few of these in the 124350 and 124349 octants. These are included in the attached KMZ file. Each placemark can be selected to show a popup balloon. There, you will see the metrics in our table, and a link to retrieve our suggested overlay outline.

- Michael

Attachments

[Atmore_Post.kmz](#) (155 downloads)

[Preview this file with the Google Earth Plugin](#) (learn more)

*Edited by Cintos (07/18/11 03:51 PM)
Edit Reason: added Coriolis note*

*Men occasionally stumble over the truth ... but most of them pick themselves up and hurry off as if nothing had happened.
..... Winston Churchill*

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Pocosin: swamp-on-hill [Re: Cintos]

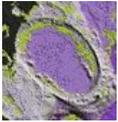
#1437722 - 08/16/11 08:58 PM

Cintos
Impactor
Investigator

Greetings:

Native Americans referred to a Carolina bay as a "Pocosin". Interesting word. According to Wikipedia®

Quote:



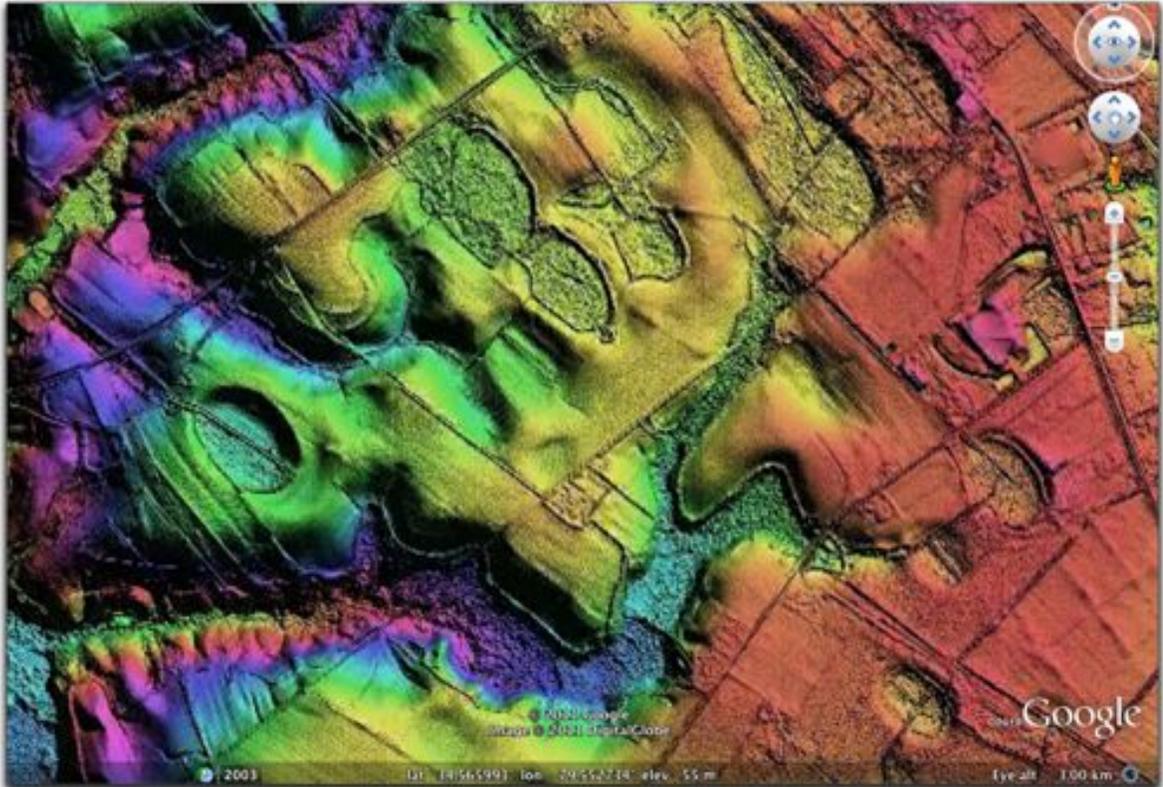
The word pocosin comes from an Eastern Algonquian word meaning "swamp-on-a-hill."

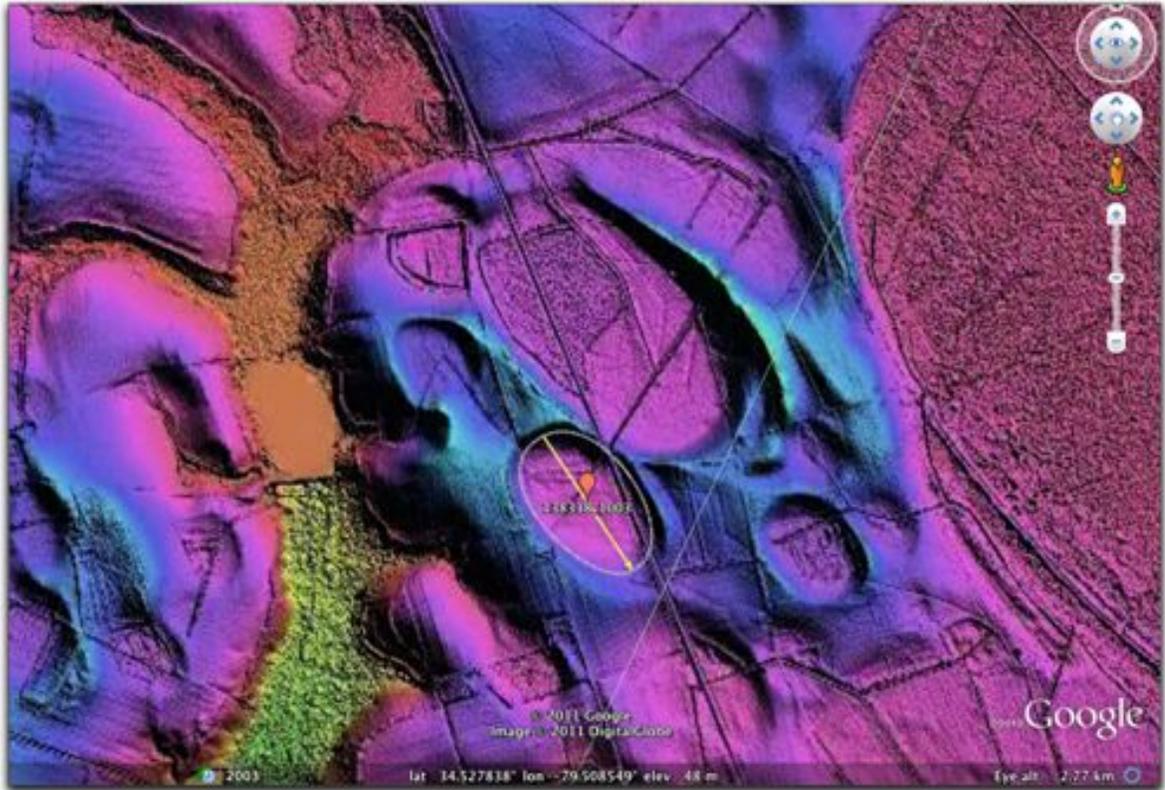
Registered:
01/27/06
Posts: 131
Loc:
Connecticut,
USA

Now, I may be a bit batty, but I can't for the life of me understand why that appellation has not raised the collective eyebrows of geologists. Swamps should exist in lowlands, not up on hills. Am I right?

The ongoing survey of Carolina bays has reinforced the concept. In many cases, the LiDAR clearly shows that the bays are expressed as depressions in the surrounding landscape, with no true raised rim. Yes, rims do exist in thousands of bays, but could they simply be wind-driven artifacts, created after the depression was generated?

The area around Minturn, SC, displays numerous "swamp-on-a-hill" examples. The attached KMZ has the elevation map overlay generated from LiDAR data, along with a network link to the survey results over the map extent (initially toggled off).





Note that the shape of the bay has no relationship to its elevation. They are seen from 35m to 60 m, over a relatively small 14km x 18km region. In many cases, the bay floors are elevated 10 meters above the surrounding drainage channels. They have orientations within the range of 142° to 146°.

Attachments

[swamp-on-hill.kmz](#) (77 downloads)

[Preview this file with the Google Earth Plugin](#) (learn more)

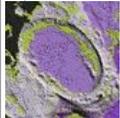
*Edited by Cintos (08/17/11 05:06 AM)
Edit Reason: bay overlays toggled off*

*Men occasionally stumble over the truth ... but most of them pick themselves up and hurry off as if nothing had happened.
..... Winston Churchill*

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Re: The Bay-Bells of Maryland, Delaware and New Jersey [Re: Cintos] #1445760 - 10/14/11 12:44 PM

Cintos
Impactor Investigator



Registered: 01/27/06
Posts: 131
Loc: Connecticut, USA

Greetings:

I had the pleasure of presenting a Poster (get it [HERE](#)) at the 2011 GSA Meeting this week. The topic was specifically these more northerly bays. According to the general casual understanding - as expressed at Wikipedia and sources - the bays lose their robust parallel alignments towards the north-central US, and rotate to a more northerly indicated source. Now that we have the LiDAR, an alternate interpretation can be made.

Our survey of Carolina bays has reached 27,000. When computed as distal ejecta traveling on ballistic trajectories which are steered by the Coriolis forces, they continue to support a triangulation network focused on Saginaw bay.

You can get the latest Google Fusion Table map visualization [HERE](#). The placemarks will link to individual bay overlays for Google Earth viewing.

The attached KMZ file has placemarks which link to survey data in the scope of a 100K USGS Quadrille.

- michael

Attachments

[SurveyTiles.kmz](#) (39 downloads)

[Preview this file with the Google Earth Plugin](#) (learn more) Description: Overall index for Carolina Survey. Each placemark will load KML data with our results at a USGS 100K Quad grid scope.

*Edited by Cintos (10/15/11 07:16 AM)
Edit Reason: typo*

Men occasionally stumble over the truth ... but most of them pick themselves up and hurry off as if nothing had happened.

..... Winston Churchill

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Re: The Bay-Bells of Maryland, Delaware and New Jersey [Re: Cintos] #1445886 - 10/15/11 09:52 AM

Hill 
Master Guide | Moderator



Registered: 10/31/04
Posts: 12656
Loc: Los Angeles, California

Cintos, I continue to read your investigations with great interest. I never could have imagined when I began my first [post](#) about the Carolina Bays in 2005 that Google Earth would ever lead to such important research about them. I'm always waiting for the next update.

Click the images to view two important videos about our only home.



[A Pale Blue Dot](#)



[HOME](#)

“Only when the last tree has died, the last river has been poisoned, and the last fish has been caught will we realize we cannot eat money.” Cree Proverb

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