

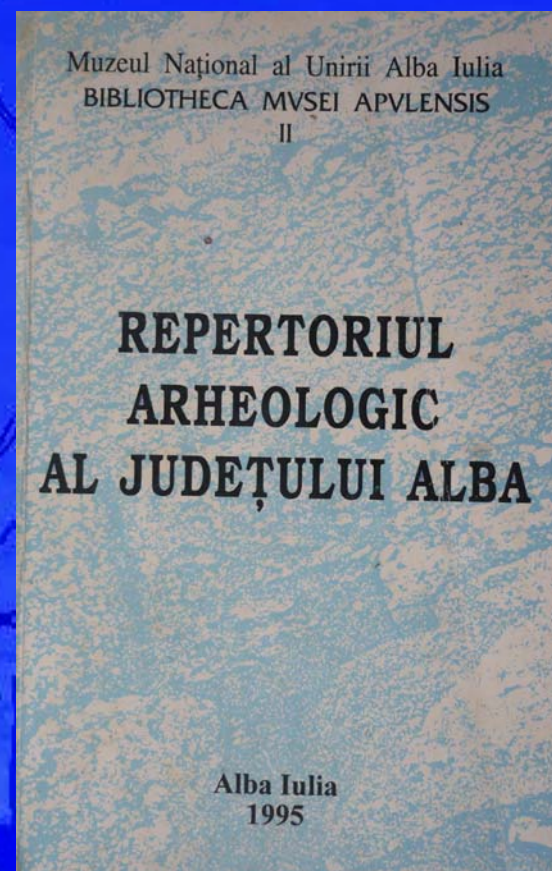
DATA ACQUISITION AND GIS SUPPORT IN SYSTEMATIC ARCHAEOLOGICAL RESEARCH

**Assistant Lecturer PhD. student eng. TUDOR BORSAN
Assoc. Prof. PhD. LEVENTE DIMEN
Assoc. Prof. PhD. eng. IOAN IENCIU
Assistant Lecturer PhD. student eng. LUCIANA OPREA
Assistant Lecturer PhD. student eng. GEORGE EMANUEL VOICU**

ARCHAEOLOGICAL SITE "LIMBA"



BIBLIOGRAPHICAL REFERENCES



CARTOGRAPHICAL REFERENCES

Repertoriul Arheologic Național

Alegeți criteriul: Categorie sit, Tip sit, Cod SIRUTA, Punct, Comună, Localitate, Epoca, Datare, Data înregistrare

Alegeți termenii de selecție: (Nici un termen), Arad [107], Așeu [149], Bacău [65], Bihor [225], Buzău [100], Iași [100], Iași [100], Iași [100], Iași [100]

Rezultatul selecției este: **321** de SITURI selectate, dintr-un total de **9061**.

Afișează selecția curentă pe hartă

Seleția a fost efectuată pe următoarele criterii:

Criteriu	Termen
Județul	Alba (elimină criteriul)

elimină orice criteriu - și începe o selecție nouă

Pașul 1: Alegeți un criteriu de selecție (ex. Județ) și așteptați încărcarea termenilor corespunzători în fereastra alăturată.

Pașul 2: Alegeți unul sau mai mulți termeni (apăsând tastele Shift pentru a marca termeni succesivi sau Ctrl pentru termeni dispași) și apăsați pe butonul Caută. Rezultatul selecției se afișează în tabelul de mai jos.

Pașul 3: Apăsând Codul RAN din prima coloană stânga pentru a vedea fișa de sit.

Notă: Puteți filtra rezultatul primei selecții alegând un al doilea criteriu (ex. Epoca) și apoi termenul sau termenii dorți. Primul criteriu se păstrează până când este șters, modificat sau până când se elimină toate criteriile. La orice selecție se aplică toate criteriile, iar la fiecare criteriu se consideră înregistrările la care se potrivește cel puțin unul din termeni.

Inapoi la Lista de situri

150 / 321 Răfoare

Informații despre SIT

Cod RAN	1106.02
Nume	Situl arheologic de la Limba - "Bordane"
Județ	Alba
Unitate administrativă	CIUGUD
Localitate	Dumbrava
Punct	Bordane
Forma de relief	terasă
Categorie	locuire civilă
Tip	așezare
Data ultimei modificări a fișei	11.7.2007

Server cartografic pentru patrimoniul cultural național

Selectați regiunea de dezvoltare | Selectați județ | Selectați regiunea istorică

Centreaza după coordonate (Streeo70)

X: 390670 Y: 565989

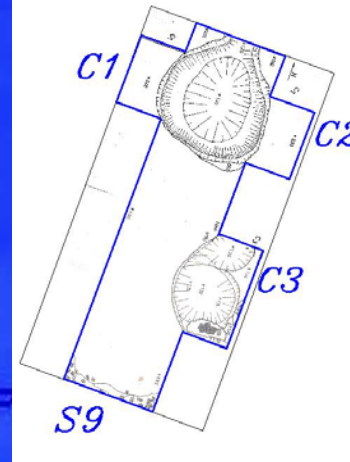
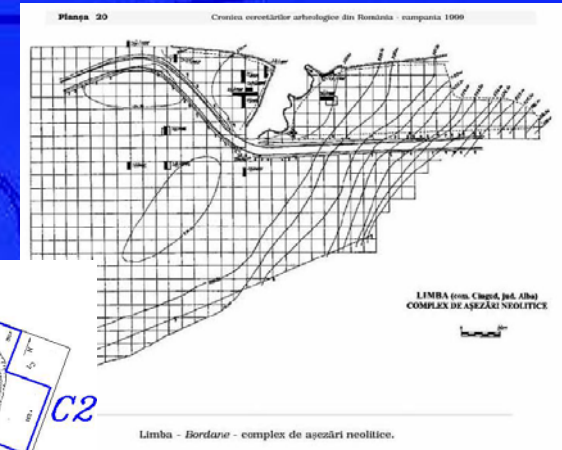
Elementele hărții

- RAN-Repertoriul Arheologic Național
- RAR-Arhive "Repertoriul Arheologic al României" de la IAB
- Cronica cercetărilor arheologice
- Muzee în România
- Lăcașe de cult
- Drumuri naționale, europene și județene
- Drumuri comunale
- Căi ferate
- Rețea hidrografică
- Regiuni de dezvoltare în România

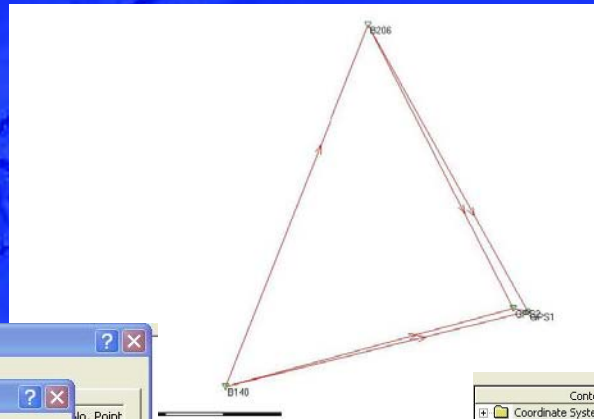
Selectați imagine de fundal

Modelul digital al altitudinilor

România - Imagine de referință



DATA ACQUISITION - GPS OBSERVATIONS



Assign

General | View Data...

New Coordinate Set

Coordinate Set Name: LOCAL_SET

Coordinate Type: Unknown

WGS84 Local

Coordinate System: STEREO_LOCAL View...

Ellipsoid: Krassowski Transformation: Not Used

Projection: STEREO Geoid Model: .

System A	System B	Easting	Northing	Height	Position	Position+Height
B140	B140	-0.0098	0.0131	-0.0000	0.0163	0.0163
B206	B206	-0.0101	-0.0115	-0.0000	0.0153	0.0153
GP52	GP52	0.0199	-0.0016	0.0001	0.0199	0.0199

Assign Close

Contents

- Coordinate Systems
- Transformations
- Ellipsoids
- Projections
- State Plane Zones
- Geoids
- CSCS Models

Name	Last Modified	Transforma...	Transformation T...	Residuals
WGS 1984	07/19/2007 08:44:29			No distribut...

New Coordinate System

General

Name: STEREO_LOCAL

Transformation: None

Trans. Type:

Residuals: No distribution

Ellipsoid: Krassowski

Projection: STEREO

Proj. Type: User Defined

Geoid Model: None

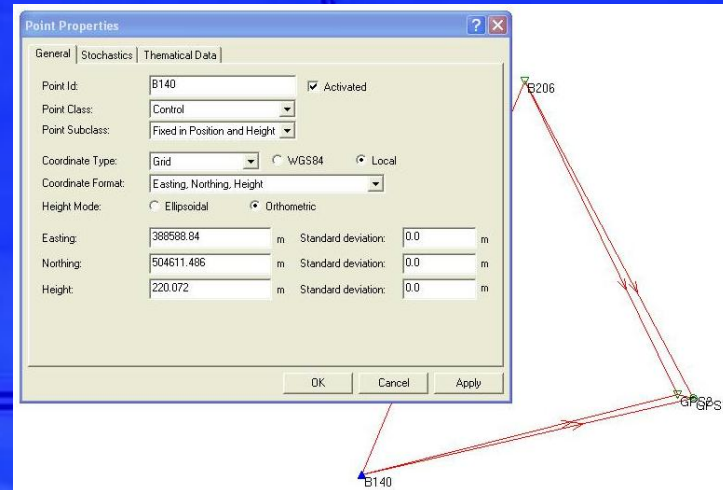
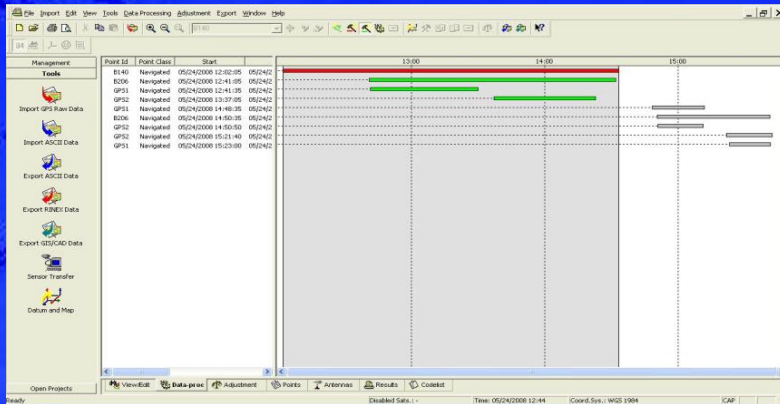
CSCS Model: None

Note:

Last Modified:

OK Cancel

DATA ACQUISITION - GPS PROCESSING

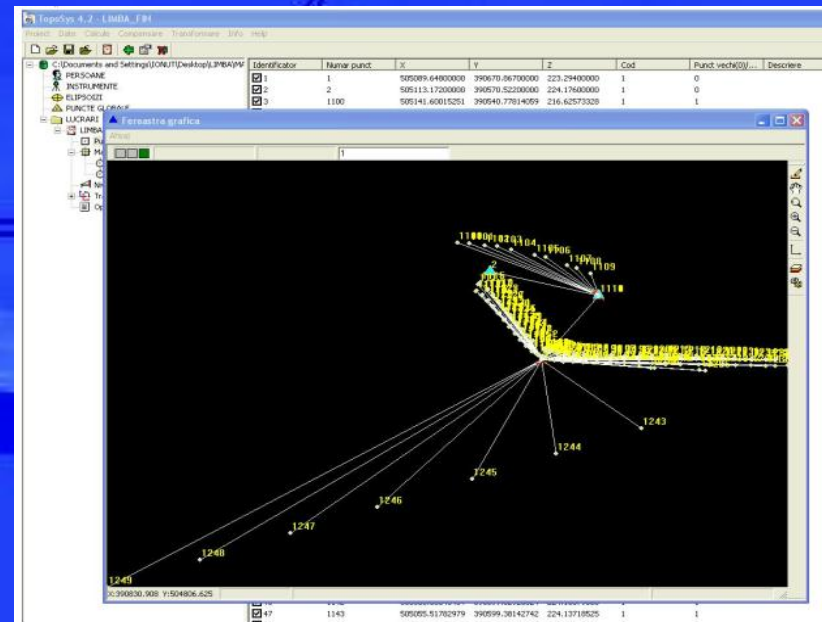
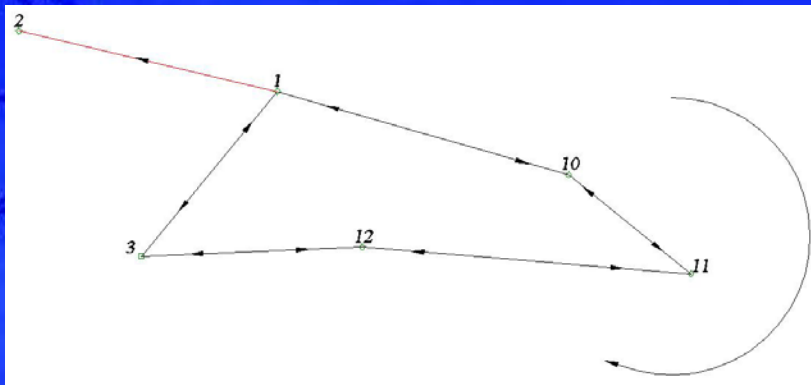


The screenshot shows a software window with a 'Management' table. The table lists the following data:

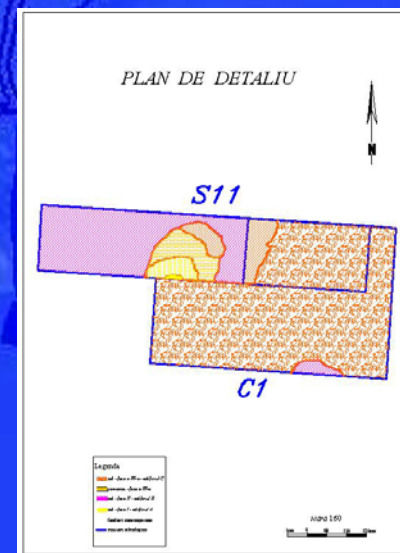
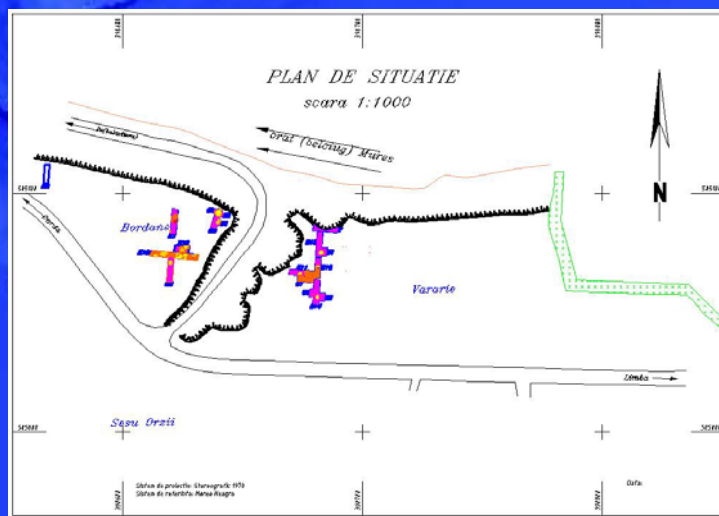
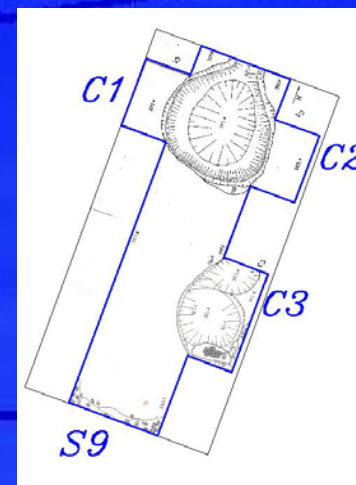
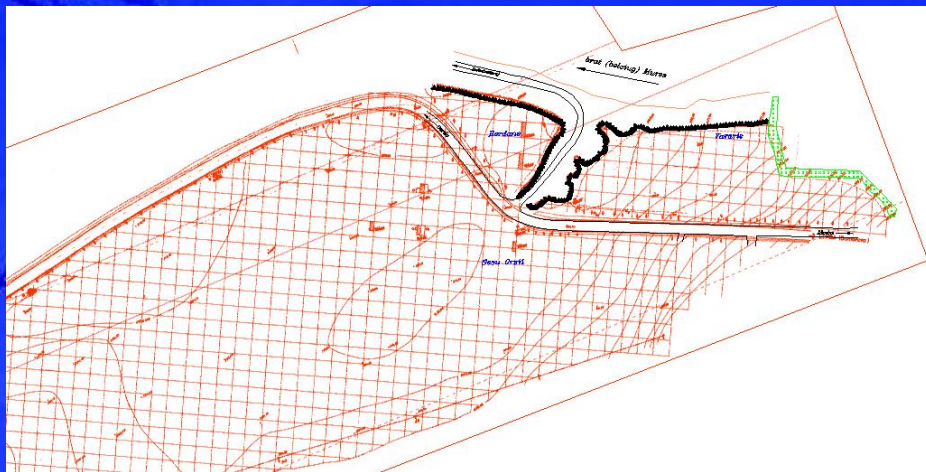
Point Id	Point Class	Epoch	Easting	Northing	Ellip. Hgt.	Posn. + Hgt. Qty
B140	Control	05/24/2008 12:02:05	388588.8400	504611.4860	-	0.0000
B206	Control	05/24/2008 12:41:05	389610.8310	507072.7960	-	0.0000
GP1	Adjusted	06/03/2011 22:58:40	390670.8668	505089.6479	223.2942	0.0197
GP2	Adjusted	06/03/2011 22:58:40	390570.5221	505113.1723	224.1761	0.0171

The software window also shows a 'Tools' menu and a 'View' menu. The 'View' menu is open, showing options for 'View-Edit', 'Data Proc.', 'Adjustment', 'Points', 'Antennas', 'Results', and 'Control'.

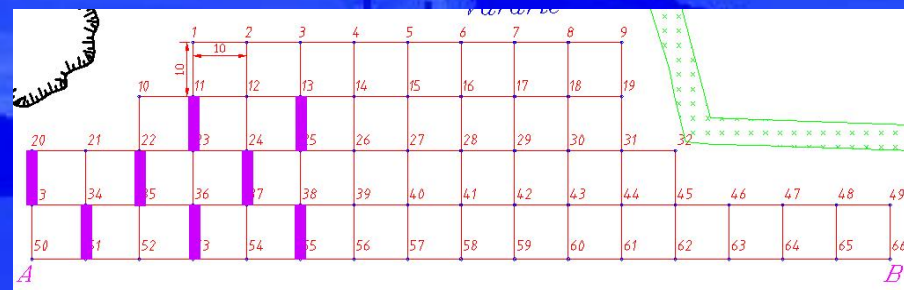
DATA ACQUISITION - TOTAL STATION MEASUREMENTS



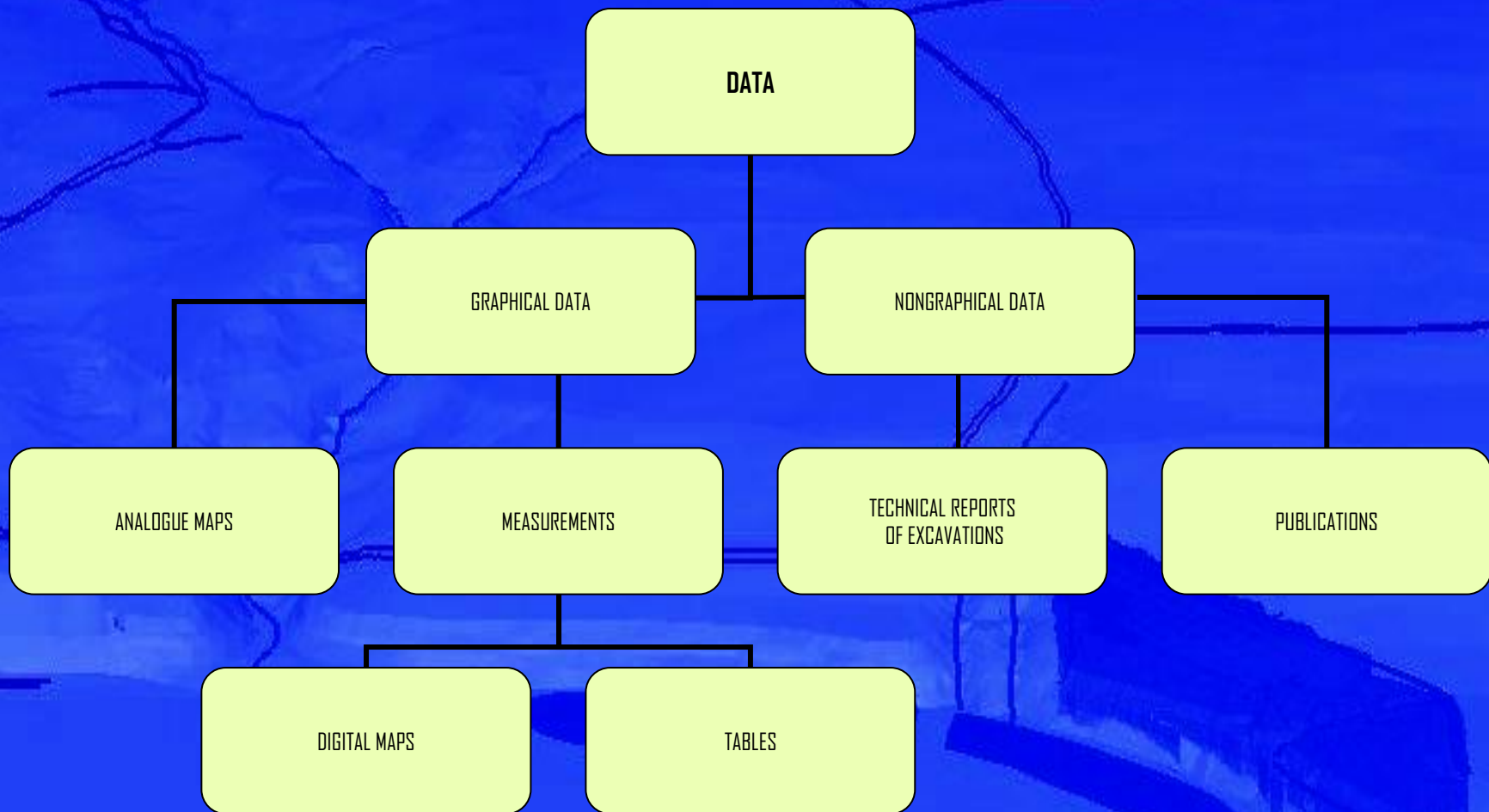
CREATING TOPOGRAPHICAL MAPS



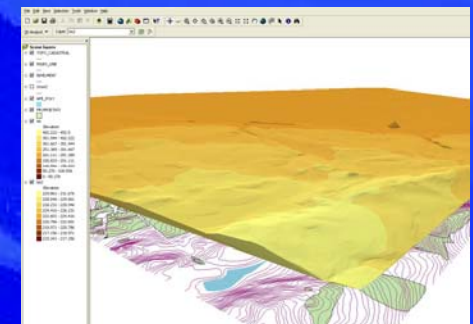
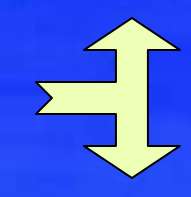
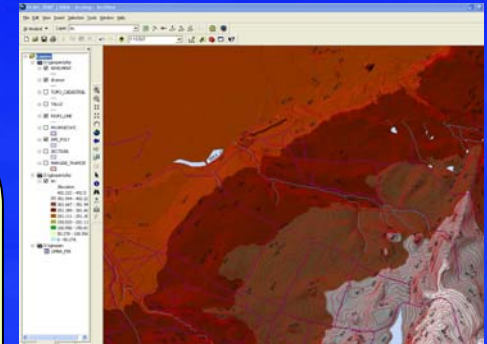
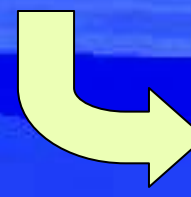
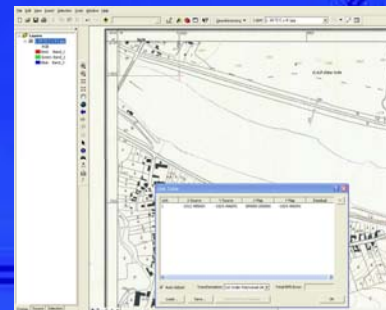
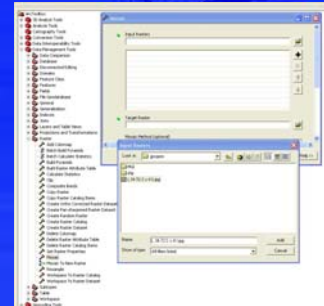
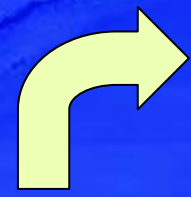
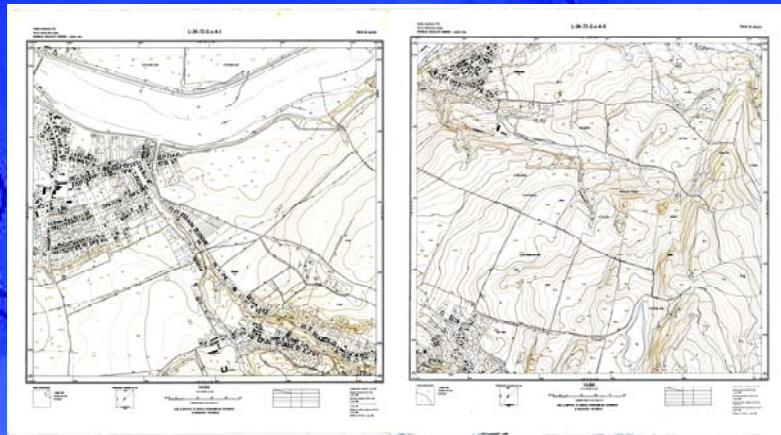
TOPOGRAPHICAL SUPPORT



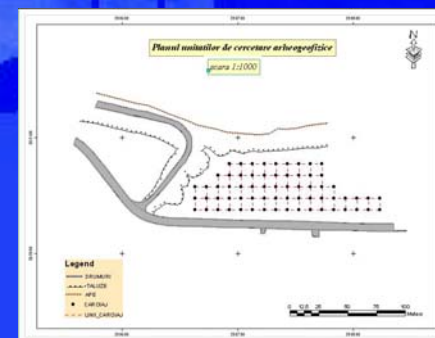
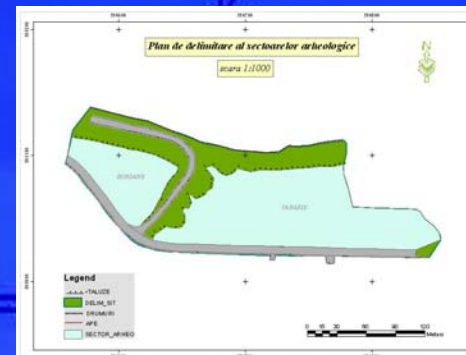
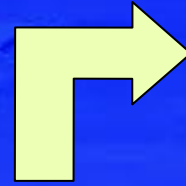
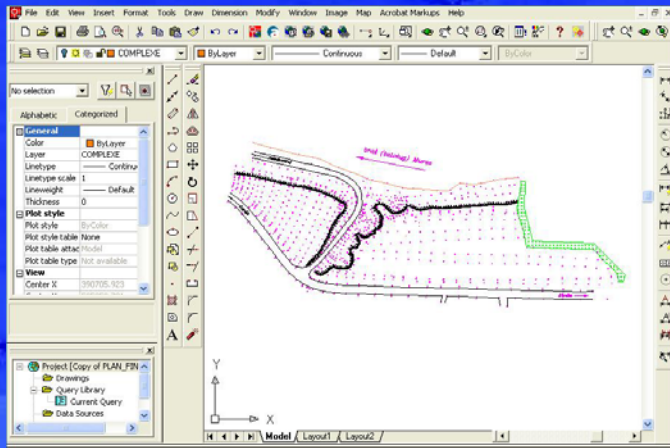
INTEGRATED DATA IN GIS ENVIRONMENT



GIS SUPPORT - USING ANALOGUE MAPS FOR EXTRASITE ZONE



GIS SUPPORT - VECTOR FORMAT USE TO ACHIEVE THEMATIC MAPS

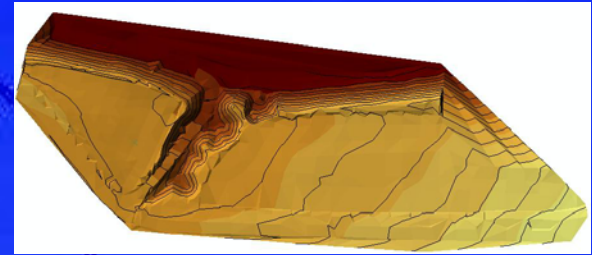


THEMATIC MAPS

GIS SUPPORT - USING TABLES TO DIGITAL DEVELOPMENT MODELS

Microsoft Excel - DBF_1.DBF

A	B	C	D	E
1	00070.387	50009.852	223.203	
2	00070.512	50513.178	224.177	
3	00070.588	50505.546	224.349	
4	00070.628	50514.852	223.950	
5	00070.198	50513.574	224.052	
6	00070.327	50512.376	224.073	
7	00070.289	50510.360	223.853	
8	00070.443	50510.736	223.853	
9	00070.187	50510.024	224.198	
10	00070.486	505104.723	224.414	
11	00070.484	505103.095	224.448	
12	00070.036	505104.457	224.032	
13	00070.621	505107.235	223.907	
14	00070.550	505109.773	223.509	
15	00070.384	505111.706	224.063	
16	00070.709	505112.803	224.156	
17	00070.793	505113.902	223.946	
18	00070.556	505113.526	224.033	
19	00070.431	505112.383	224.181	
20	00070.247	505110.369	223.804	
21	00070.830	505109.707	223.895	
22	00070.224	505105.514	223.944	
23	00070.541	505103.708	224.014	
24	00070.978	505102.763	224.052	
25	00070.436	505100.702	224.452	
26	00070.998	505098.805	224.391	
27	00071.837	505103.679	224.067	
28	00071.002	505103.943	223.879	
29	00074.383	505107.546	223.881	
30	00074.952	505111.142	223.948	
31	00074.530	505111.802	224.145	
32	00074.587	505113.017	224.016	



Coordinate Editor - [James_mua]

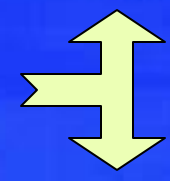
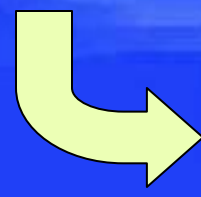
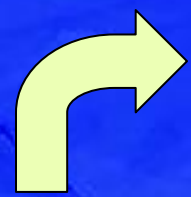
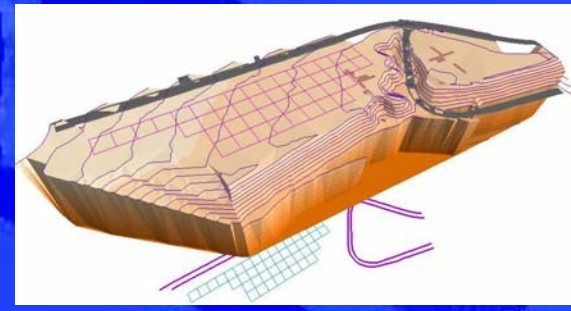
Point Id	Easting	Northing	Elevation
1	389 228.3293	510 067.8579	244.5745
2	389 225.6784	510 065.0738	244.2529
3	389 232.3315	510 084.2782	244.4619
4	389 235.4606	510 083.5881	244.5140
5	389 240.5998	510 097.2730	244.5598
6	389 237.9645	510 098.5794	244.6287
7	389 240.8313	510 107.5243	244.7556
8	389 243.5453	510 107.0603	244.7541
9	389 245.4626	510 116.6714	244.9064
10	389 242.7946	510 117.4866	244.8831
11	389 244.6714	510 131.3034	245.0897
12	389 247.9985	510 132.0326	245.1191
13	389 249.2627	510 152.5551	245.3135
14	389 245.8911	510 153.2122	245.1928
15	389 246.8374	510 161.3316	245.1704
16	389 250.8632	510 188.8746	244.7763
17	389 247.5942	510 188.4472	243.1288
18	389 250.7848	510 202.3316	244.5626
19	389 251.5498	510 214.0948	244.1512
20	389 248.8133	510 214.5328	244.1414
21	389 249.1148	510 225.6080	243.8895
22	389 252.8158	510 226.0990	243.7535
23	389 251.2988	510 237.8333	243.4948
24	389 243.1013	510 238.2246	243.4812
25	389 248.9238	510 246.1956	243.3788
26	389 251.7391	510 246.6135	243.4292
27	389 250.9295	510 262.8788	243.2348
28	389 247.6775	510 262.3374	243.2113
29	389 246.5983	510 274.7517	243.1637
30	389 249.4189	510 275.5667	243.1521
31	389 248.6544	510 288.2478	243.0528
32	389 245.8458	510 288.3583	243.1832
33	389 245.4918	510 321.8331	243.2884
34	389 248.0945	510 321.4635	243.0895
35	389 247.9836	510 331.8187	243.1736
36	389 245.1859	510 331.4232	243.2156

Name: **DBF_LIMBA.dbf**
Type: **dBASE Table**

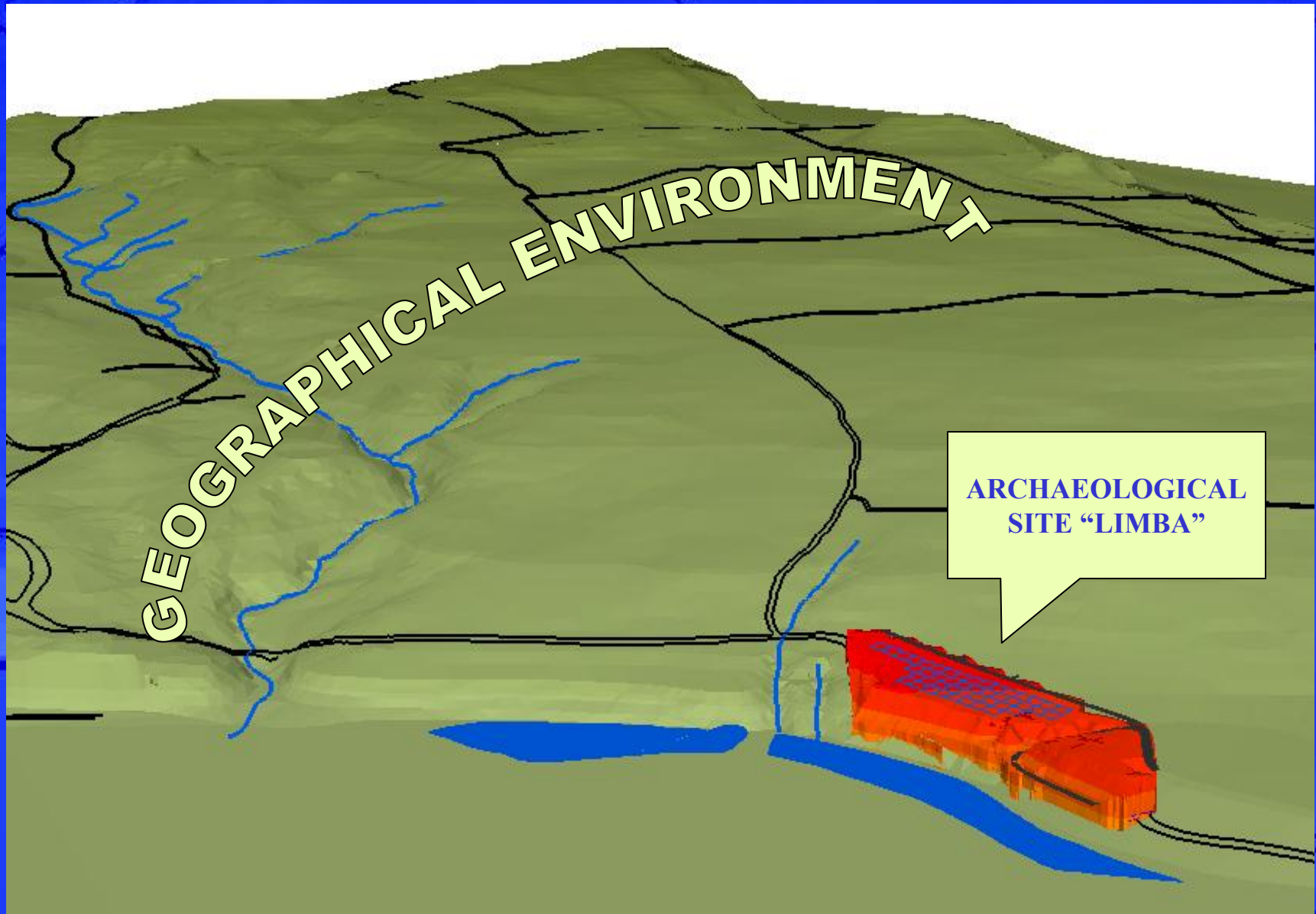
DBF_LIMBA

Name: **tin3**
Type: **TIN Dataset**

tin3



ARCHAEOLOGICAL SITE INTEGRATED IN GEOGRAPHICAL ENVIRONMENT



CONCLUSIONS

The research would be advisable to continue in an interdisciplinary manner, with the results materialised in a more complex GIS project, following subsequent archaeological work on the spatial distribution of a type of object discovered and correlations between objects found on different treading levels, percentage analyses regarding the presence of objects or archaeological clusters on layers, on spread levels or areas, analyses to determine the limits of an archaeological site, through digging, drilling, geophysical prospecting, geological and soil analyses, proximity analyses resulting in the source areas of materials.

REFERENCES

- Borsan T., Voicu G. E. – *Sisteme informationale geografice – Aplicatii*, Seria Didactica, Universitatea „1 Decembrie 1918” Alba Iulia, 2008;
- Borsan T., Voicu G. E. – *GIS Utilisation for the Evidence of Archaeological Sites*, Universitaria Simpro, Topografie si cadastru, Editura Universitas, Petroșani, *Lucrările științifice ale simpozionului internațional multidisciplinar „Universitaria Simpro”*, Editura Universitas, Petroșani, 2008;
- Borsan T., Dimen L., Ienciu I., Ludusan N. - *Archeológiai ásatások GIS reprezentációja*, GISOPEN 2008, Szekesfehervar, Ungaria, www.geo.info.hu/gisopen/gisopen2008/ppt, 2008;
- Breazu M., Borsan T., Maican I. - *Aplicatii ale tehnicilor si metodelor moderne in cadrul cercetarilor arheologice de salvare – topografia digitala*, Patrimonium Apulense, IV, Editura Altip Alba Iulia, 2004;
- Ciuta B., Florescu C., Gligor M., Mazare P., Suteu C., Varvara S, Breazu M., Lipot S., Toth C. – *Ceramica neolítica- O lectie de istorie – catalog de expozitie*, *Cultura Vinca*, p. 34-41, Editura Aeternitas, Alba Iulia, 2007;
- Paul I., Ciuta M., *Raport sinteza asupra cercetarilor arheologice din complexul de situri preistorice de la Limba*, *Acta Praehistorica et Archaeologica Transilvaniae*, I, 2000;
- ***, *Repertoriul arheologic al județului Alba*, Alba Iulia, 1995, p. 92 – 93;
- <http://www.cimec.ro>



THANK YOU FOR
YOUR
ATTENTION!