Geographic Information and Environment Law Enforcement within IGAMAOT

Luis Marques | Susana Silva
Cláudia Morgado

03.06.2015

GOVERNO DE PORTUGAL
IMPEL
themis NETWORK
IGAMAOT
Inspeção-Geral da Agricultura, do Mar, do Ambiente e do Ordenamento do Território

Agenda:

- Environment Users and Complaints Records (IGAMAOT – SDI / Spatial Data Infrastructure)
- Data Dissemination and Visualization
- Spatial Analysis and Conflict Detection Tools

Environment Users and Complaints Records (IGAMAOT Spatial Data Infrastructure)

GOVERNO DE PORTUGAL

IMPEL

themis NETWORK

IGAMAOT
Inspeção-Geral da Agricultura, do Mar, do Ambiente e do Ordenamento do Território

Environment Users and Complaints Records (IGAMAOT Spatial Data Infrastructure)

- **Present situation (Concerning GI)**

1. Coordinates acquired by user in field
2. Coordinates insertion by the user in data base (Gestiga)
3. Data Base visualization
4. GIS association through the coordinates
5. Thematic cartography production
6. Graphic and alphanumeric data dissemination

Data Base example

Pesquisa de Utilizadores do Ambiente

Critérios | Resultados

Resultados: 1 Registos

Código	Nome	Tipo	Sector Actividade	Empresa/Dono Obra	Entidade Exploradora	Concelho	Freguesia	Observações
2272	FTOF - Fiação e Tecidos Oliveira Fe	Estabecimento Industrial	Têxteis	FTOF - Fiação e Tecidos Oli		Vila Nova de Famalicãc	Riba de Ave	(PCO 438/06)(Azul)

Pesquisar | Limpar | Consultar | Novo | Alterar Tipo | Apagar | Substituir | Imp. Listagem | Exportar | Sair

Utilizador do Ambiente

Número : 2272 Nome : FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Procº de Insolvência nº 1/

Geral | Actividade | CAE/PCIP | CAE Rev.3 - IGAOT/ PRTR

Empresa | FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Sede)(Procº de Insolv | Consultar

Localização

Lugar : Av.Narciso Ferreira, nº 614 - Apartado 9

C.P. : 4765-901 Riba D'Ave VNF

Concelho :

Freguesia :

Copiar Dados da Empresa

Coordenadas

Latitude : 41 ° 23 ' 38.12 " (ss.ss) Norte

Longitude : 8 ° 23 ' 42.71 " (ss.ss) Oeste

Nº Carta Militar :

Área Total Instalações :

Área Total Coberta :

Telefone : 252980020 Fax : 252980021

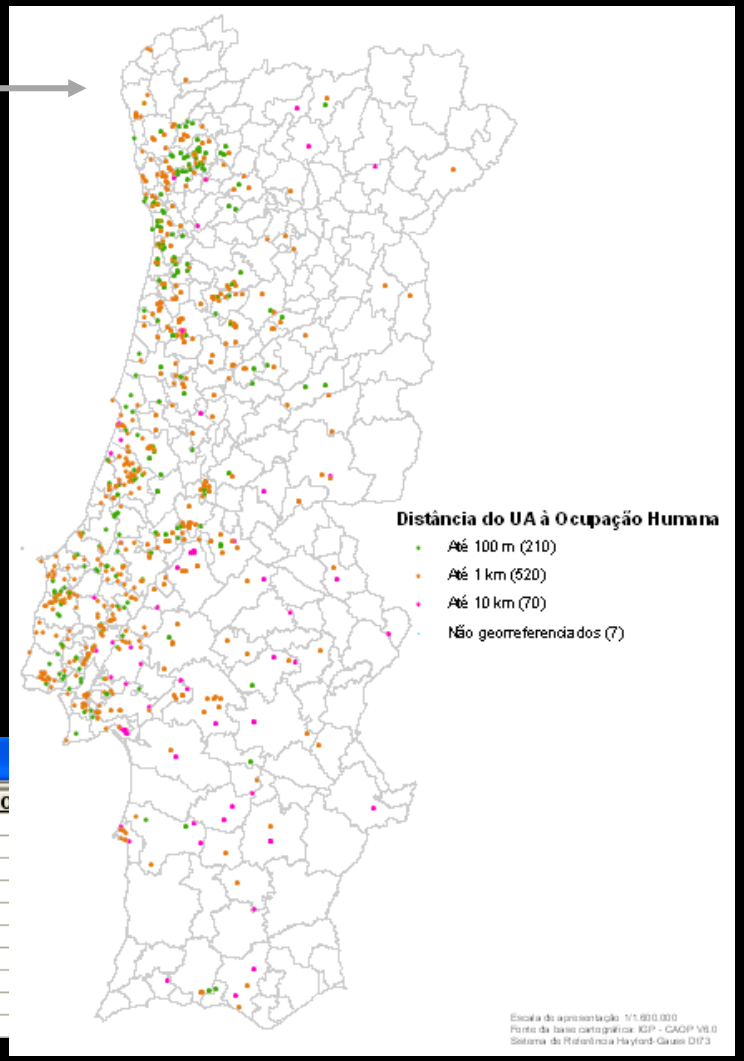
Bacia hidrográfica :

Sub-Bacia hidrográfica :

Editar | Gravar | Ficha de UA | Imprimir Carta | Georeferenciação | Suporte Digital | Sair

Data Base / Geographic Information example

- Thematic



- Attribute Table

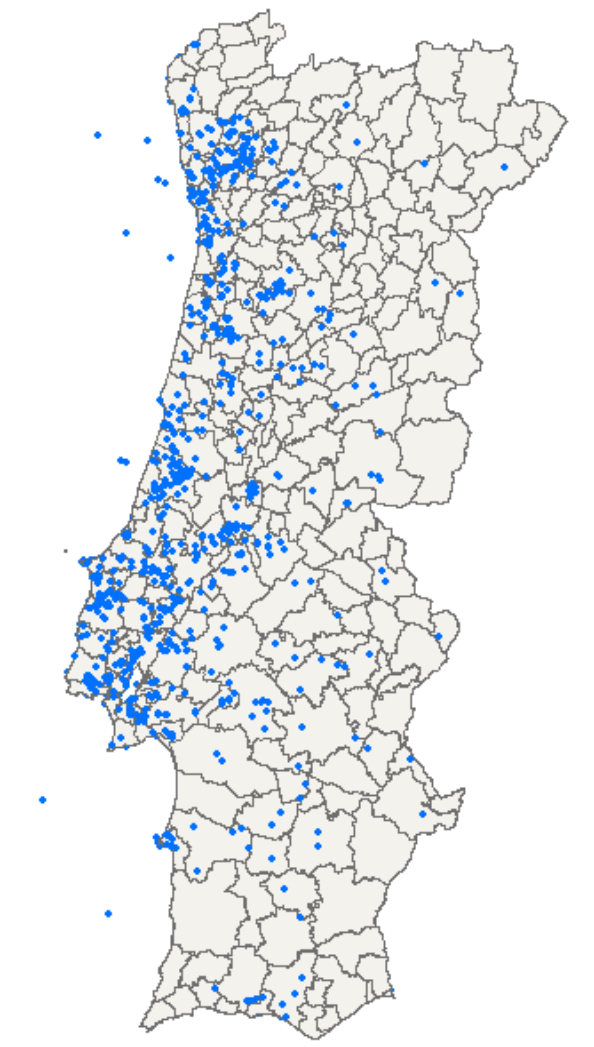
Attributes of UA_PCIP

UA	DSG_UA	DSG_CONCELHO	DSG_FREGUE	LUGAR_MORADA	HUMAN_OCUPATIC
752	Aviário de Santa Cita de António Jacinto Fer	Tomar	Asseiceira	Estrada da Lamarosa,Santa Cita	1 KM
823	Vale de Mafra - Anodização e Lacagem de	Mafra	Venda do Pinh	Rua Manuel Francisco Branco,C	100 M
1122	Suigranja - Sociedade Agrícola, S. A. - Vend	Vendas Novas	Vendas Novas	Monte da Ribeira,Monte da Ribeir	10 KM
1287	Sapor - Sociedade Exploração Gado, Lda.	Cartaxo	Cartaxo	Cabeços Ferreiros	1 KM
5089	Agrozel - Agro-Pecuária do Zêzere, Lda - Al	Ferreira do Zêzere	Paio Mendes	Alqueidão	1 KM
5090	Aviário do Marmeleiro, Lda	Tomar	Madalena	Estrada do Ramilo, nº 4 - Mamele	1 KM
5091	Rações Zêzere, S.A.	Ferreira do Zêzere	Águas Belas	Gravulha	100 M
5201	Cerâmica Castros, S.A.	Águeda	Aguada de Ci	Rua de Miragaia	100 M
5088	Agrozel - Agro-Pecuária do Zêzere, Lda - R	Ferreira do Zêzere	Paio Mendes	Relvas	1 KM
5243	Aterro de Resíduos não perigosos de Rio Ma	Rio Maior	Rio Maior	Sanguinhais	-

Main errors identified

Coordinates:

- Inappropriate response of GPS/GLONASS satellite;
- Bad position of aerial photo;
- Missunderstanding between Lat / Long or +/- ;
- Insertion error (cause: manual);
- Inexistence of user validation.



Environment Users and Complaints Records (IGAMAOT Spatial Data Infrastructure)

- Present situation

- **Future situation (Concerning GI)**

1. Coordinates acquired by user in field/office
2. Coordinates insertion by the user in data base and validation
3. GIS server visualization / validation / edition
4. Production of Services Web Map (WMS/WFS)
    - 4.1. Internal Geographic Information Visualization
    - 4.2. External Dissemination

Data Base

Coordinates insertion

Pesquisa de Utilizadores do Ambiente

Critérios | Resultados

Resultados: 1 Registos

Código	Nome	Tipo	Sector Actividade	Empresa/Dono Obra	Entidade Exploradora	Concelho	Freguesia	Observações
2272	FTOF - Fiação e Tecidos Oliveira Fe	Estabecimento Industrial	Têxteis	FTOF - Fiação e Tecidos Oli		Vila Nova de Famalicão	Riba de Ave	(PCO 438/06)(Azul)

Pesquisar | Limpar | Consultar | Novo | Alterar Tipo | Apagar | Substituir | Imp. Listagem | Exportar | Sair

Utilizador do Ambiente

Número : 2272 Nome : FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Procº de Insolvência nº 1/

Geral | Actividade | CAE/PCIP | CAE Rev.3 - IGAOT/ PRTR

Empresa | FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Sede)(Procº de Insolv | Consultar

Localização

Lugar : Av.Narciso Ferreira, nº 614 - Apartado 9

C.P. : 4765-901 Riba D'Ave VNF

Concelho :

Freguesia :

Copiar Dados da Empresa

Coordenadas

Latitude : ° ' " (ss.ss) Norte

Longitude : ° ' " (ss.ss) Oeste

Nº Carta Militar :

Área Total Instalações :

Área Total Coberta :

Telefone : 252980020 Fax : 252980021

Bacia hidrográfica :

Sub-Bacia hidrográfica :

Editar | Gravar | Ficha de UA | Imprimir Carta | Georeferenciação | Suporte Digital | Sair

Data Base

Coordinates insertion

Pesquisa de Utilizadores do Ambiente

Critérios | Resultados

Resultados: 1 Registos

Código	Nome	Tipo	Sector Actividade	Empresa/Dono Obra	Entidade Exploradora	Concelho	Freguesia	Observações
2272	FTOF - Fiação e Tecidos Oliveira Fe	Estabecimento Industrial	Têxteis	FTOF - Fiação e Tecidos Oli		Vila Nova de Famalicão	Riba de Ave	(PCO 438/06)(Azul)

Pesquisar | Limpar | Consultar | Novo | Alterar Tipo | Apagar | Substituir | Imp. Listagem | Exportar | Sair

Utilizador do Ambiente

Número : 2272 Nome : FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Procº de Insolvência nº 1/

Geral | Actividade | CAE/PCIP | CAE Rev.3 - IGAOT/ PRTR

Empresa | FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Sede)(Procº de Insolv | Consultar

Localização

Lugar : Av.Narciso Ferreira, nº 614 - Apartado 9

C.P. : 4765-901 Riba D'Ave VNF

Concelho :

Freguesia :

Copiar Dados da Empresa

Coordenadas

Latitude : 41 ° 23 ' 38.12 " (ss.ss) Norte

Longitude : 8 ° 23 ' 42.71 " (ss.ss) Oeste

Nº Carta Militar :

Área Total Instalações :

Área Total Coberta :

Telefone : 252980020 Fax : 252980021

Bacia hidrográfica :

Sub-Bacia hidrográfica :

Editar | Gravar | Ficha de UA | Imprimir Carta | Georeferenciação | Suporte Digital | Sair

Data Base

Coordinates insertion: semi-automatic fields filling

Pesquisa de Utilizadores do Ambiente

Critérios | Resultados

Resultados: 1 Registos

Código	Nome	Tipo	Sector Actividade	Empresa/Dono Obra	Entidade Exploradora	Concelho	Freguesia	Observações
2272	FTOF - Fiação e Tecidos Oliveira Fe	Estabecimento Industrial	Têxteis	FTOF - Fiação e Tecidos Oli		Vila Nova de Famalicãc	Riba de Ave	(PCO 438/06)(Azul)

Utilizador do Ambiente

Número : 2272 Nome : FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Procº de Insolvência nº 1/

Geral | Actividade | CAE/PCIP | CAE Rev.3 - IGAOT/ PRTR

Empresa | FTOF - Fiação e Tecidos Oliveira Ferreira, S.A.(Sede)(Procº de Insolv | Consultar

Localização

Lugar : Av.Narciso Ferreira, nº 614 - Apartado 9

C.P. : 4765-901 Riba D'Ave VNF

Concelho : Vila Nova de Famalicão

Freguesia : Riba de Ave

Copiar Dados da Empresa

Coordenadas

Latitude : 41 ° 23 ' 38.12 " (ss.ss) Norte

Longitude : 8 ° 23 ' 42.71 " (ss.ss) Oeste

Nº Carta Militar :

Área Total Instalações :

Área Total Coberta :

Telefone : 252980020 Fax : 252980021

Bacia hidrográfica : Rio Ave - 104

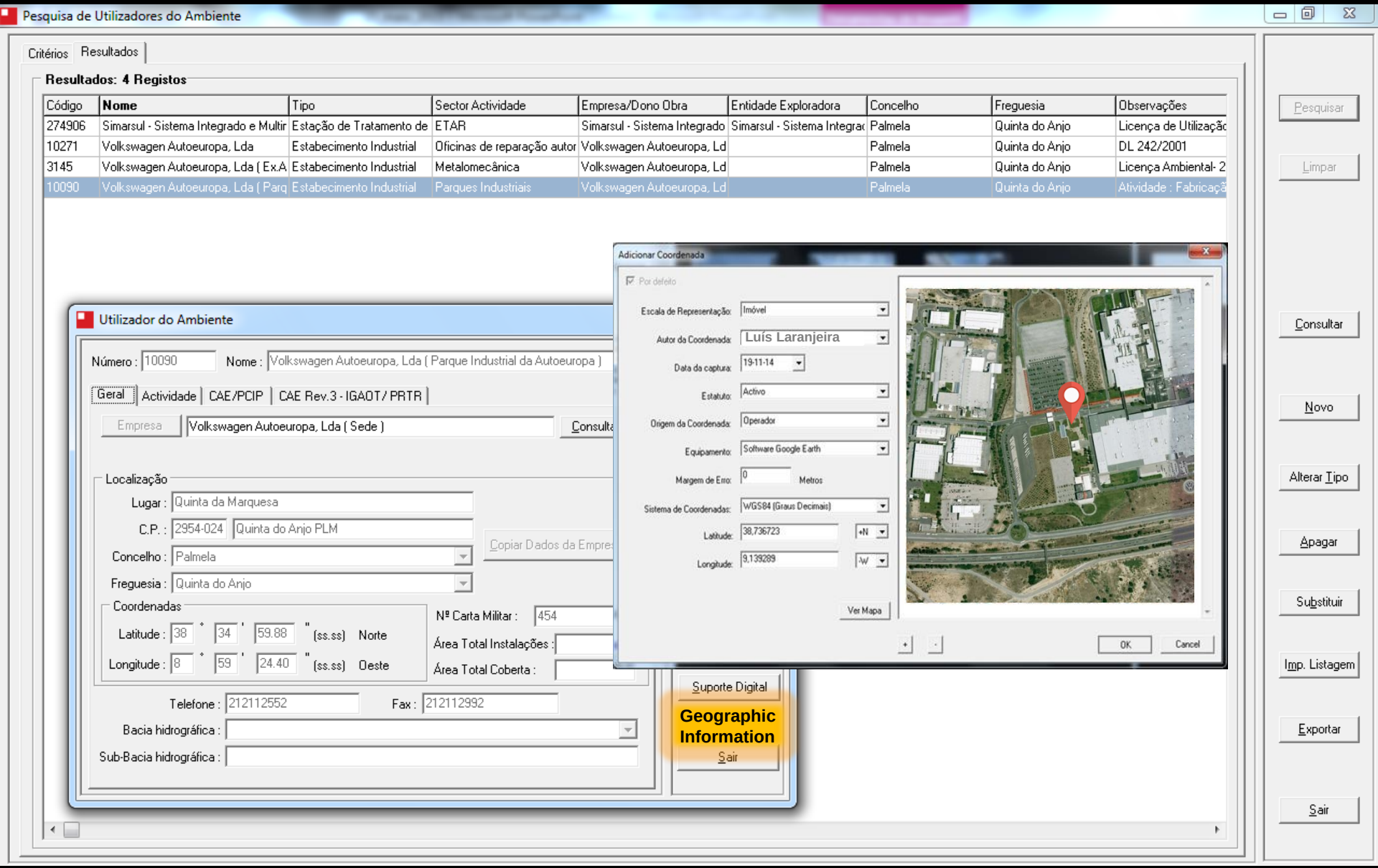
Sub-Bacia hidrográfica :

Editar | Gravar | Ficha de UA | Imprimir Carta | Georeferenciação | Suporte Digital | Sair

Pesquisar | Limpar | Consultar | Novo | Alterar Tipo | Apagar | Substituir | Imp. Listagem | Exportar | Sair

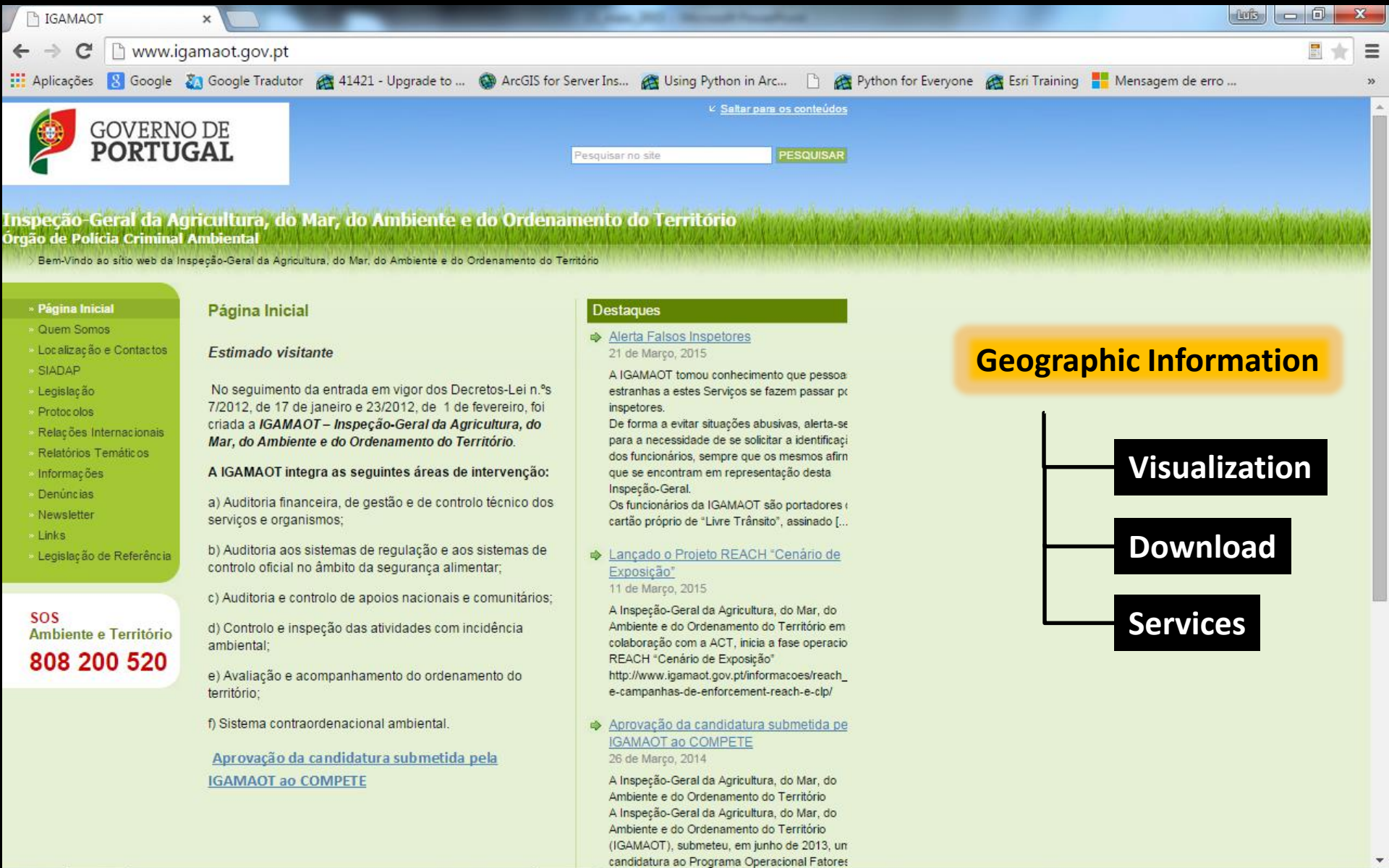
Data Base

Coordinates / metadata insertion and validation (aerial photograph)



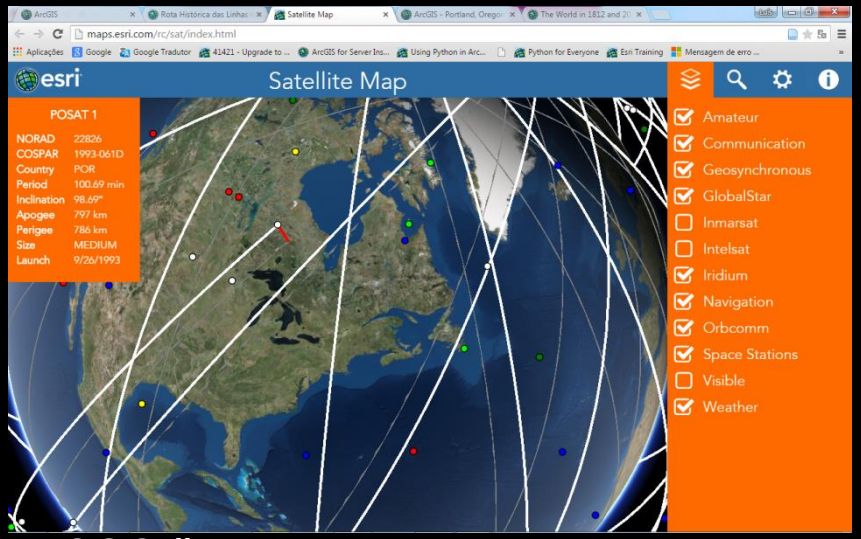
Future Internet Portal

Geographic Information (Visualization/ Download/ Web Map Services)



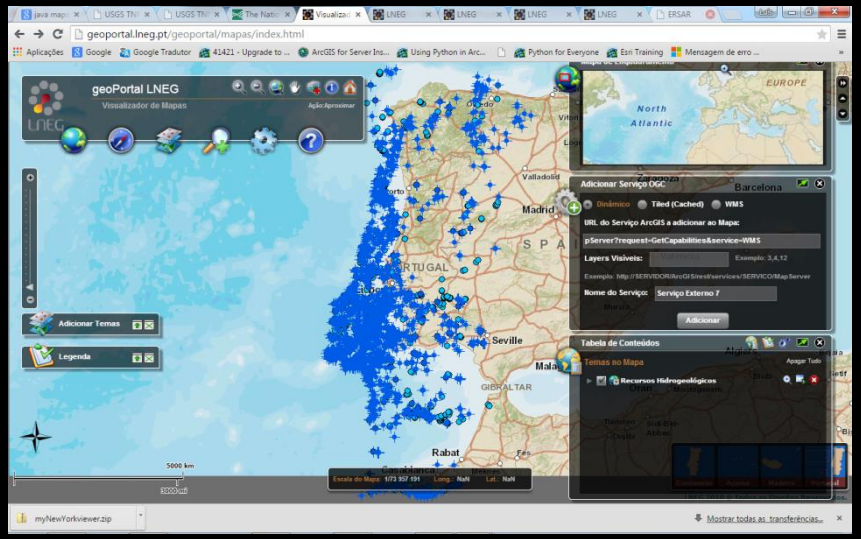
Future Internet Portal

Visualization

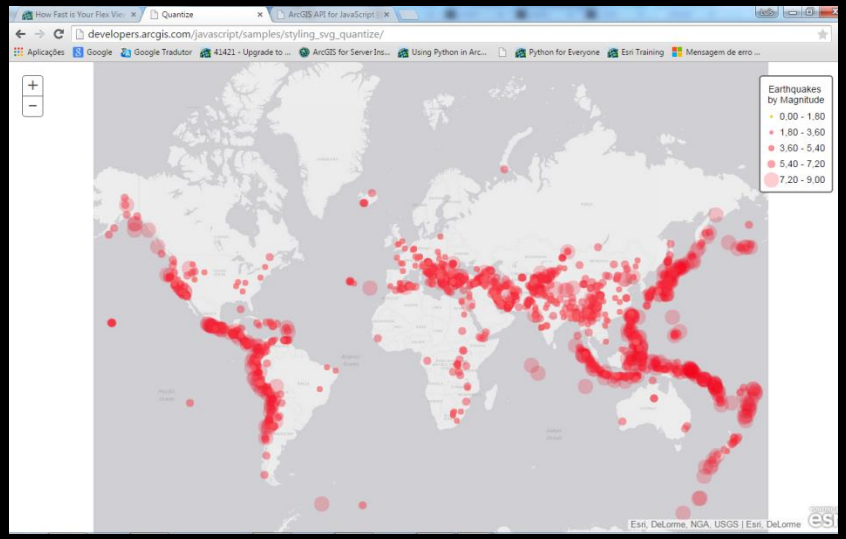


ArcGIS Online

API Silverlight



API Flex



API Java

Future Internet Portal

Download

APA - Instrumentos > Lice | Registo | Agência Portuguesa do A | USGS: Maps, Imagery, and | The USGS Store - One sto

store.usgs.gov/b2c_usgs/b2c/display/(xcm=r3standardpitrex_prd&layout=6_1_61_50_2&uiarea=2&ctype=areaDetails&carea=0000000009)/.do

Aplicações | Google | Google Tradutor | 41421 - Upgrade to ... | ArcGIS for Server Ins... | Using Python in Arc... | Python for Everyone | Esri Training | Mensagem de erro ...

USGS
science for a changing world

USGS Home
Contact USGS
Search USGS

The USGS Store

Log on | No Items in Basket | Help

Search

Map Locator & Downloader

or Enter Search Term:

go

Advanced Search

Maps

- USGS Store Home
- State Indexes
- 15 Minute Maps (1:62.5K)
- 7.5 Minute Maps (1:24K & 1:25K)
- 30X60 Minute Maps (1:100K)
- 1X2 Degree Maps (1:250K)
- Historical Maps
- State Maps
- County Maps
- US Maps
- Antarctic Maps
- World Maps
- Planets & Moons
- Satellite Image
- Earth-As-Art (EAA) satellite scenes
- Landsat State Maps
- National Atlas Maps
- National Park Maps

USGS Store Home :: Maps

Map Products

Map Locator
Featuring: Map Locator

State Indexes
Featuring Product Number: 85745
New York Index, NY

7.5 & 15 Minute Maps
Featuring Product Number: 45330
San Francisco North, CA

30x60 Minute Maps
Featuring Product Number: 45329
San Francisco, CA

1x2 Degree Maps
Featuring Product Number: 47219
San Francisco, CA

Historical Maps
Featuring Product Number: 113632
Map of The United States of America 1857. The British Provinces, Mexico, the West Indies and Central America, with part of New Granada and Venezuela

State Maps
Featuring Product Number: 72505
Montana Base With Highways

County Maps
Featuring Product Number: 90886
Lycoming County, PA (West Section) 1993

United States Maps
Featuring Product Number: 101208
United States of America Public Land Surveys

Antarctic Maps
Featuring Product Number: 39154
McMurdo Sound IMW

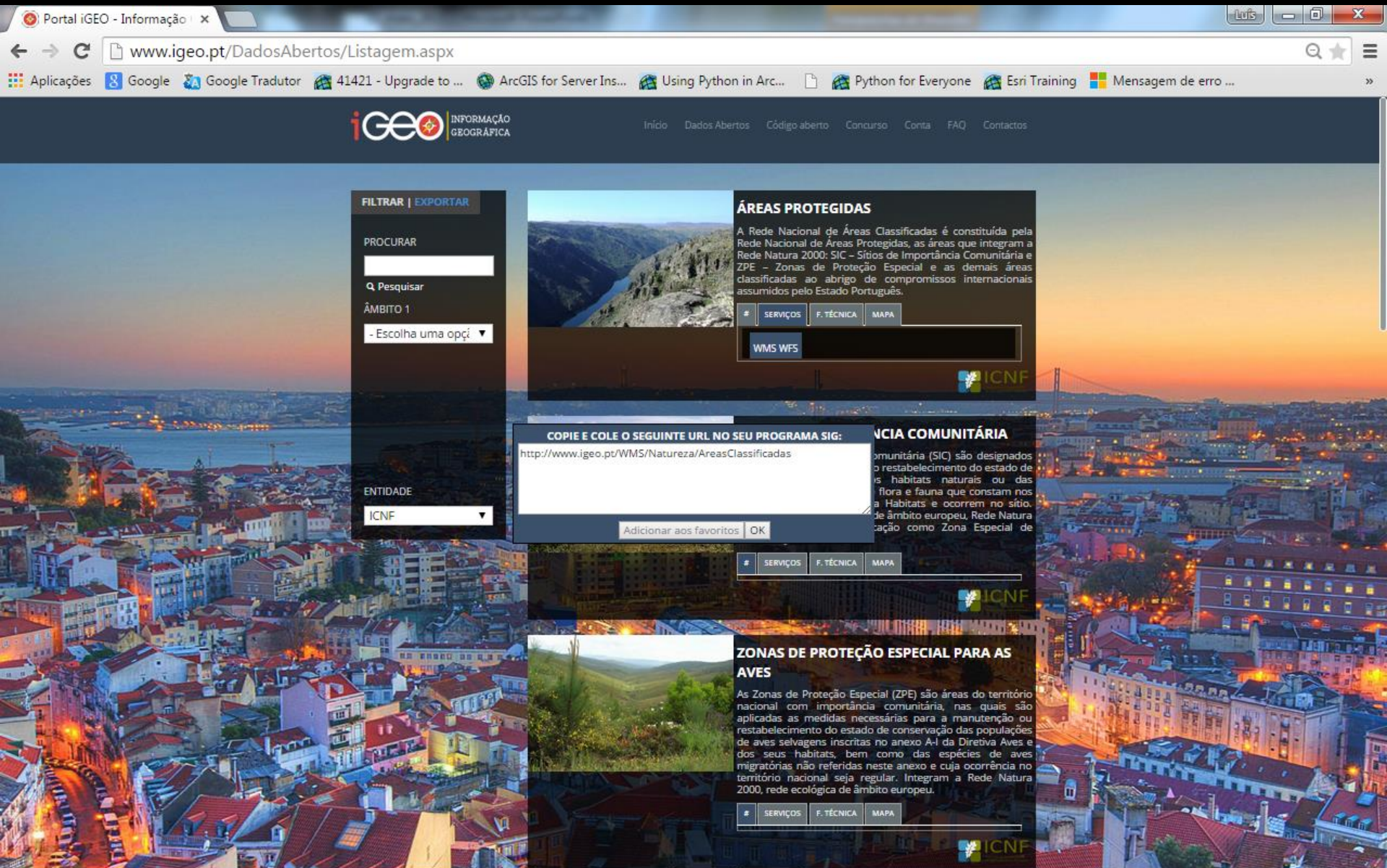
Planets & Moon Maps

store.usgs.gov/b2c_usgs/usgs/maplocator/(xcm=r3standardpitrex_prd&layout=6_1_61_50_2&uiarea=2&ctype=areaDetails&carea=0000000009)/.do

Future Internet Portal

Services Web Map (WMS/WFS) : example – iGEO Portal

Provide access to permanent actualized Information

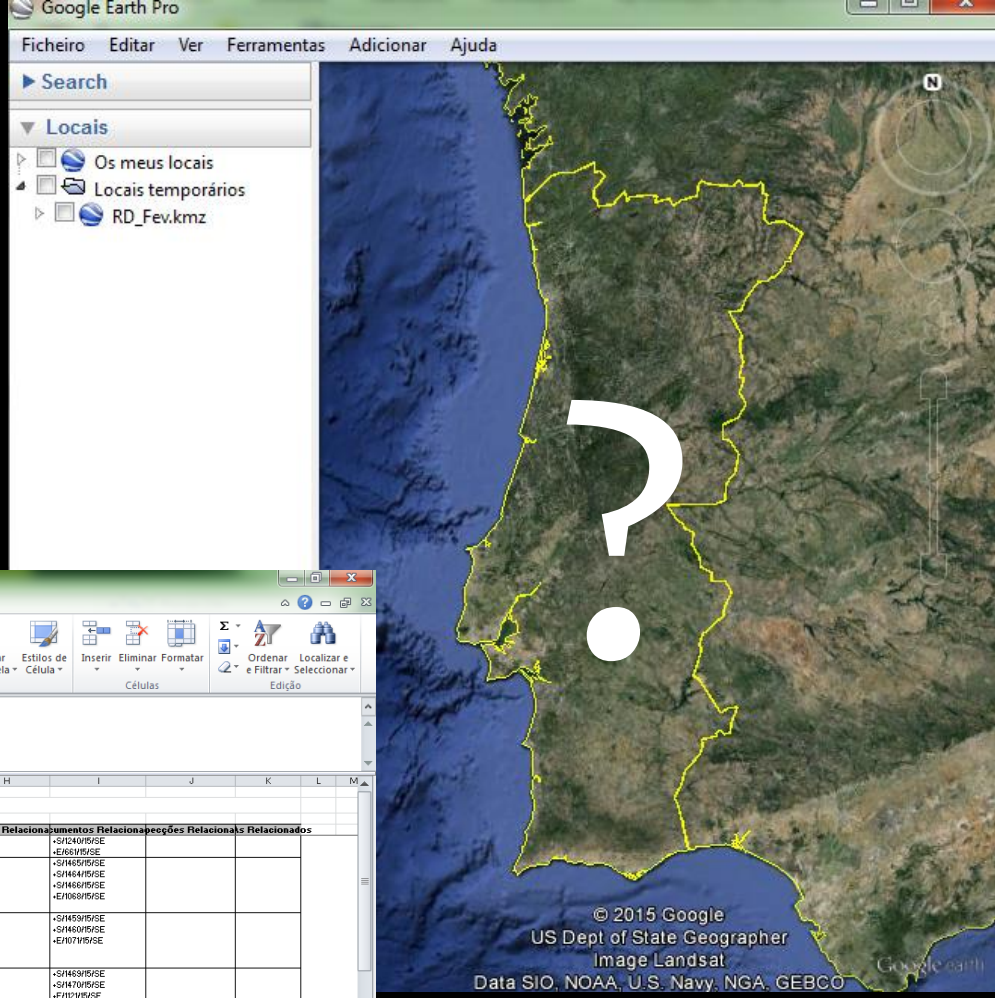


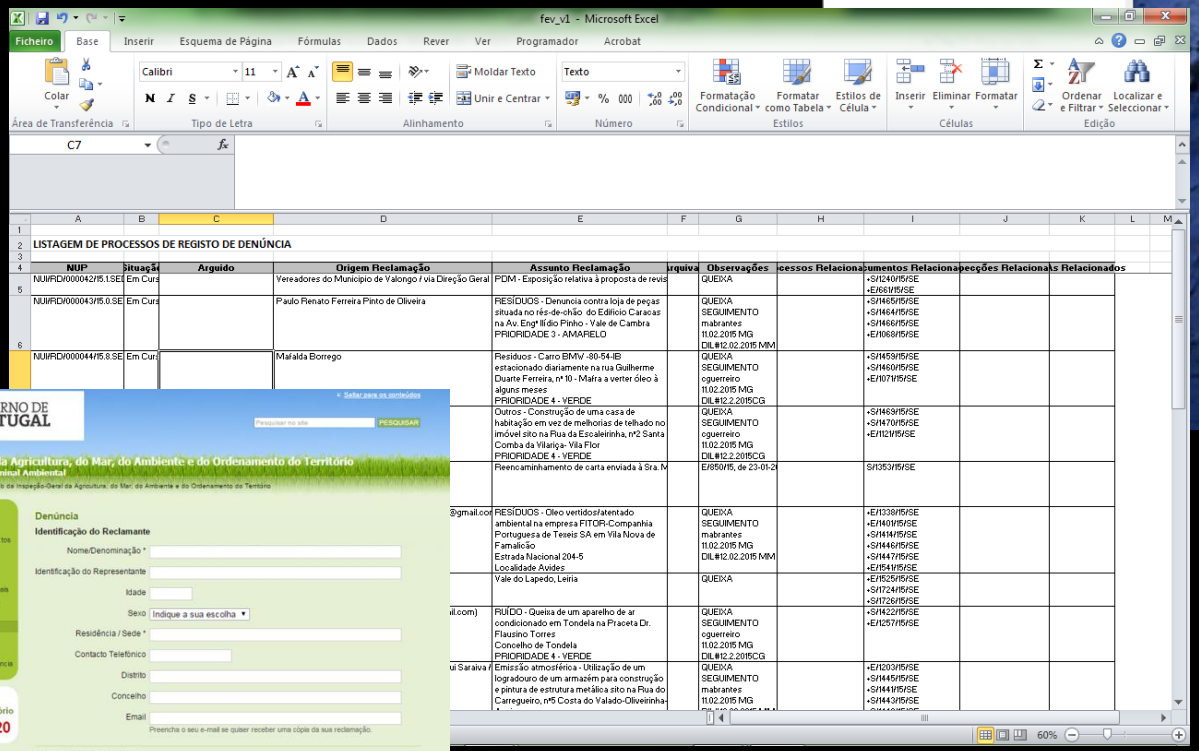
Environment Users and **Complaints** Records (IGAMAOT Spatial Data Infrastructure)

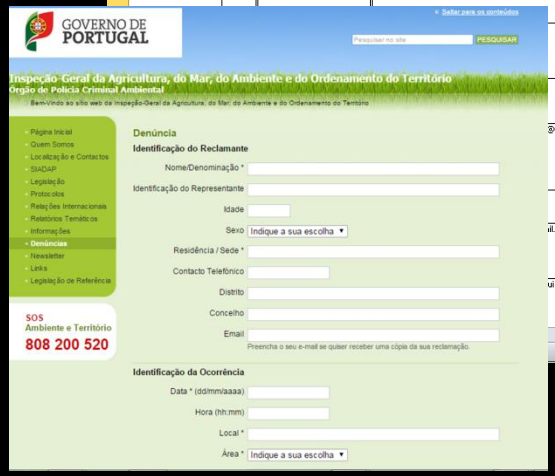
- **Present situation (concerning GI)**
  1. Form
  2. Process / database
  3. Geo Location (IGAMAOT GIS Technician)
  4. GI association to database

Present process

- Form
- Process /Databases
- Geo Location

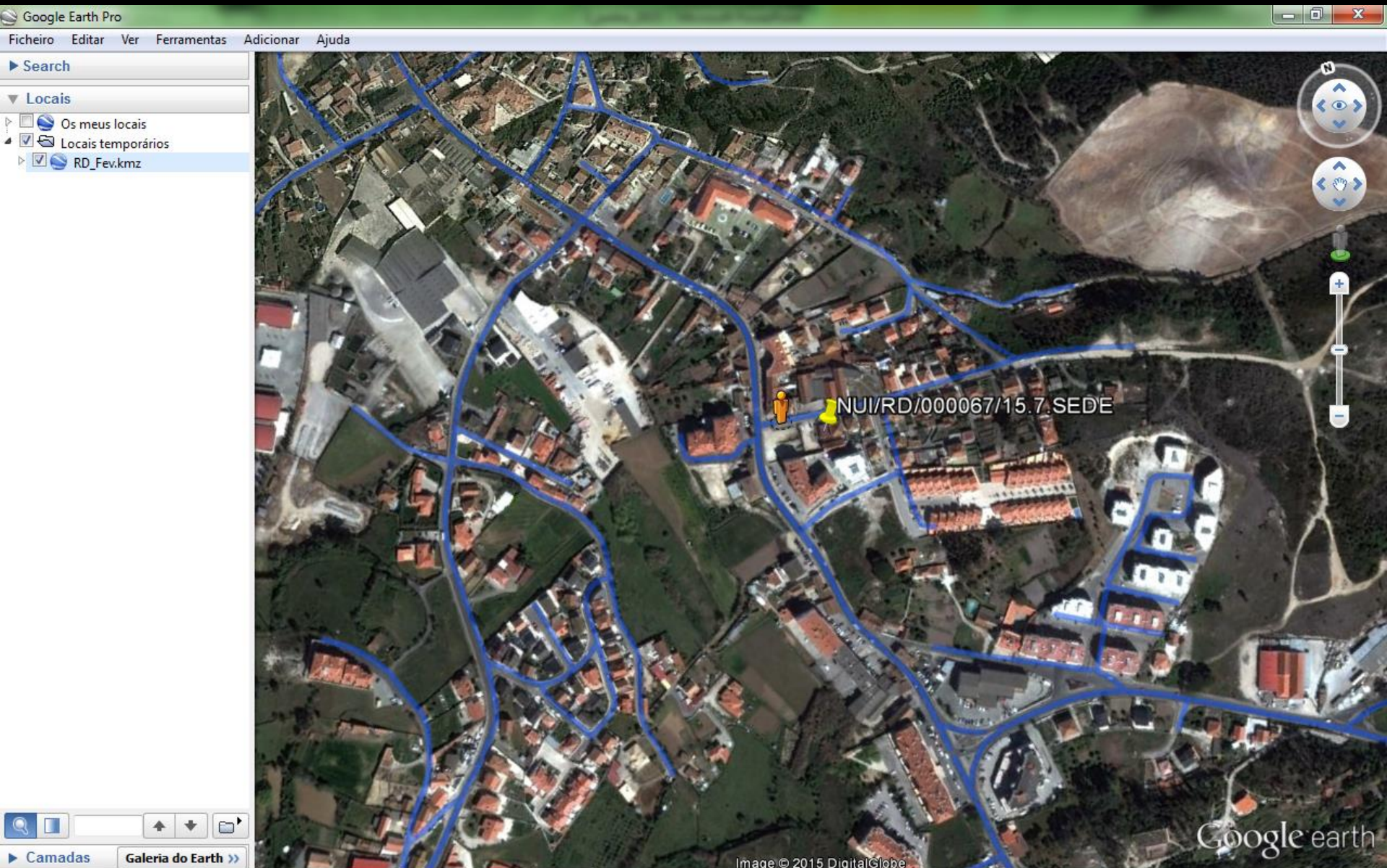




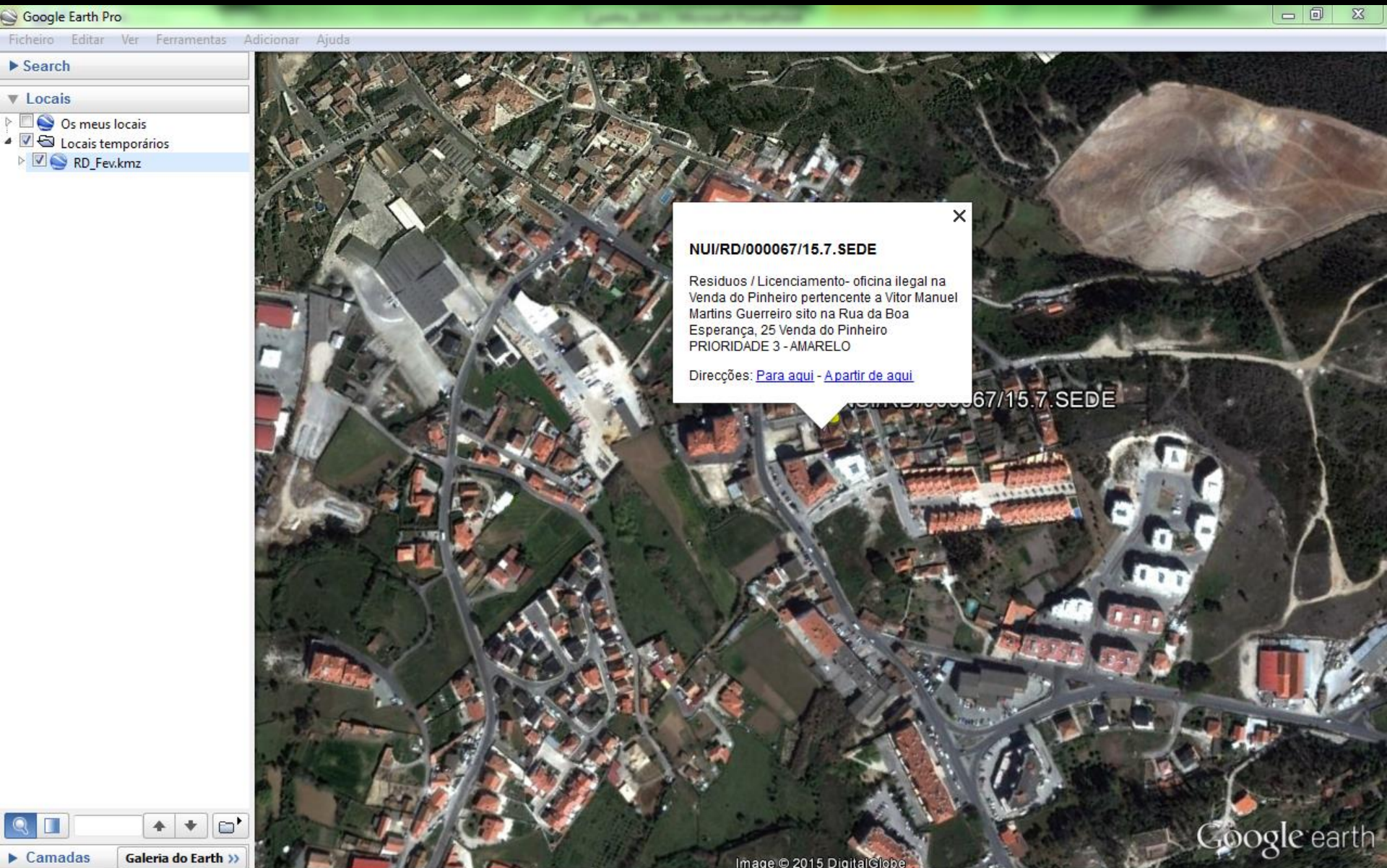


Location through Goggle Earth *software*

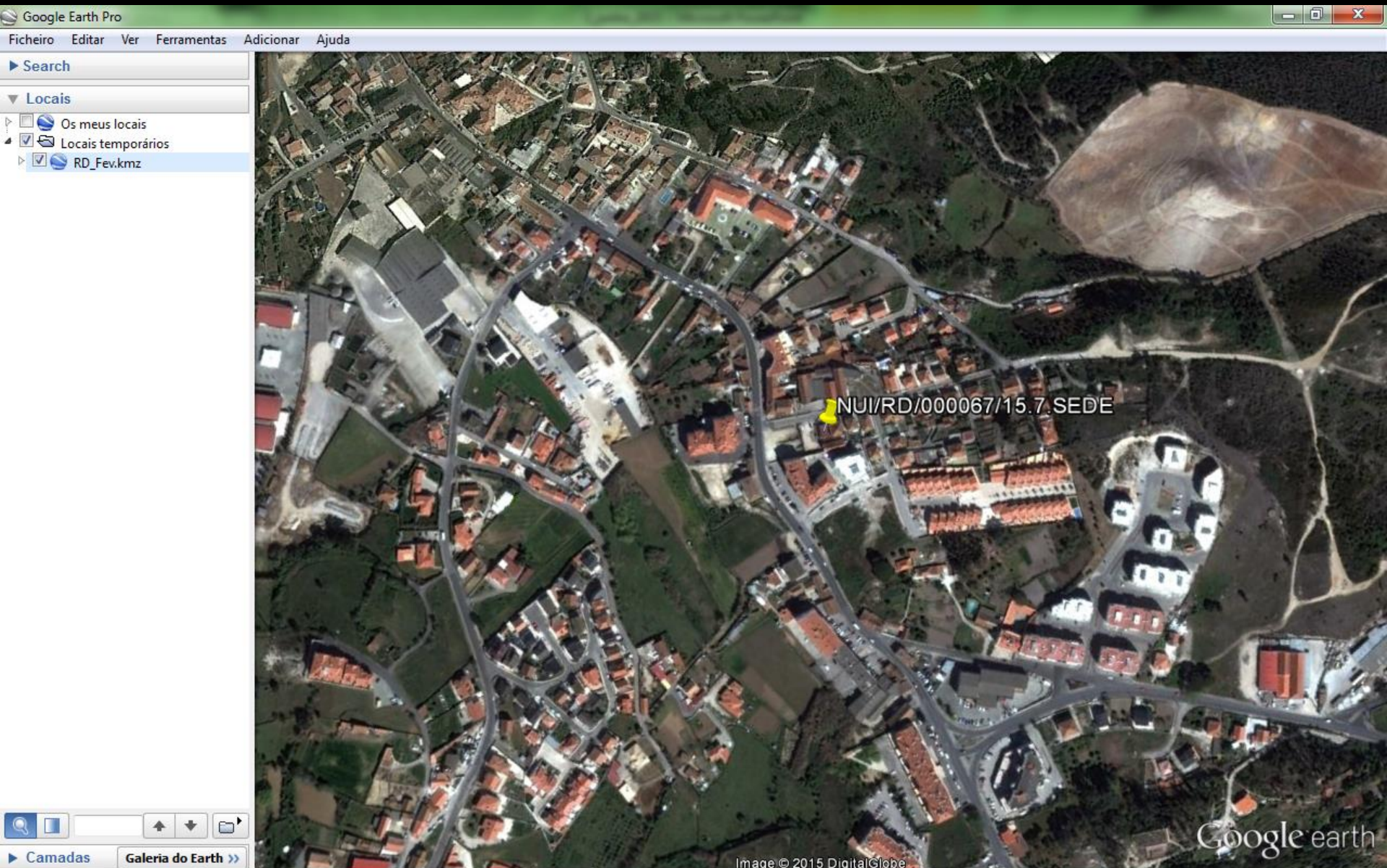
Location through Goggle Earth *software*



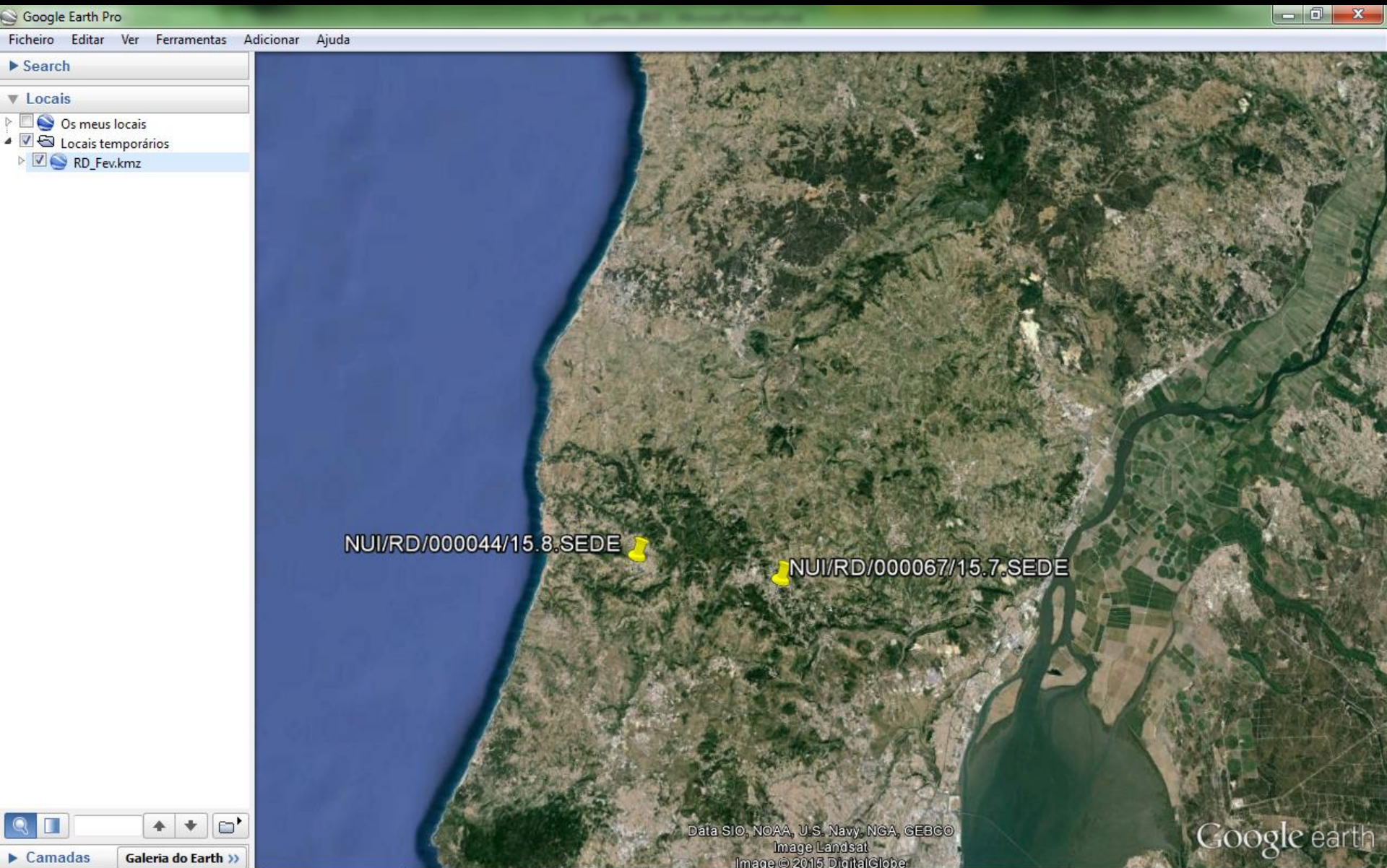
Location through Goggle Earth *software*



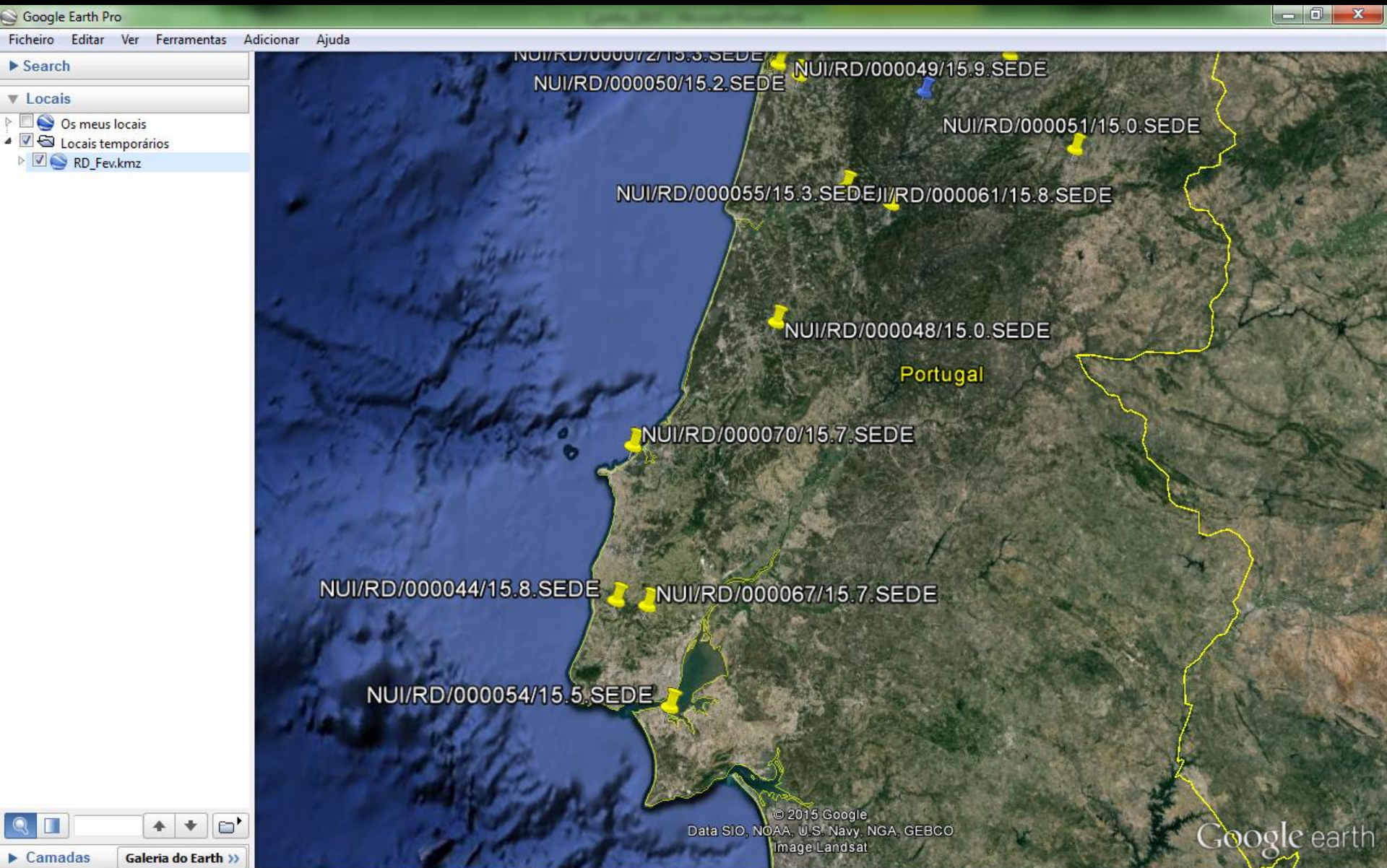
Location through Goggle Earth *software*



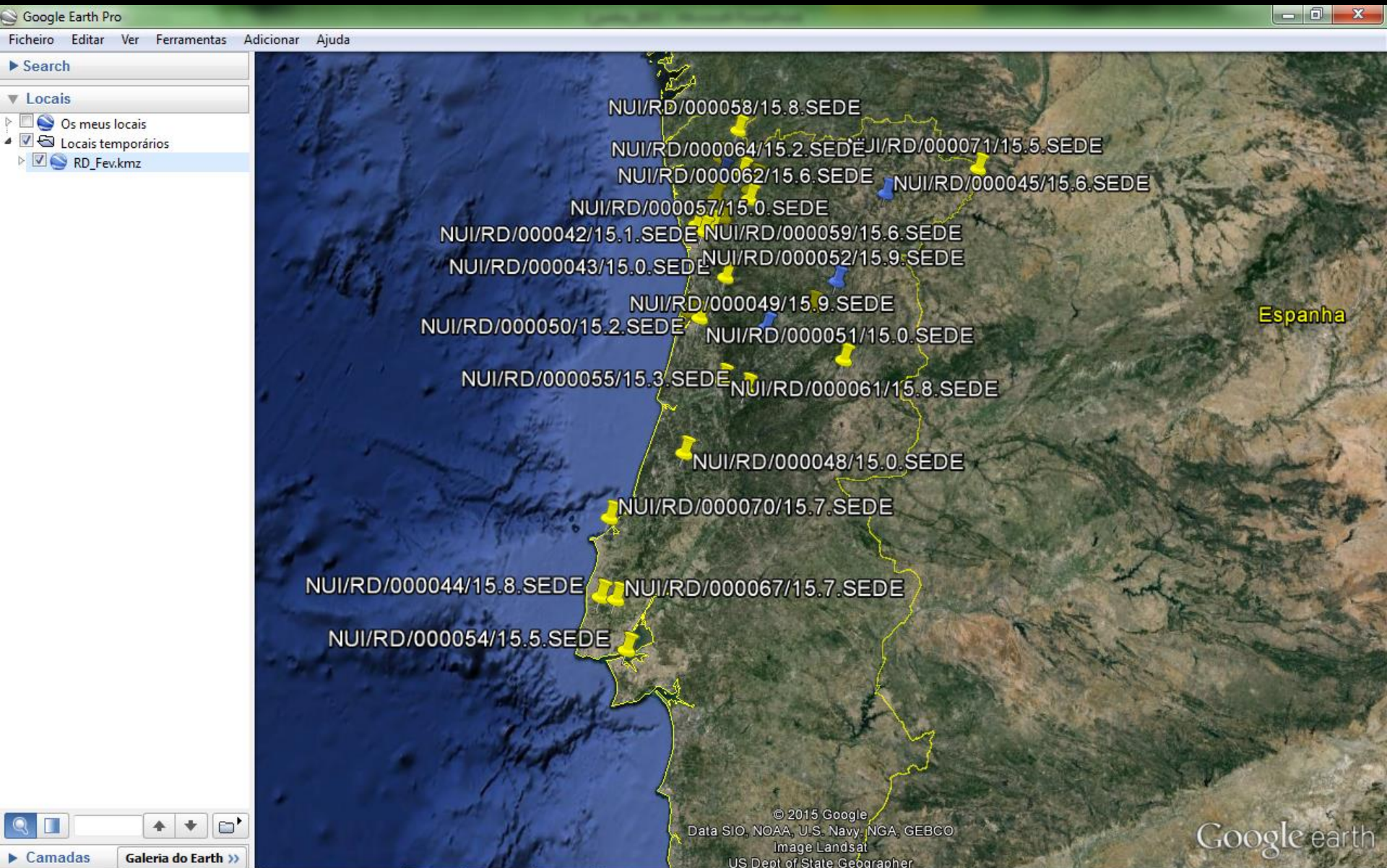
Location through Goggle Earth *software*



Location through Goggle Earth *software*



Location through Goggle Earth *software*



Main problems identified in complaints records

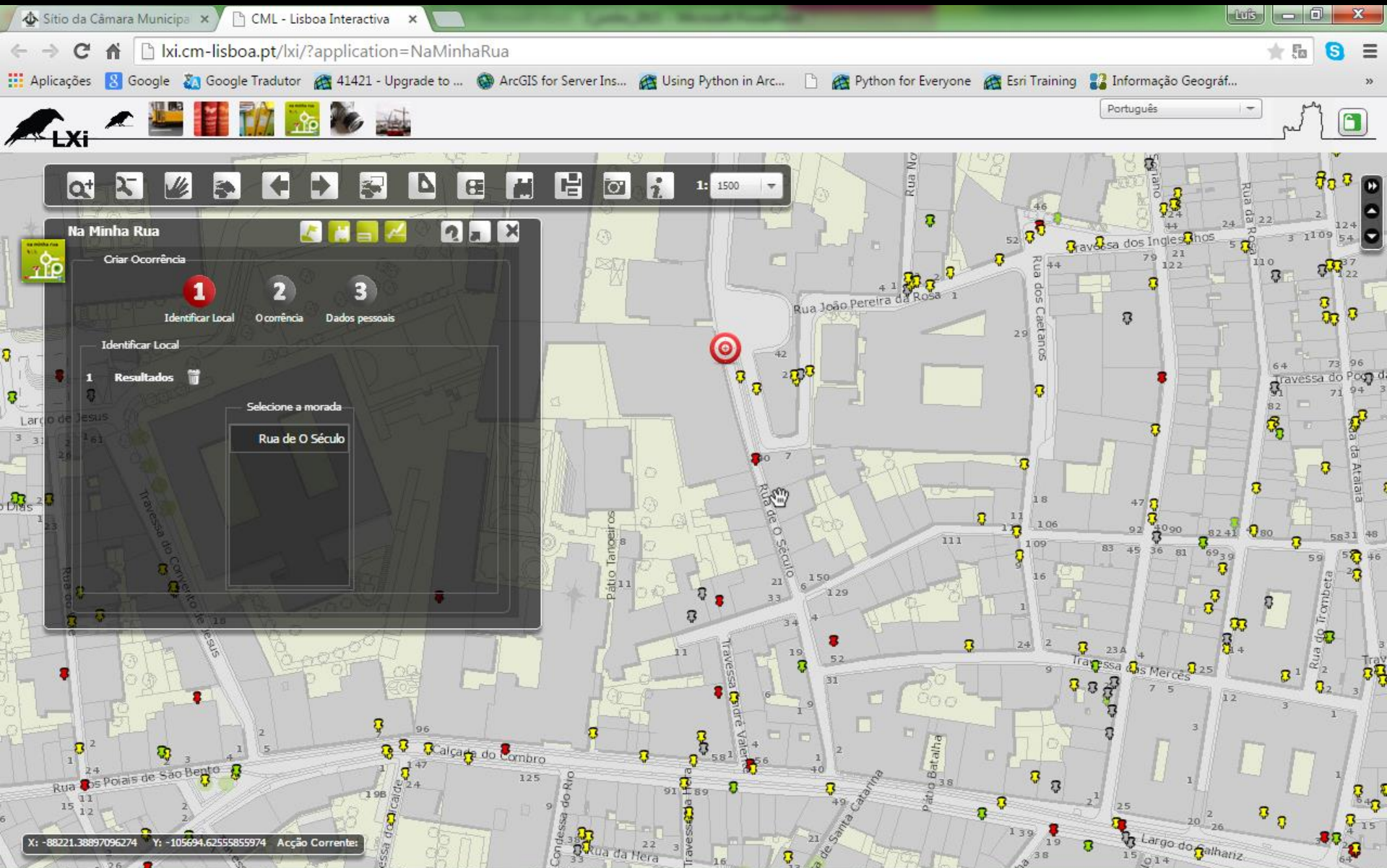
- Complaints from several sources (analogical: mail / digital: email and form);
- Digital form with insufficient spatial information…
    - Time / resources misdirected …
    - Eventual misallocation…
    - Fragmented information…

Environment Users and **Complaints** Records (IGAMAOT Spatial Data Infrastructure)

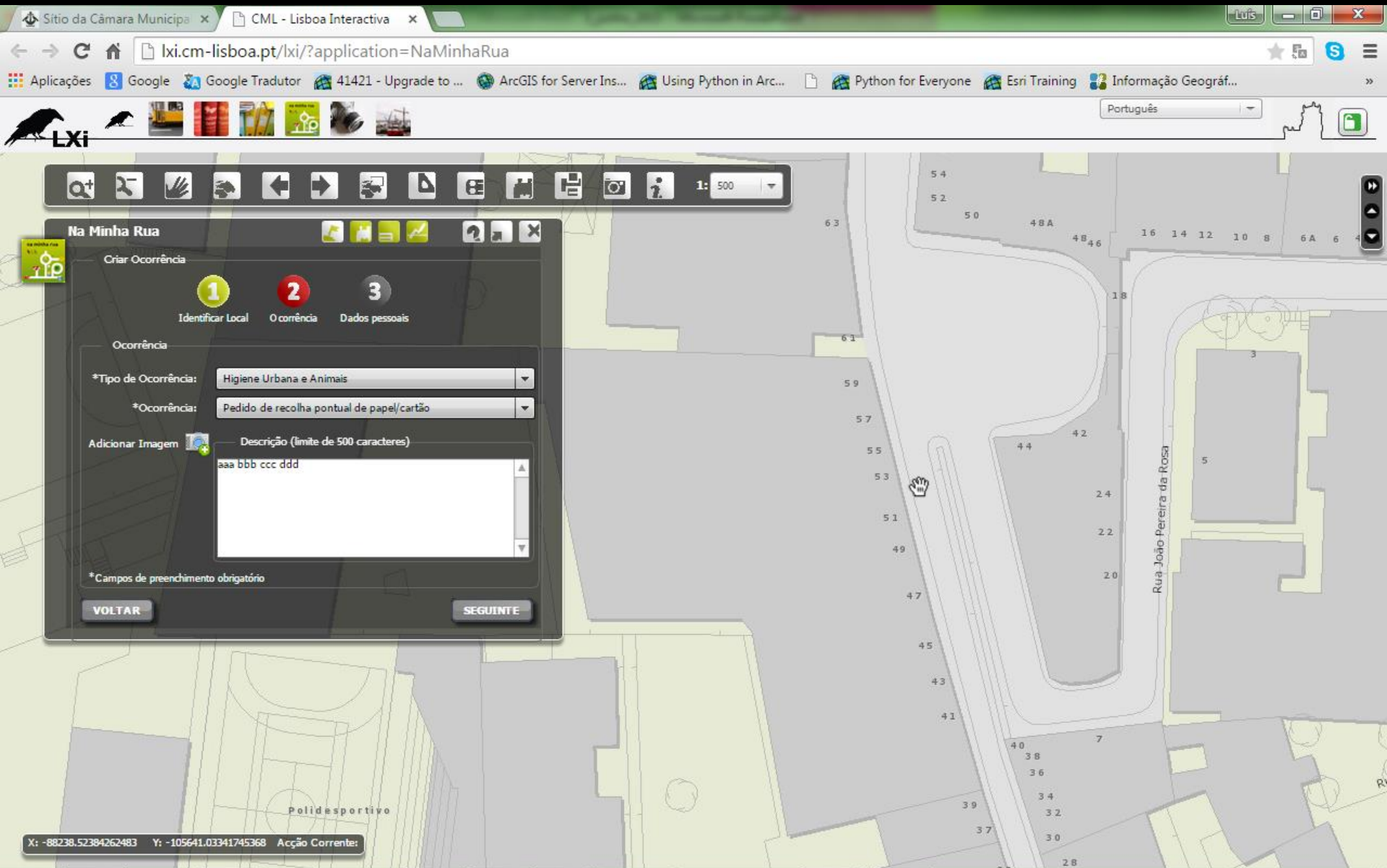
- Present situation

- **Future situation**
  1. Complaint location through aerial photograph (WMS/WFS Viewer)
  2. Form associated with coordinates
  3. Validation through administrative boundaries

Complaints records through (starting) location
Lisbon municipality example - Naminharua form (in 3 steps)



Complaints records through (starting) location
Lisbon municipality example - Naminharua form (in 3 steps)



Data Dissemination and Visualization

Example of Environment Users and other GI (overlay and spatial analysis processes)

Google Earth software

Spatial records visualization - Environmental Users (EU)

- EU Records within Vale do Ave Basin :
  - EU Records (unsorted);
  - Integrated Pollution Prevention and Control Records;
  - Water Treatment Plant Records.

IGAMAOT / APA

- Hydrographical basin;
- Hydrographical network;

APA

- Relief;
- Aerial / satellite image.

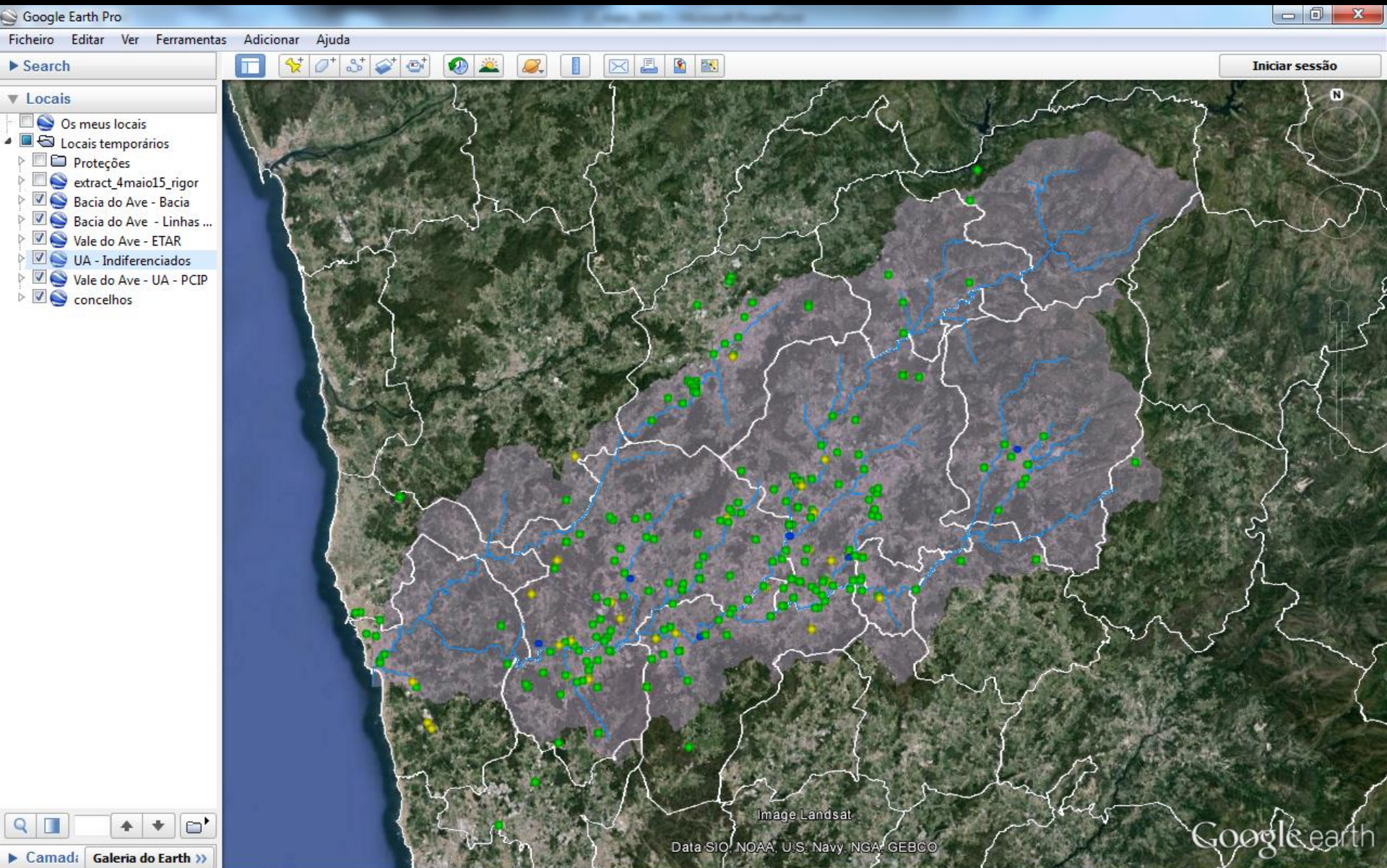
Google Earth

- Spatial analysis using Land Use cartography

IGAMAOT / DGT

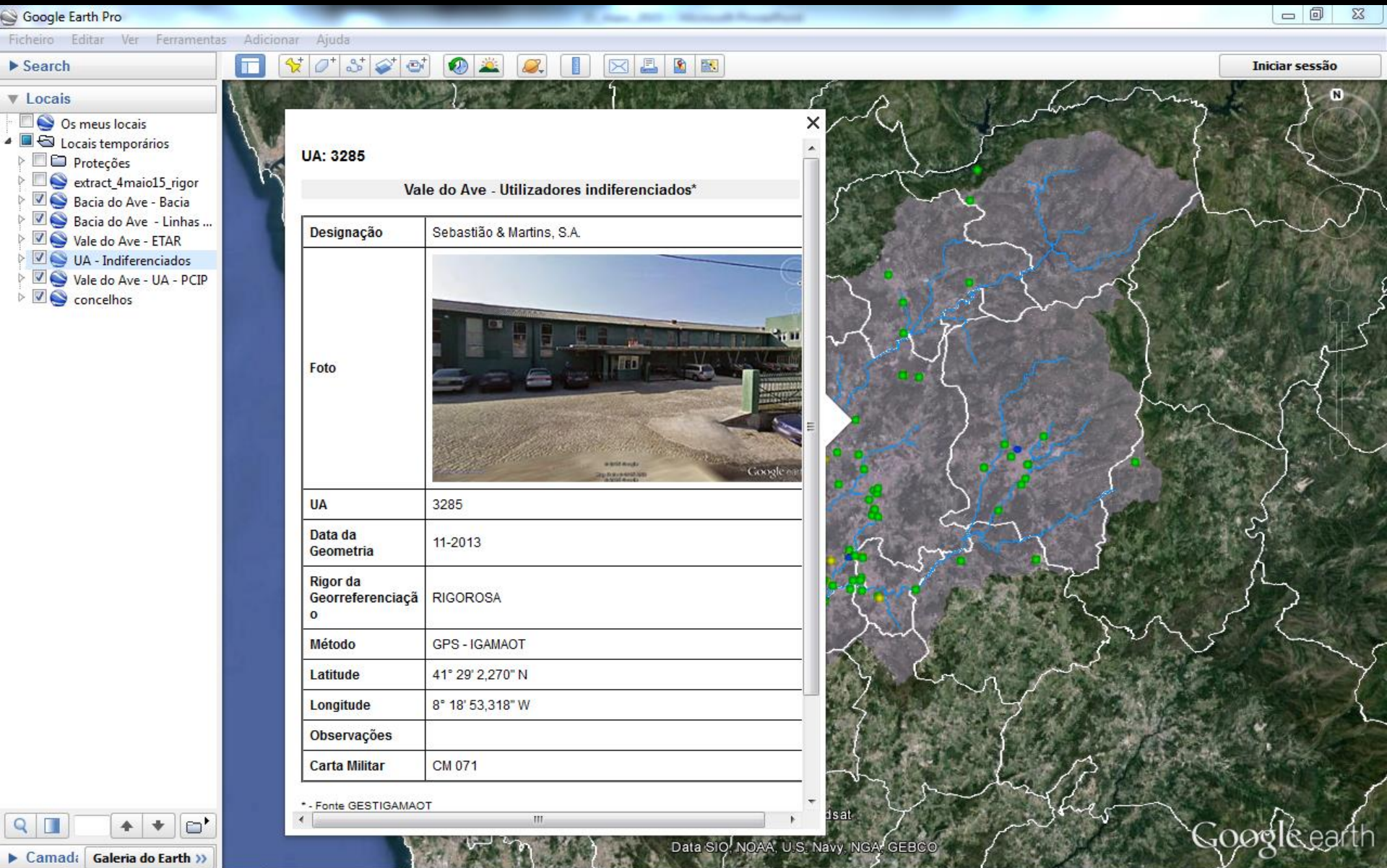
Google Earth software

Spatial records visualization - Environmental Users (EU)



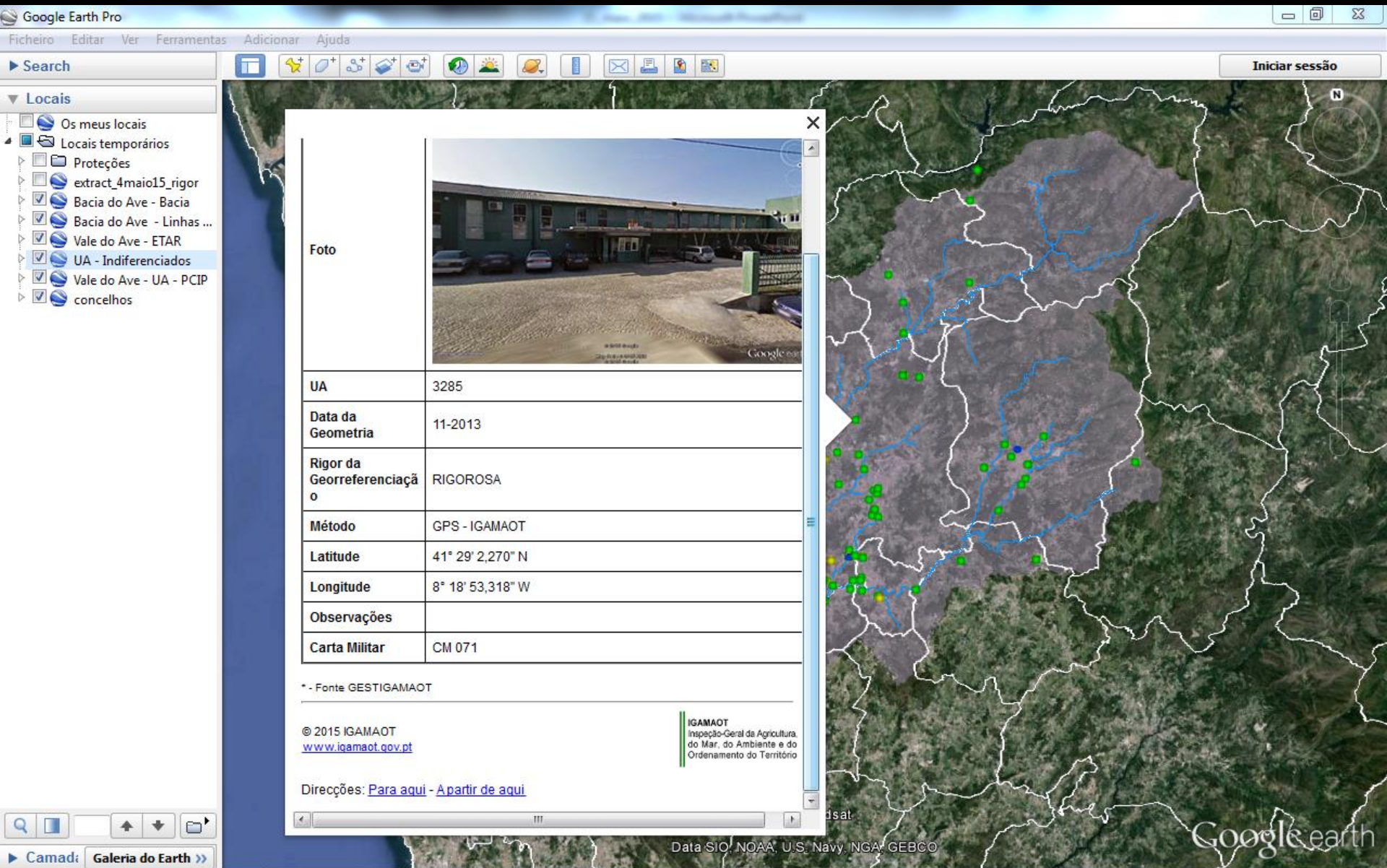
Google Earth software

Spatial records visualization - Environmental Users (EU)



Google Earth software

Spatial records visualization - Environmental Users (EU)

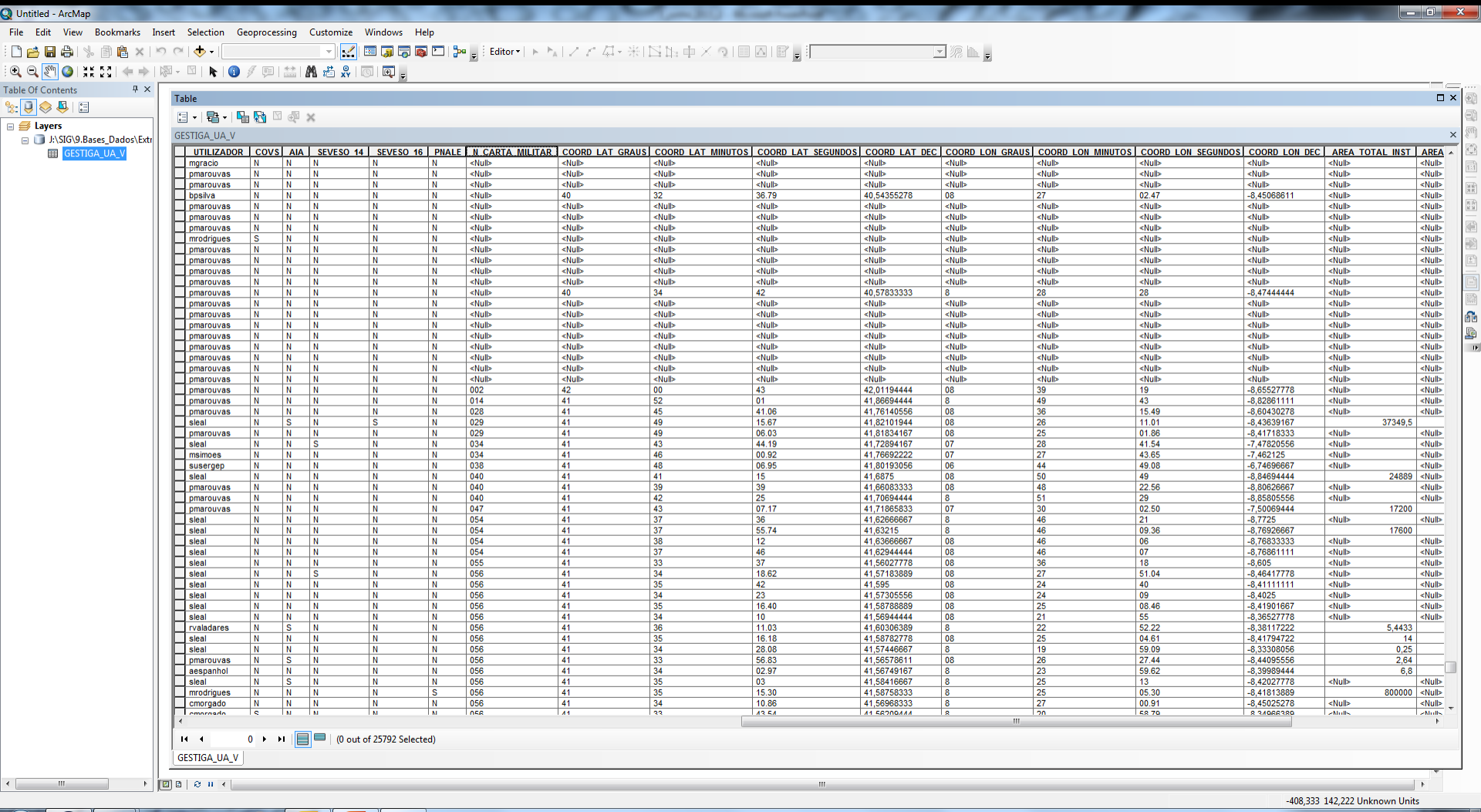


Data Dissemination and Visualization

Example of creating and using geoprocessing tools for systematic processes and routines

Tools to visualize spatial information from Data Base

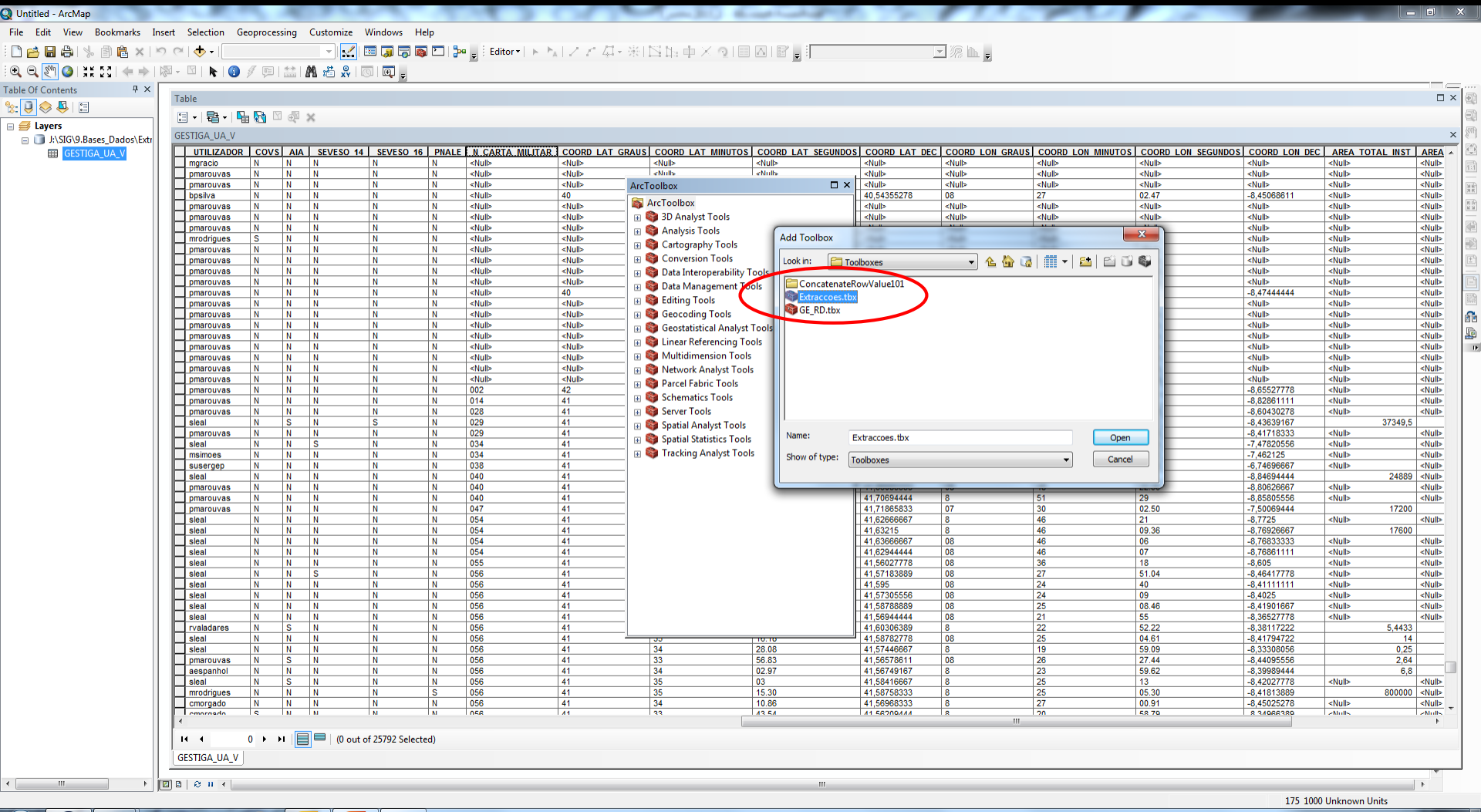
Database visualization in GIS environment



UTILIZADOR	COVS	AIA	SEVESO 14	SEVESO 16	PNALE	N_CARTA_MILITAR	COORD LAT GRAUS	COORD LAT MINUTOS	COORD LAT SEGUNDOS	COORD LAT DEC	COORD LON GRAUS	COORD LON MINUTOS	COORD LON SEGUNDOS	COORD LON DEC	AREA TOTAL INST	AREA
mgracio	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
bpsilva	N	N	N	N	N	<Null>	40	32	36.79	40,54355278	08	27	02.47	-8,45068611	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
mrodrigues	S	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	40	34	42	40,57833333	8	28	28	-8,47444444	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
pmarouvas	N	N	N	N	N	002	42	00	43	42,01194444	08	39	19	-8,65527778	<Null>	<Null>
pmarouvas	N	N	N	N	N	014	41	52	01	41,86694444	8	49	43	-8,82861111	<Null>	<Null>
pmarouvas	N	N	N	N	N	028	41	45	41.06	41,76140556	08	36	15.49	-8,60430278	<Null>	<Null>
sleal	N	S	N	S	N	029	41	49	15.67	41,82101944	08	26	11.01	-8,43639167	37349,5	
pmarouvas	N	N	N	N	N	029	41	49	06.03	41,81834167	08	25	01.86	-8,41718333	<Null>	<Null>
sleal	N	N	S	N	N	034	41	43	44.19	41,72894167	07	28	41.54	-7,47820556	<Null>	<Null>
msimoes	N	N	N	N	N	034	41	46	00.92	41,76692222	07	27	43.65	-7,462125	<Null>	<Null>
susergep	N	N	N	N	N	038	41	48	06.95	41,80193056	06	44	49.08	-6,74696667	<Null>	<Null>
sleal	N	N	N	N	N	040	41	41	15	41,6875	08	50	49	-8,84694444	24889	<Null>
pmarouvas	N	N	N	N	N	040	41	39	39	41,66083333	08	48	22.56	-8,80626667	<Null>	<Null>
pmarouvas	N	N	N	N	N	040	41	42	25	41,70694444	8	51	29	-8,85805556	<Null>	<Null>
pmarouvas	N	N	N	N	N	047	41	43	07.17	41,71865833	07	30	02.50	-7,50069444	17200	
sleal	N	N	N	N	N	054	41	37	36	41,62666667	8	46	21	-8,7725	<Null>	<Null>
sleal	N	N	N	N	N	054	41	37	55.74	41,63215	8	46	09.36	-8,76926667	17600	
sleal	N	N	N	N	N	054	41	38	12	41,63666667	08	46	06	-8,76833333	<Null>	<Null>
sleal	N	N	N	N	N	054	41	37	46	41,62944444	08	46	07	-8,76861111	<Null>	<Null>
sleal	N	N	N	N	N	055	41	33	37	41,56027778	08	36	18	-8,605	<Null>	<Null>
sleal	N	N	S	N	N	056	41	34	18.62	41,57183889	08	27	51.04	-8,46417778	<Null>	<Null>
sleal	N	N	N	N	N	056	41	35	42	41,595	08	24	40	-8,41111111	<Null>	<Null>
sleal	N	N	N	N	N	056	41	34	23	41,57305556	08	24	09	-8,4025	<Null>	<Null>
sleal	N	N	N	N	N	056	41	35	16.40	41,58788889	08	25	08.46	-8,41901667	<Null>	<Null>
sleal	N	N	N	N	N	056	41	34	10	41,56944444	08	21	55	-8,36527778	<Null>	<Null>
rvaladares	N	S	N	N	N	056	41	36	11.03	41,60306389	8	22	52.22	-8,38117222	5,4433	
sleal	N	N	N	N	N	056	41	35	16.18	41,58782778	08	25	04.61	-8,41794722	14	
sleal	N	N	N	N	N	056	41	34	28.08	41,57446667	8	19	59.09	-8,33308056	0,25	
pmarouvas	N	S	N	N	N	056	41	33	56.83	41,56578611	08	26	27.44	-8,44095556	2,64	
aespanhol	N	N	N	N	N	056	41	34	02.97	41,56749167	8	23	59.62	-8,39989444	6,8	
sleal	N	S	N	N	N	056	41	35	03	41,58416667	8	25	13	-8,42027778	<Null>	<Null>
mrodrigues	N	N	N	N	S	056	41	35	15.30	41,58758333	8	25	05.30	-8,41813889	800000	<Null>
cmorgado	N	N	N	N	N	056	41	34	10.86	41,56968333	8	27	00.91	-8,45025278	<Null>	<Null>
cmorgado	S	N	N	N	N	056	41	33	43.54	41,56209444	8	20	58.79	-8,34986389	<Null>	<Null>

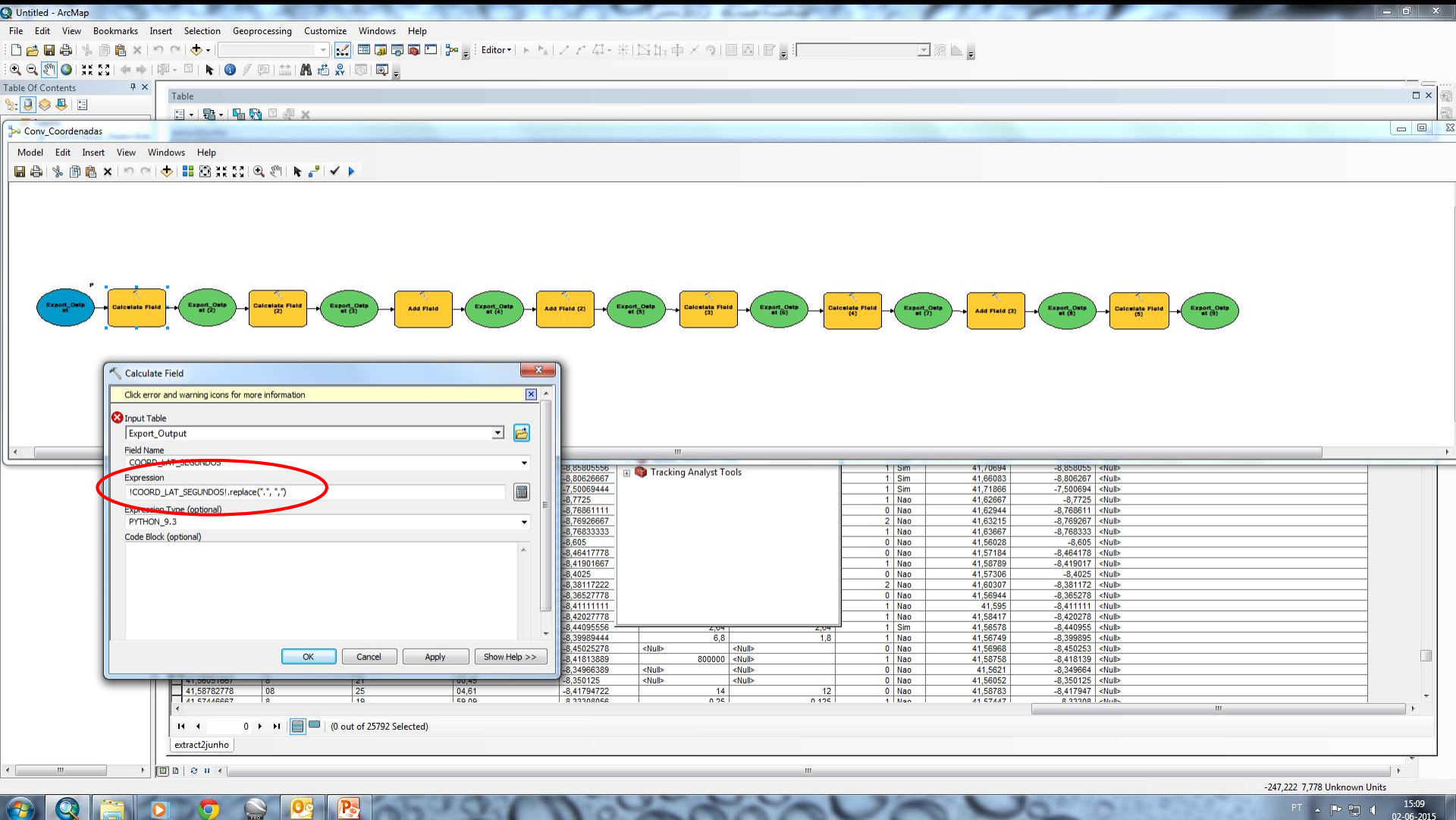
Tools to visualize spatial information from Data Base

Load a programed toolbox



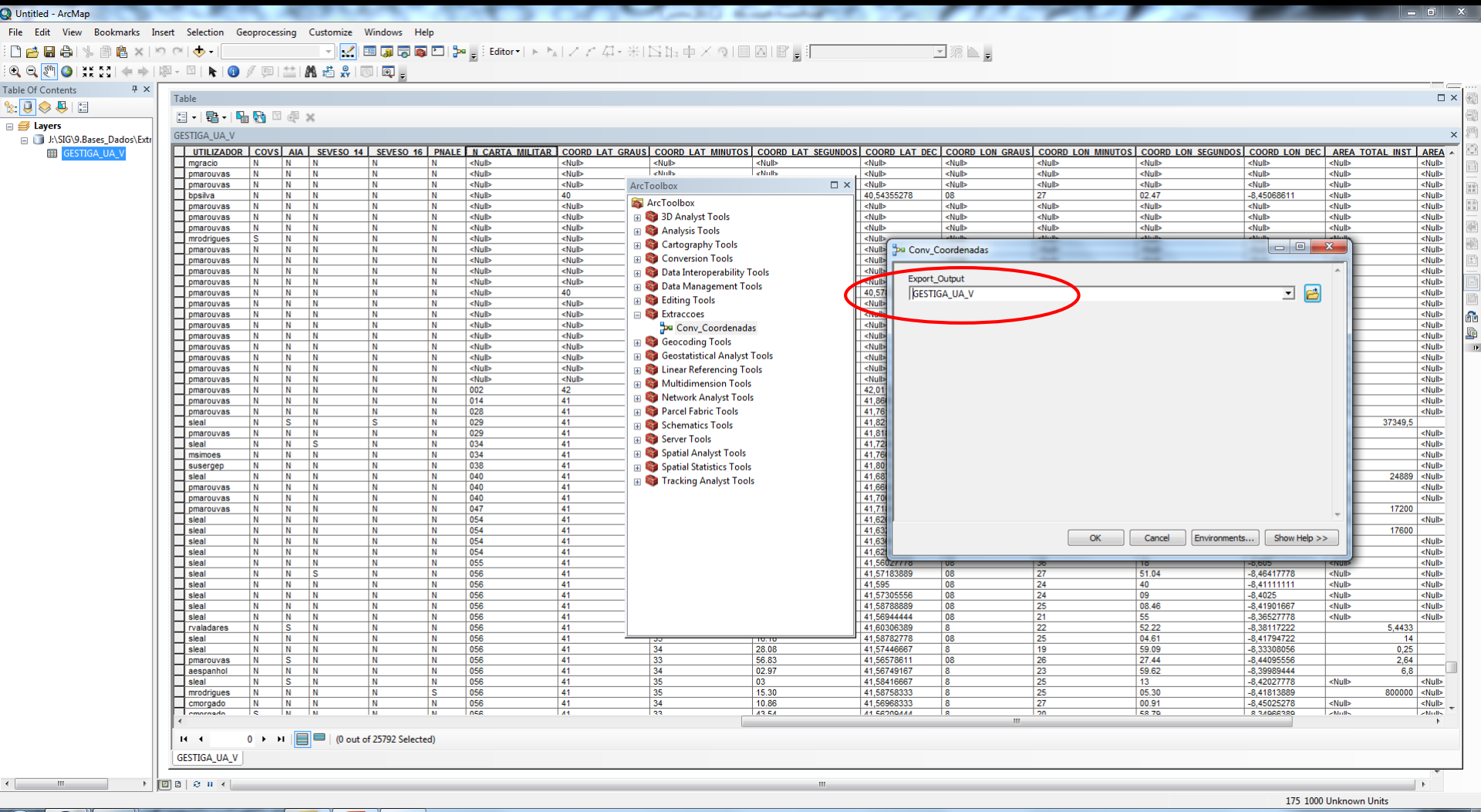
Tools to visualize spatial information from Data Base

Python (programming language) Expression



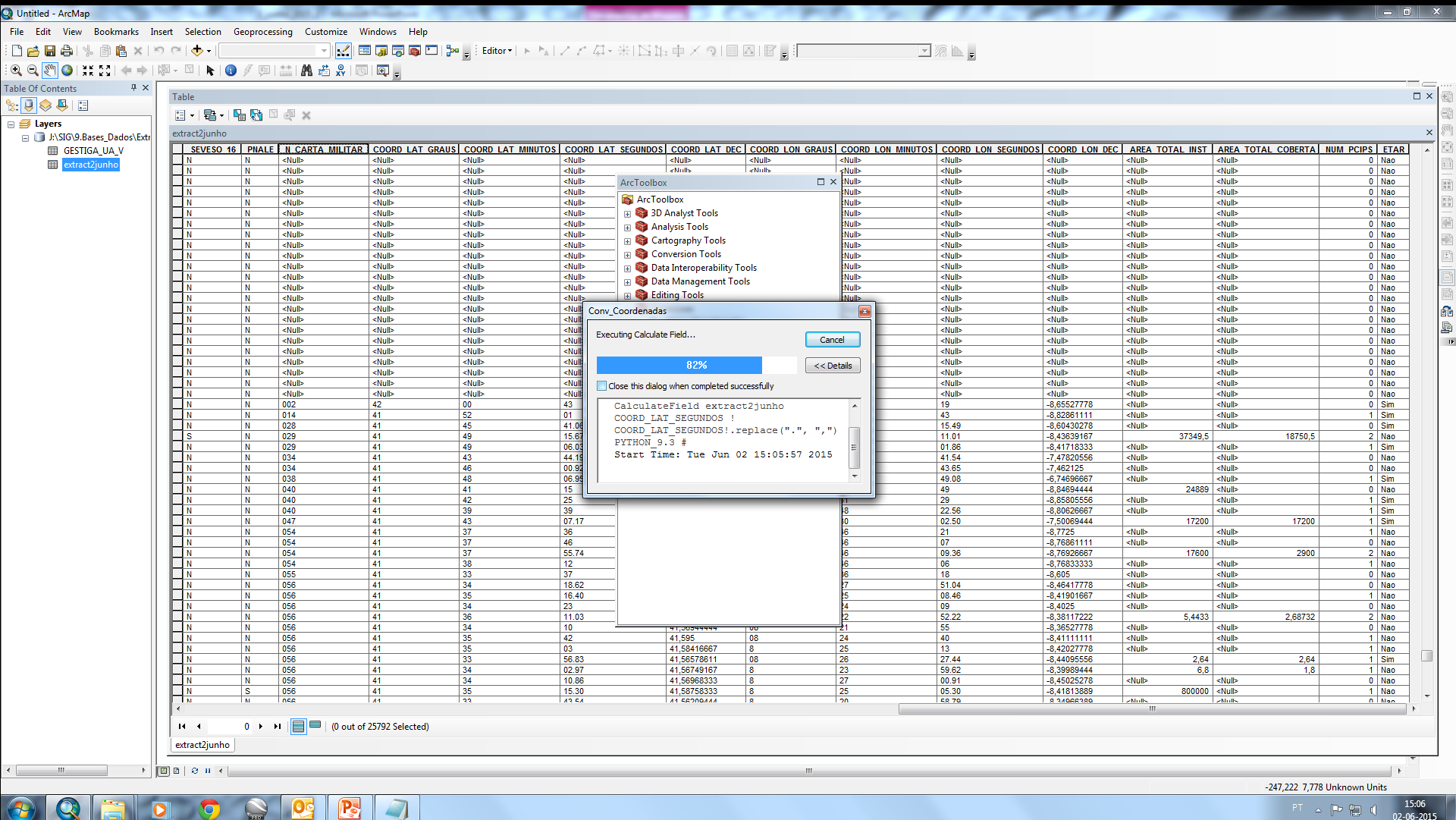
Tools to visualize spatial information from Data Base

RUN the toolbox (applied to database)



Tools to visualize spatial information from Data Base

Running toolbox



Tools to visualize spatial information from Data Base

New fields added (Coordinates transformation from 6 fields to 2 field: Degrees, Minutes, Seconds to Decimal Degrees / Latitude; Longitude / Text to number)

Untitled - ArcMap

File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help

Table Of Contents

Layers

J:\SIG\9.Bases_Dados\Extr

GESTIGA_UA_V

extract2junho

Table

extract2junho

COORD_LAT_DEC	COORD_LON_GRAUS	COORD_LON_MINUTOS	COORD_LON_SEGUNDOS	COORD_LON_DEC	AREA_TOTAL_INST	AREA_TOTAL_COBERTA	NUM_PCIPS	ETAR	Latitude	Longitude	Rigor
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	0	Nao	<Null>	<Null>	<Null>
42,01194444	08	39	19	-8,65527778	<Null>	<Null>	0	Sim	42,01194	-8,655278	<Null>
41,86694444	8	49	43	-8,82861111	<Null>	<Null>	1	Sim	41,86694	-8,828611	<Null>
41,76140556	08	36	15,49	-8,60430278	<Null>	<Null>	0	Sim	41,76141	-8,604302	<Null>
41,82101944	08	26	11,01	-8,43639167	37349,5	18750,5	2	Nao	41,82102	-8,436392	<Null>
41,81834167	08	25	01,86	-8,41718333	<Null>	<Null>	1	Sim	41,81834	-8,417183	<Null>
41,72894167	07	28	41,54	-7,47820556	<Null>	<Null>	0	Nao	41,72894	-7,478206	<Null>
41,76692222	07	27	43,65	-7,462125	<Null>	<Null>	0	Nao	41,76692	-7,462125	<Null>
41,80193056	06	44	49,08	-6,74696667	<Null>	<Null>	1	Sim	41,80193	-6,746967	<Null>
41,6875	08	50	49	-8,84694444	24889	<Null>	0	Nao	41,6875	-8,846945	<Null>
41,70694444	8	51	29	-8,85805556	<Null>	<Null>	1	Sim	41,70694	-8,858055	<Null>
41,66083333	08	48	22,56	-8,80626667	<Null>	<Null>	1	Sim	41,66083	-8,806267	<Null>
41,71865833	07	30	02,50	-7,50069444	17200	17200	1	Sim	41,71866	-7,500694	<Null>
41,62666667	8	46	21	-8,7725	<Null>	<Null>	1	Nao	41,62667	-8,7725	<Null>
41,62944444	08	46	07	-8,76861111	<Null>	<Null>	0	Nao	41,62944	-8,768611	<Null>
41,63215	8	46	09,36	-8,76926667	17600	2900	2	Nao	41,63215	-8,769267	<Null>
41,63666667	08	46	06	-8,76833333	<Null>	<Null>	1	Nao	41,63667	-8,768333	<Null>
41,56027778	08	36	18	-8,605	<Null>	<Null>	0	Nao	41,56028	-8,605	<Null>
41,57183889	08	27	51,04	-8,46417778	<Null>	<Null>	0	Nao	41,57184	-8,464178	<Null>
41,58788889	08	25	08,46	-8,41901667	<Null>	<Null>	1	Nao	41,58789	-8,419017	<Null>
41,57305556	08	24	09	-8,4025	<Null>	<Null>	0	Nao	41,57306	-8,4025	<Null>
41,60306389	8	22	52,22	-8,38117222	5,4433	2,68732	2	Nao	41,60307	-8,381172	<Null>
41,56944444	08	21	55	-8,36527778	<Null>	<Null>	0	Nao	41,56944	-8,365278	<Null>
41,595	08	24	40	-8,41111111	<Null>	<Null>	1	Nao	41,595	-8,411111	<Null>
41,58416667	8	25	13	-8,42027778	<Null>	<Null>	1	Nao	41,58417	-8,420278	<Null>
41,56578611	08	26	27,44	-8,44095556	2,64	2,64	1	Sim	41,56578	-8,440955	<Null>
41,56749167	8	23	59,62	-8,39989444	6,8	1,8	1	Nao	41,56749	-8,399895	<Null>
41,56968333	8	27	00,91	-8,45025278	<Null>	<Null>	0	Nao	41,56968	-8,450253	<Null>
41,58758333	8	25	05,30	-8,41813889	800000	<Null>	1	Nao	41,58758	-8,418139	<Null>
41,56209444	8	20	58,79	-8,34966389	<Null>	<Null>	0	Nao	41,5621	-8,349664	<Null>
41,56051667	8	21	00,45	-8,350125	<Null>	<Null>	0	Nao	41,56052	-8,350125	<Null>
41,58782778	08	25	04,61	-8,41794722	14	12	0	Nao	41,58783	-8,417947	<Null>
41,57446667	8	19	59,09	-8,33308056	0,25	0,125	1	Nao	41,57447	-8,33308	<Null>

0 (0 out of 25792 Selected)

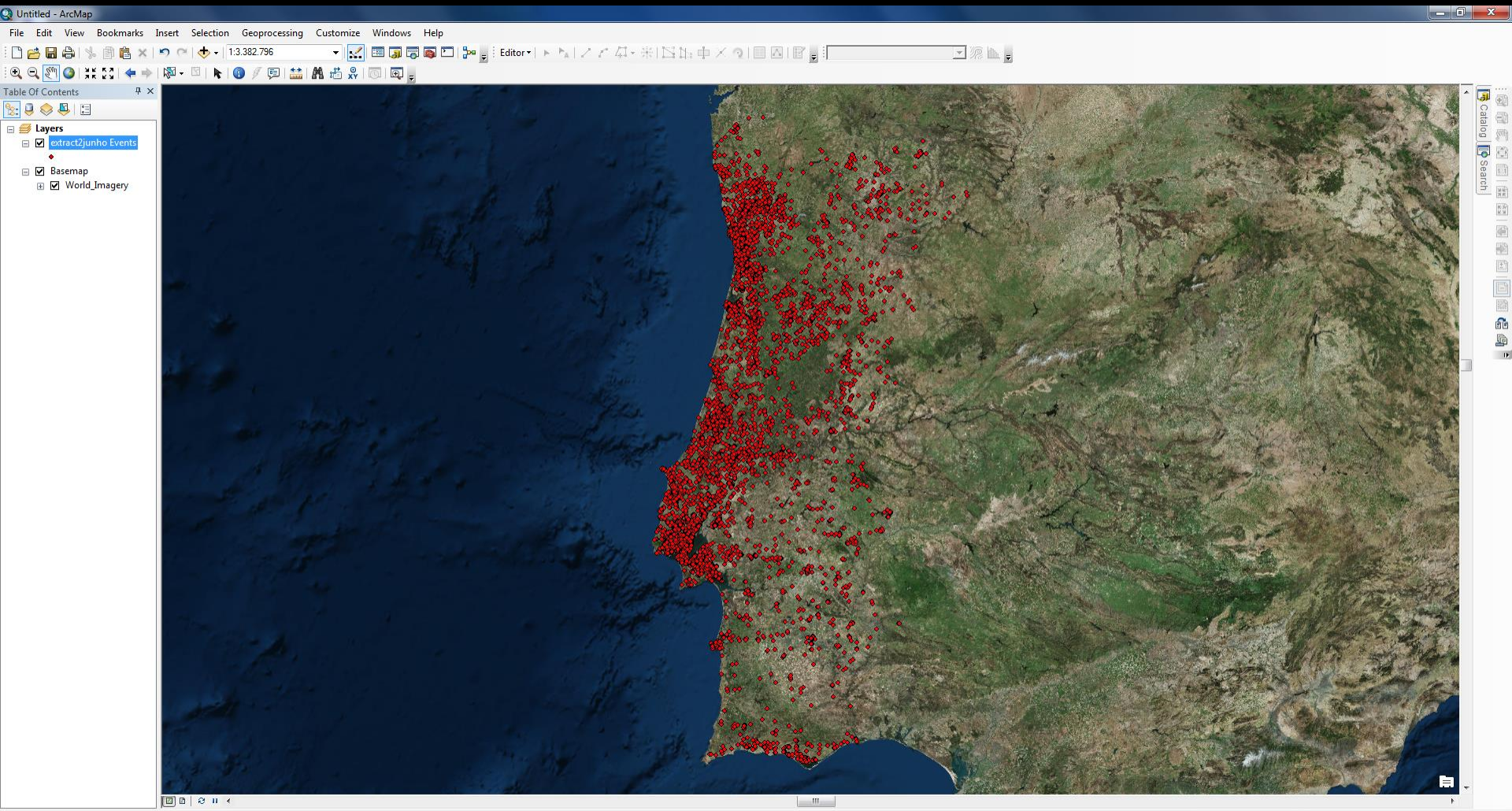
extract2junho

-247,222 7,778 Unknown Units

PT 15:12 02-06-2015

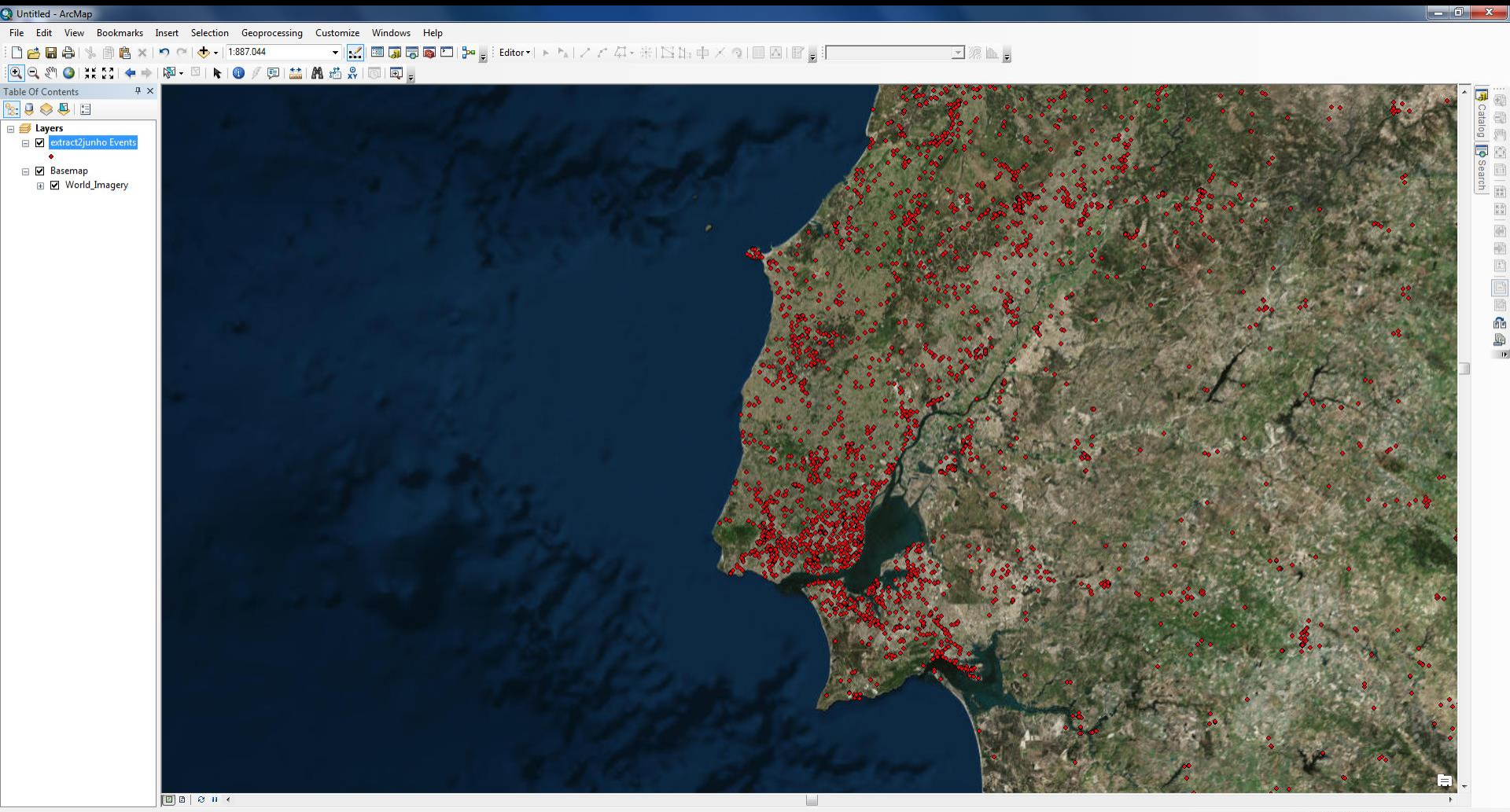
Tools to visualize spatial information from Data Base

Map visualization (from pair of coordinates)



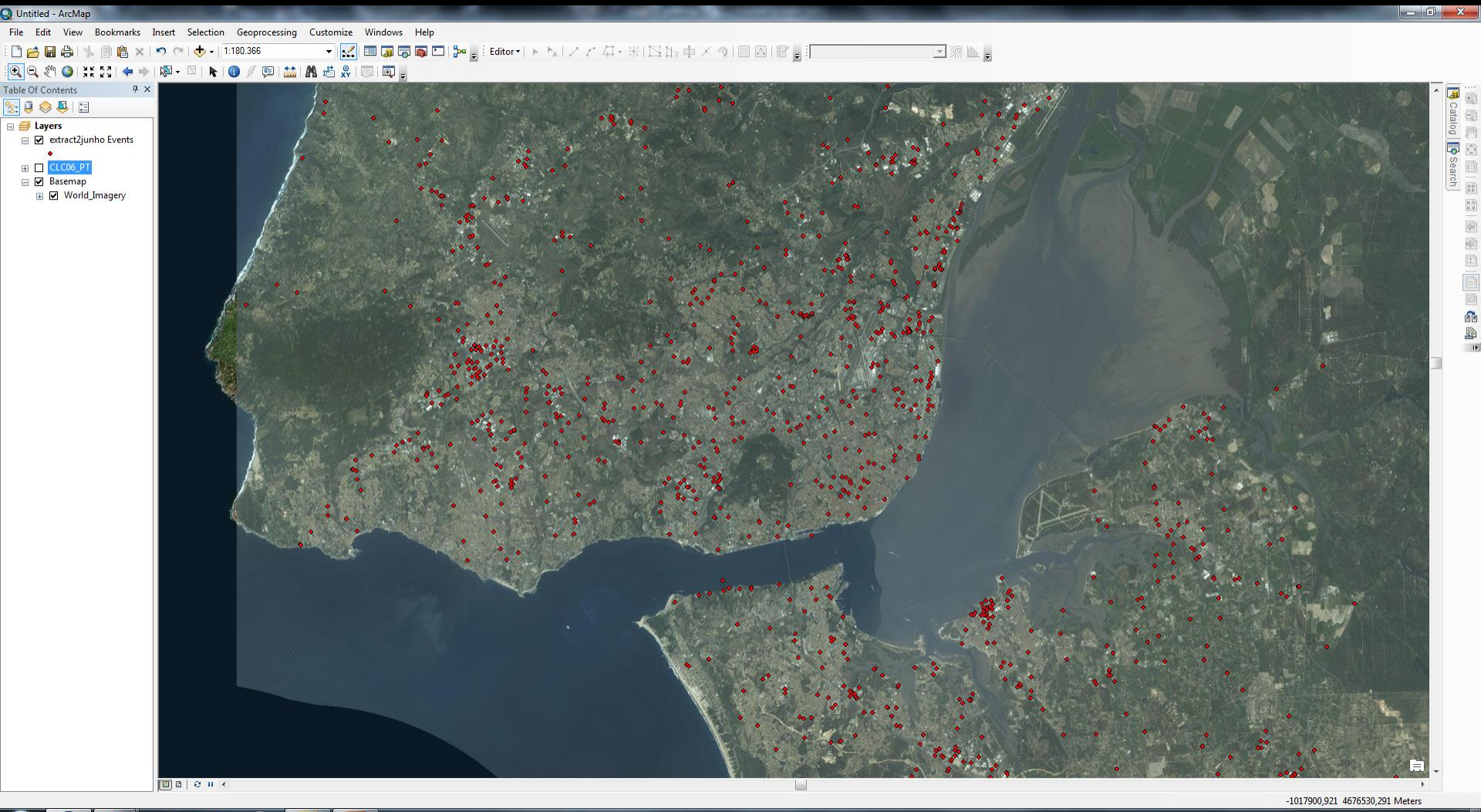
Tools to visualize spatial information from Data Base

Zoom with aerial photograph



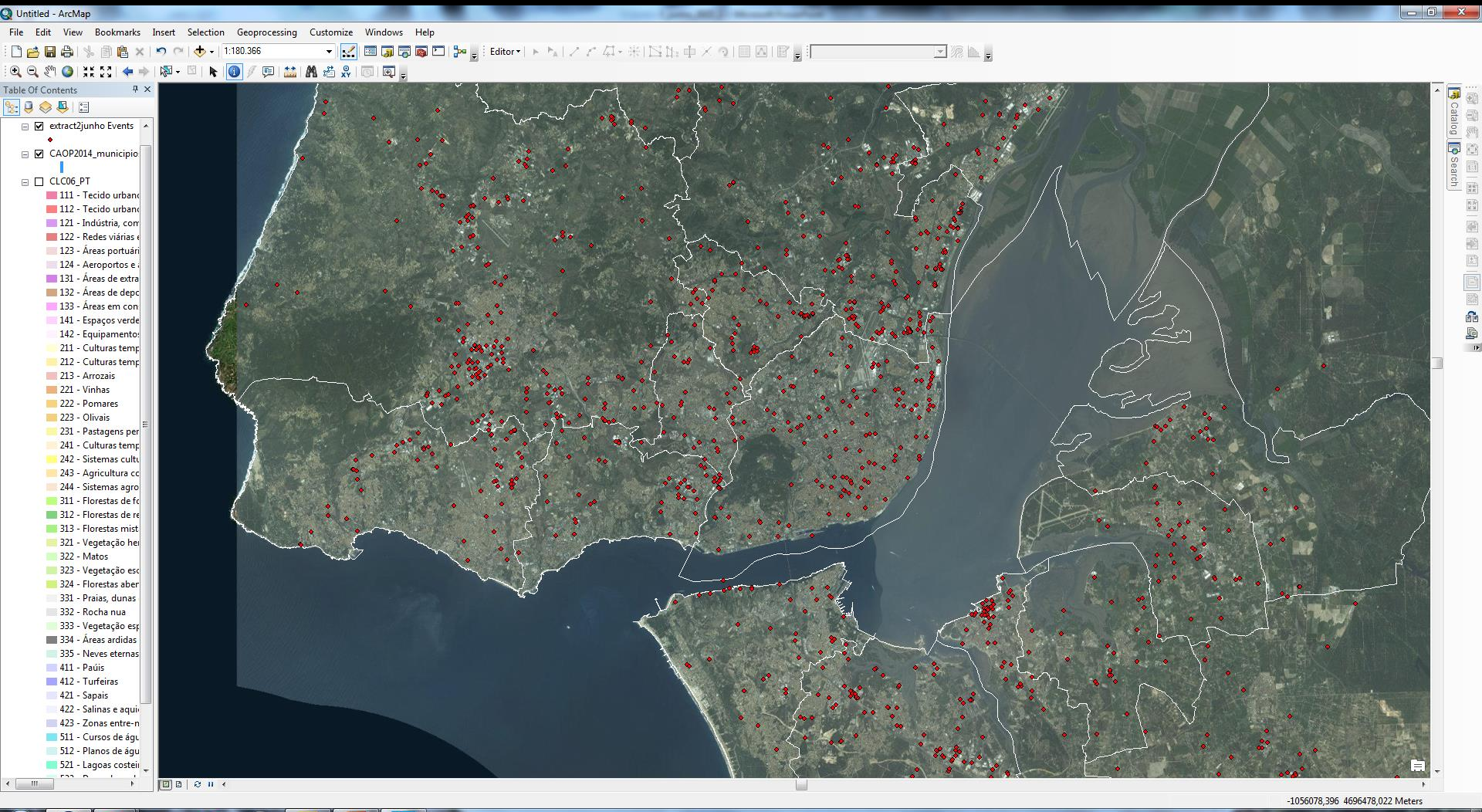
Tools to visualize spatial information from Data Base

Zoom with aerial photograph (automatic improvement of base cartography resolution)



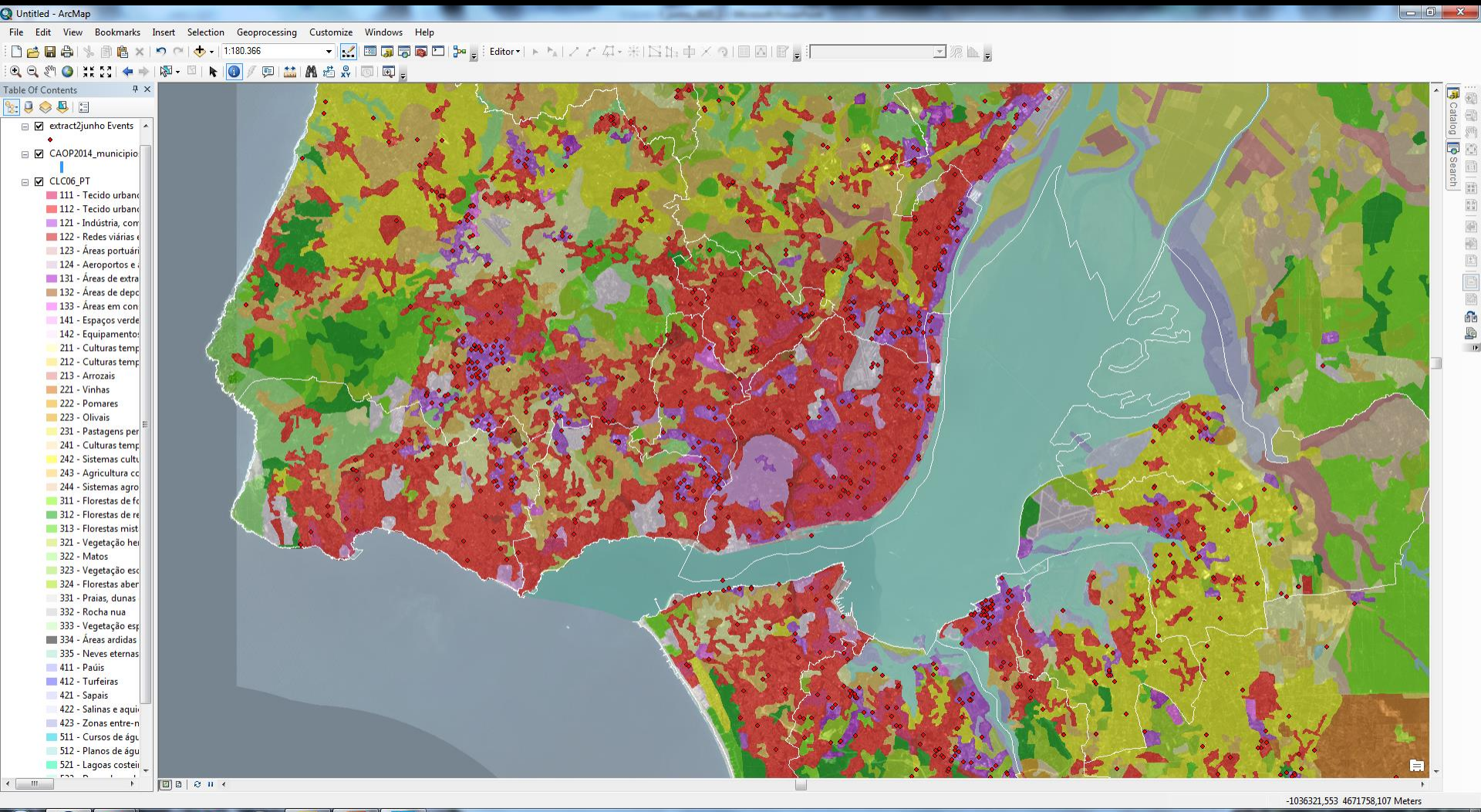
Tools to visualize spatial information from Data Base

Other spatial data visualization



Tools to visualize spatial information from Data Base

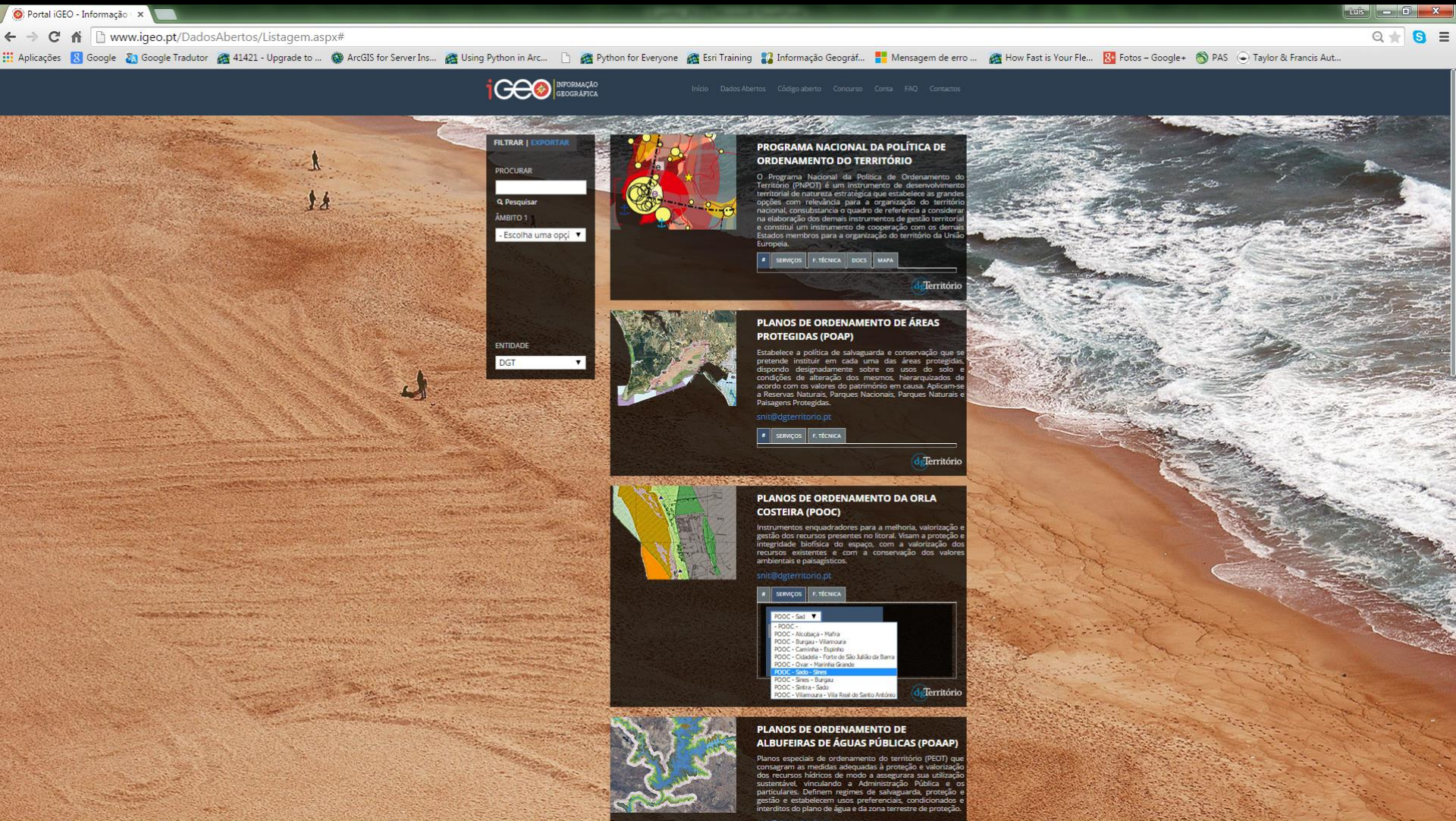
Other spatial data visualization



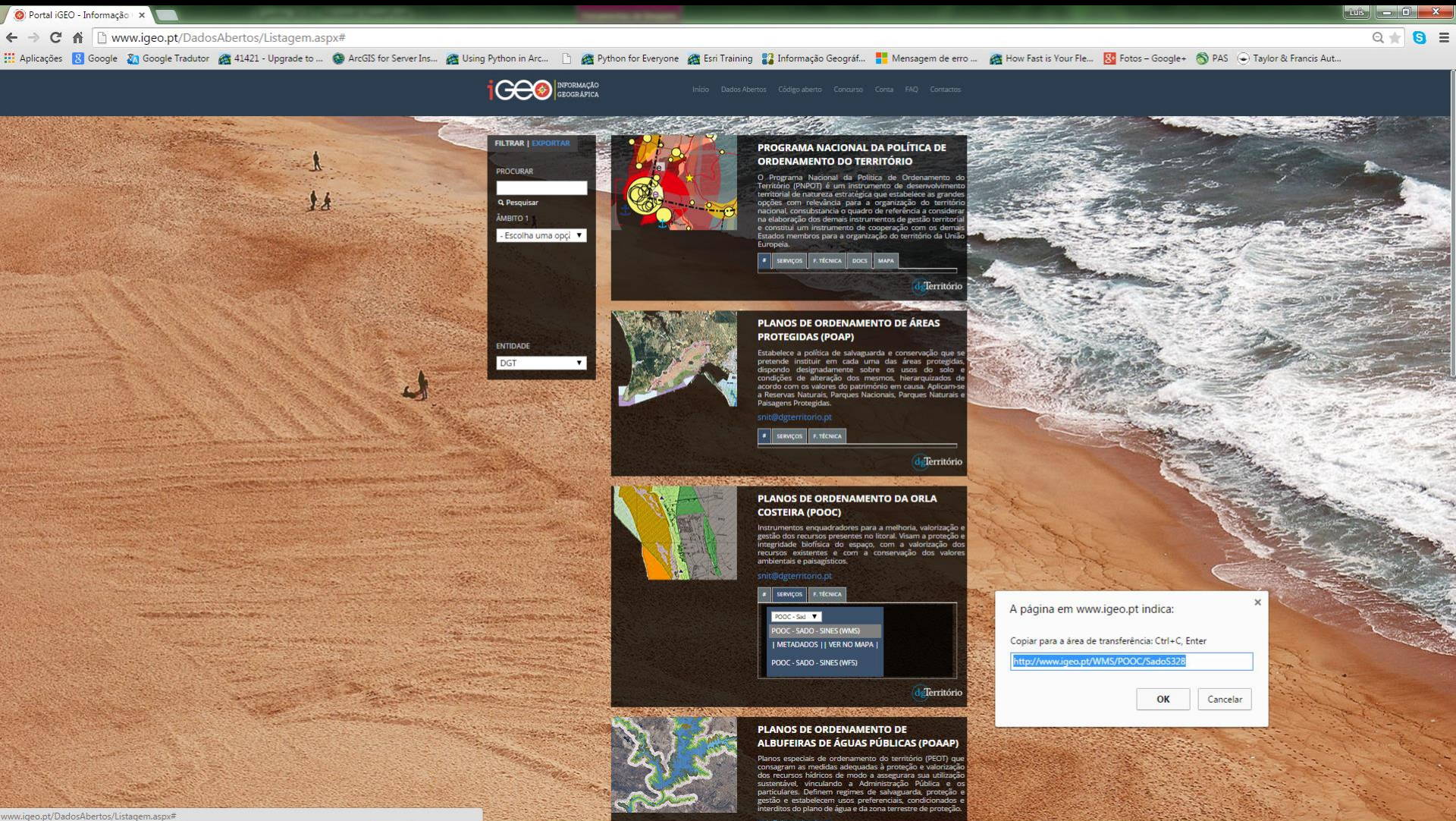
Data Dissemination and Visualization

Example of external data connection overlay (through WMS)

WMS Connections portal

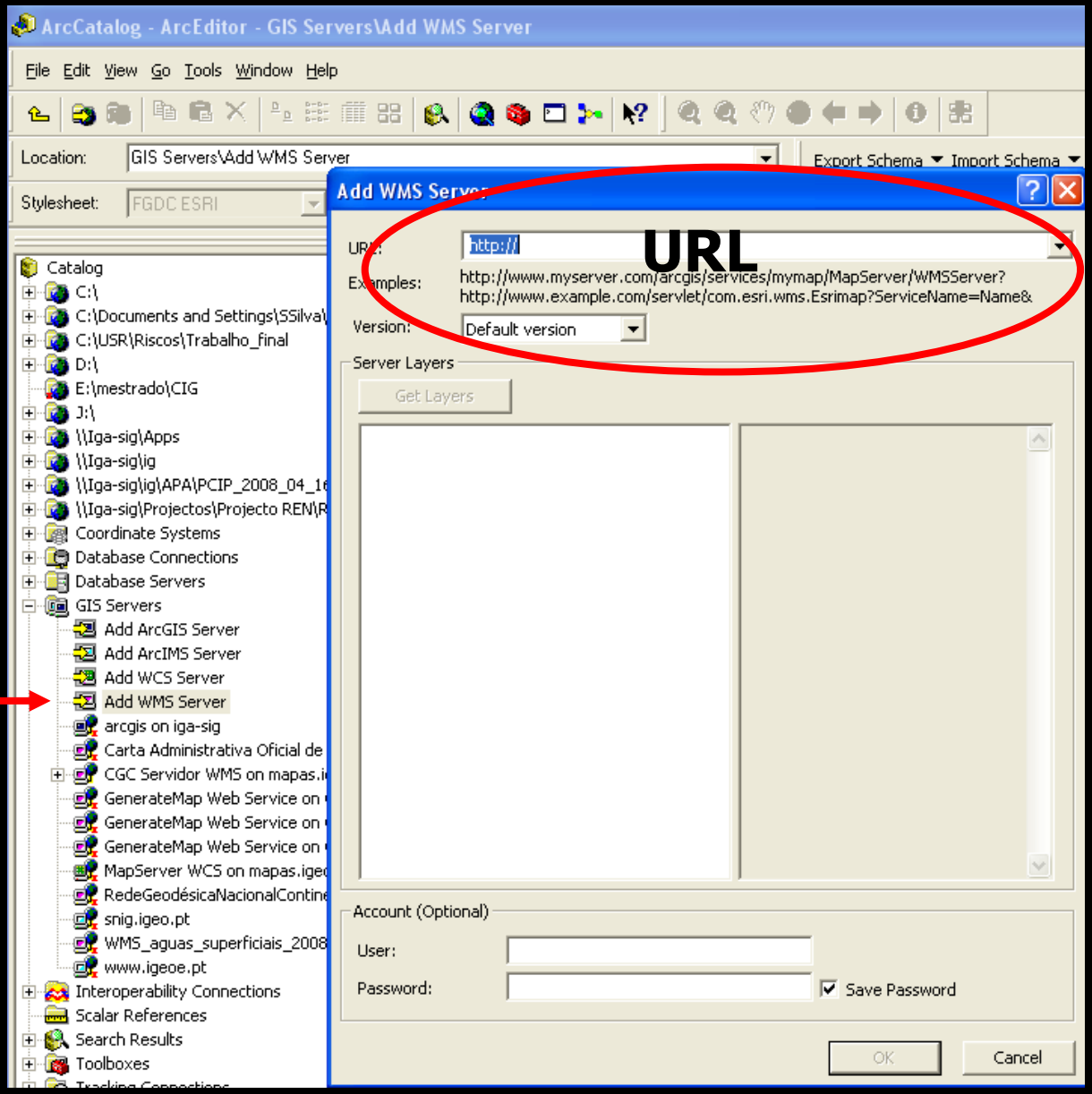


WMS Connections portal



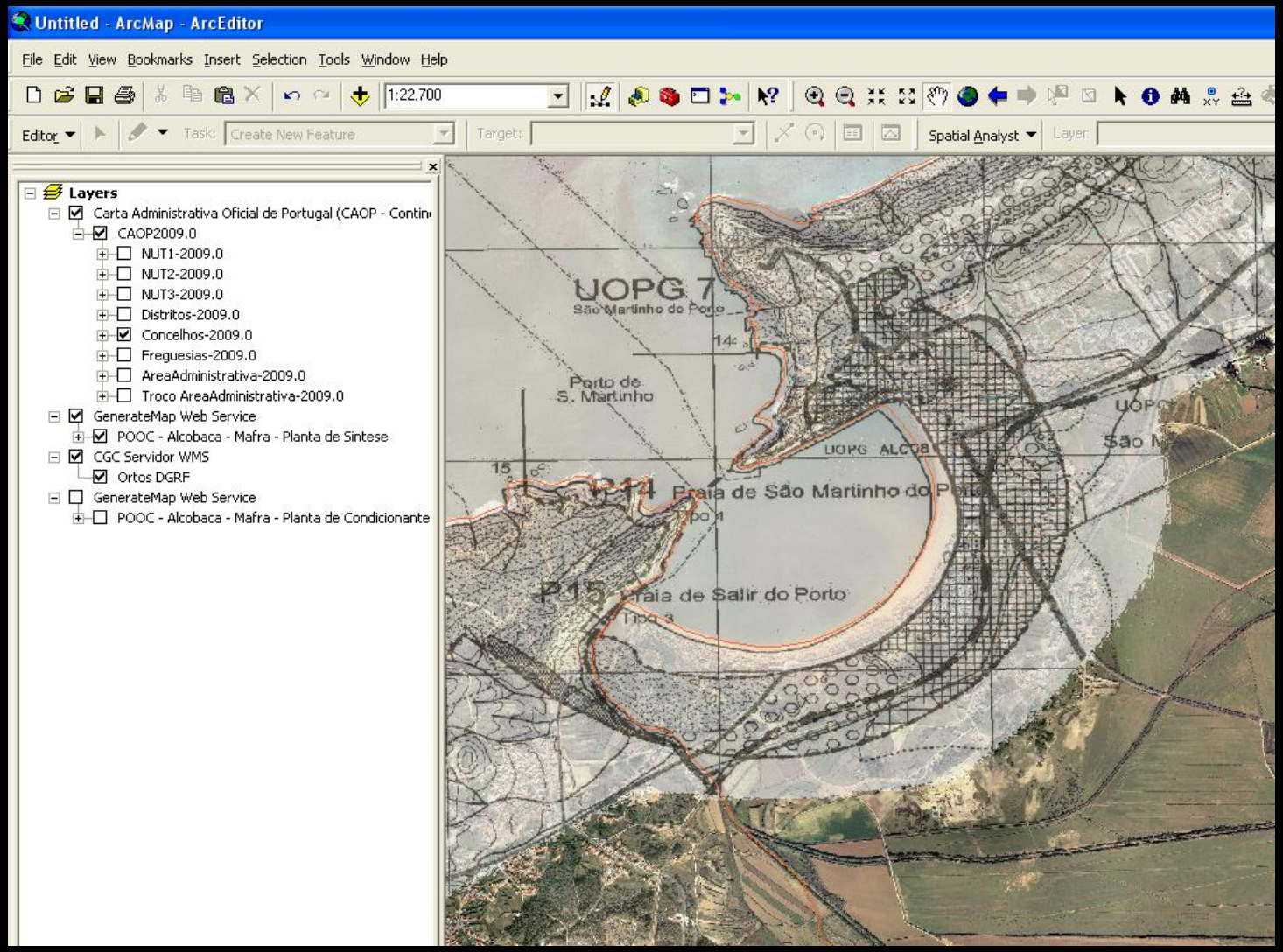
WMS Connections - examples

- Establish connection



WMS Connections - examples

- Administrative boundaries and other base cartography
- Historical Cartography / and Aerial images
- Territorial Planning Instruments
- Protected sites
- Other…



Spatial Analysis and Conflict Detection Tools

Example of proximity analysis

Geoprocessing Tools

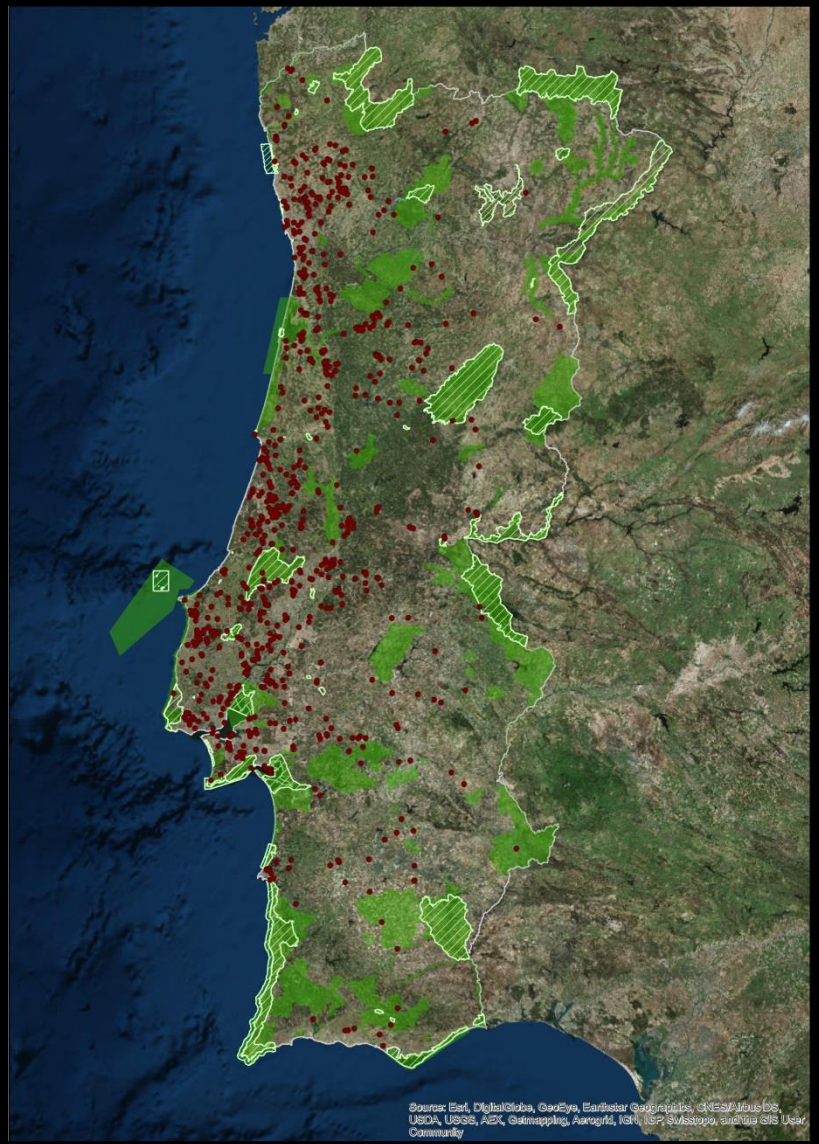
- example: IPPC proximity to Protected Areas in Portugal

Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal

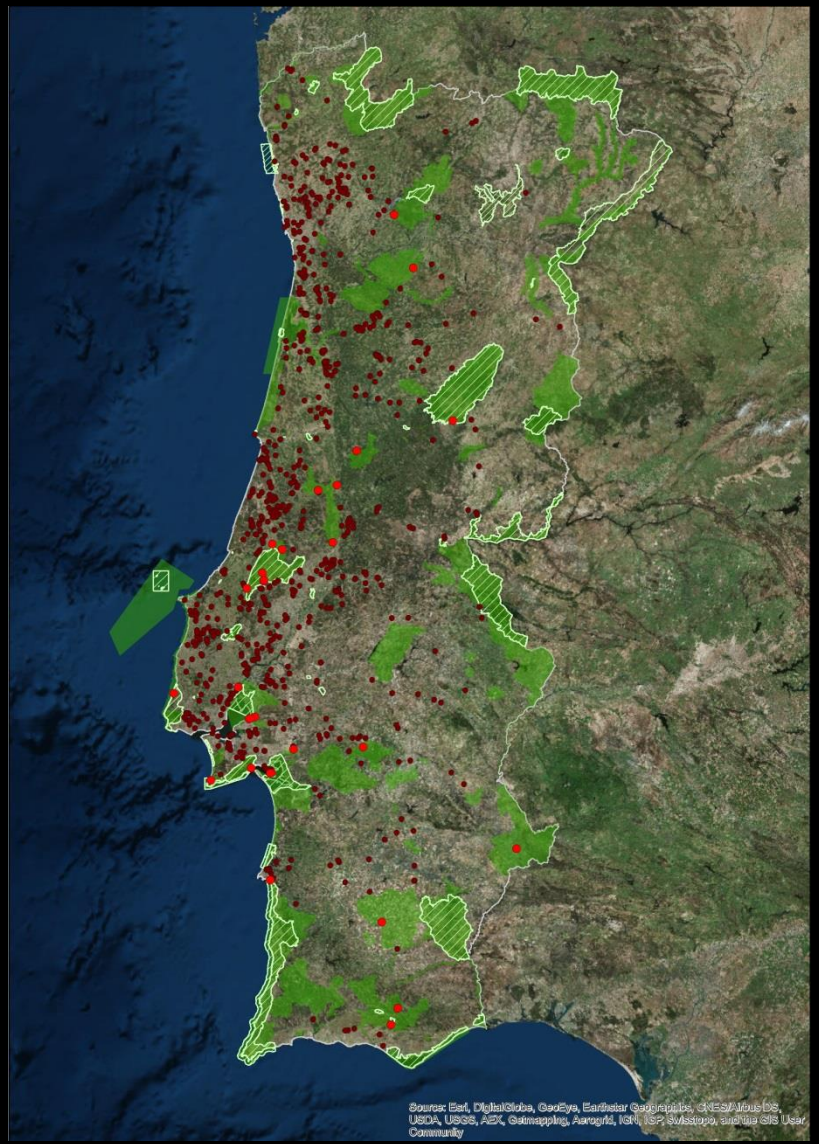
Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal



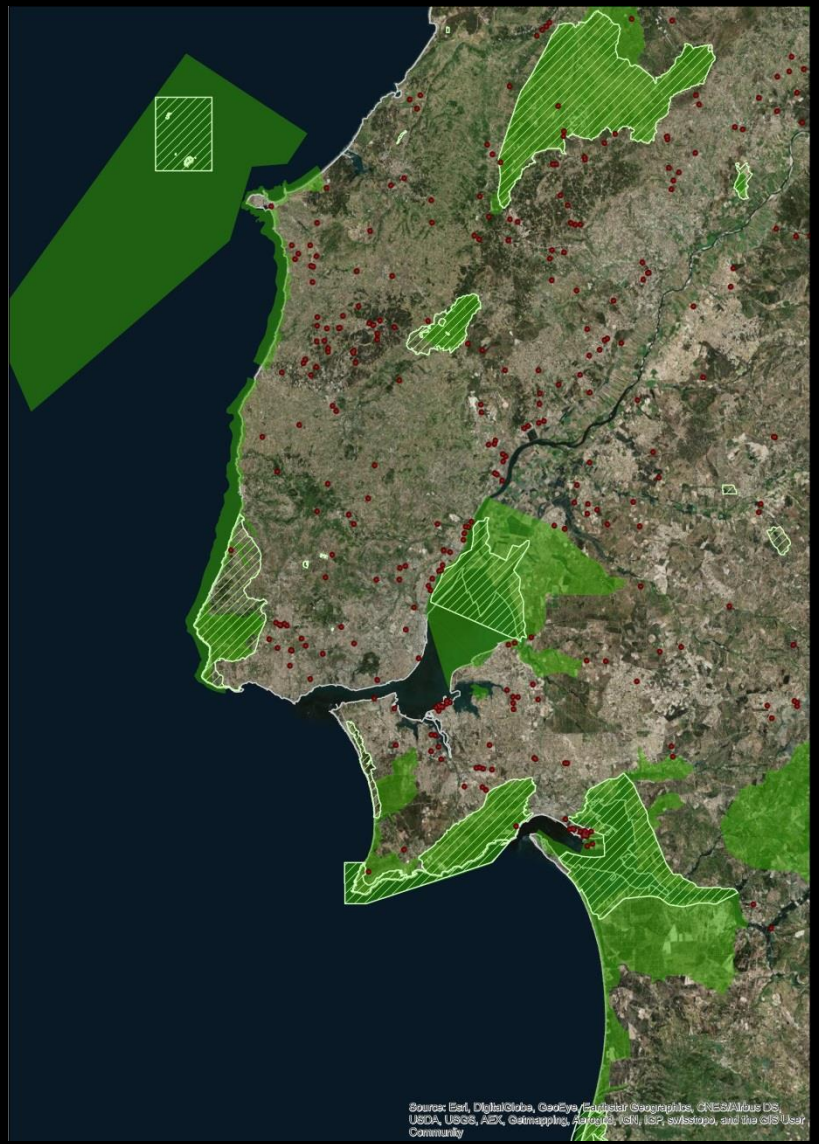
Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal



Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal



Geoprocessing Tools

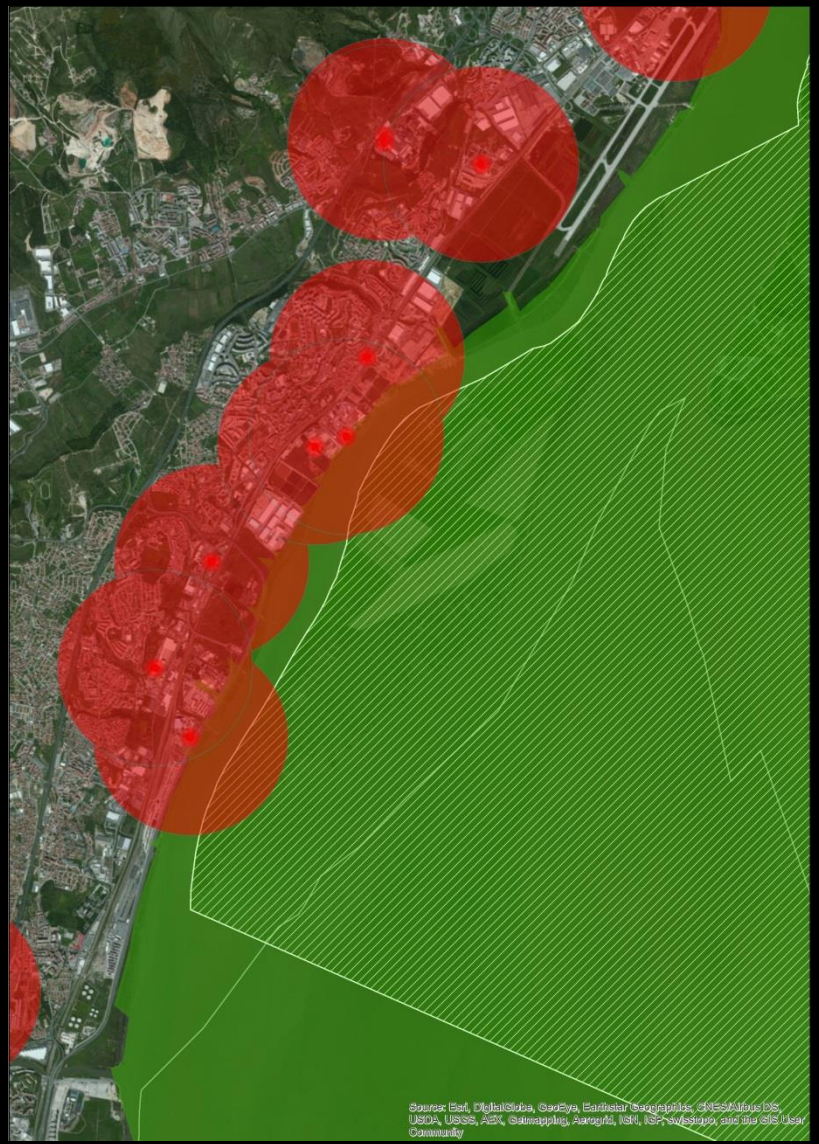
- example: IPPC proximity to Protected Areas in Portugal

Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal

Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal

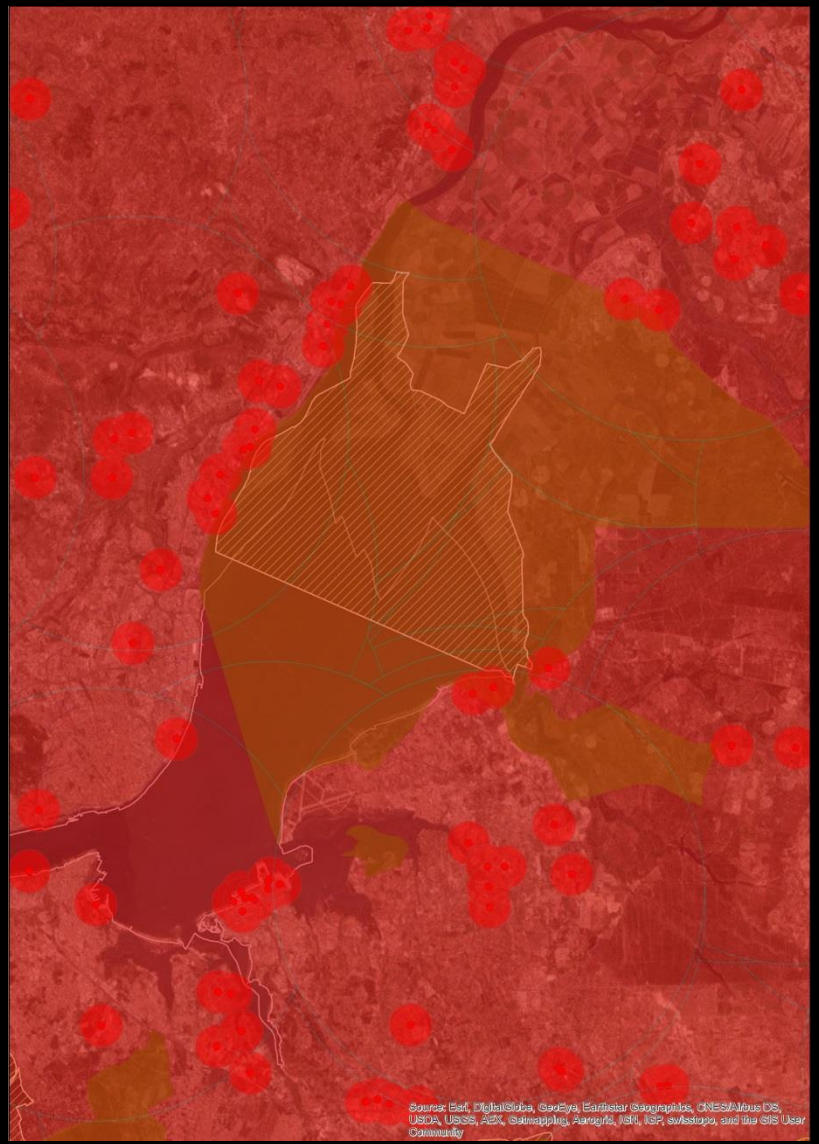


Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal

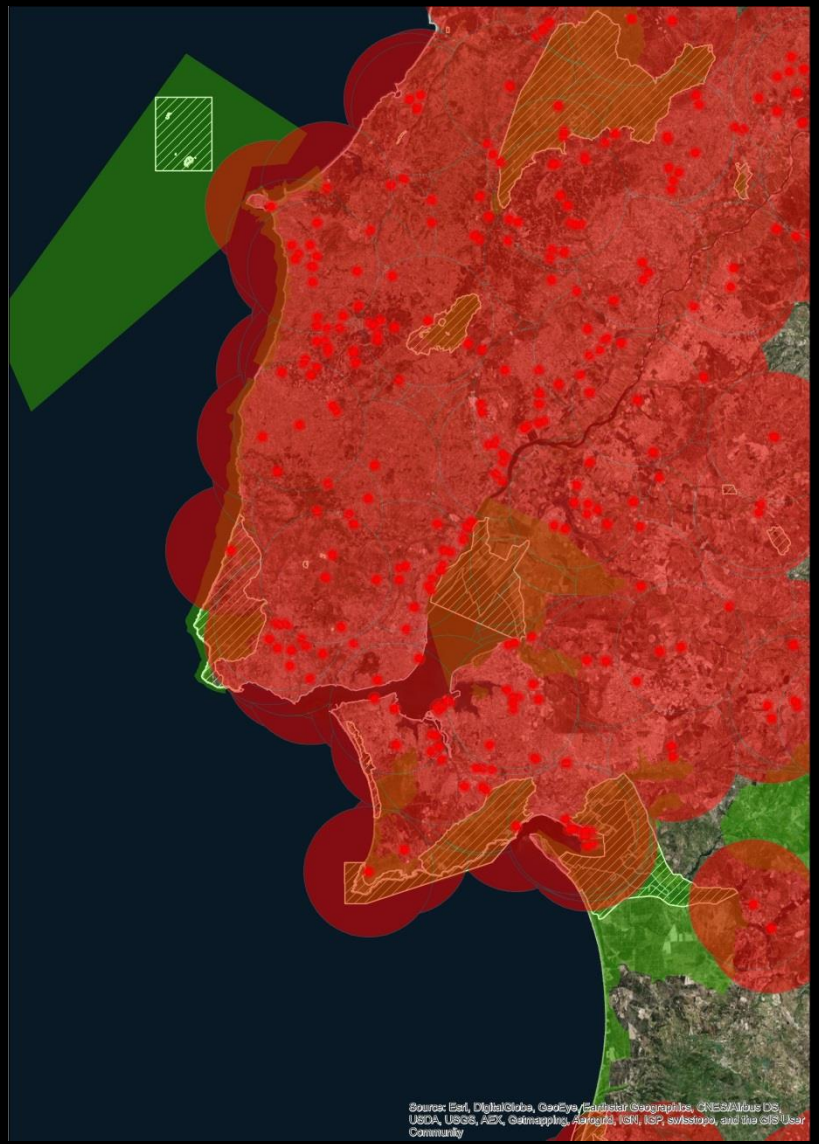
Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal



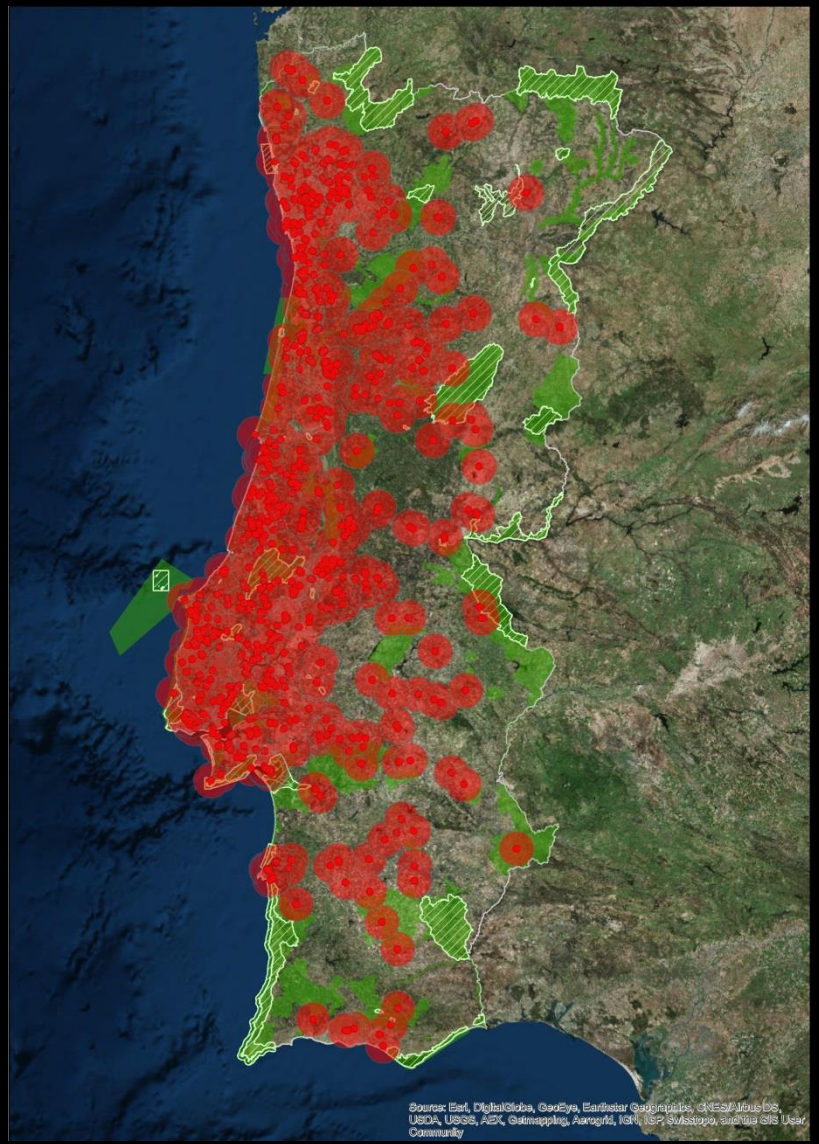
Geoprocessing Tools

- example: IPPC proximity to Protected Areas in Portugal



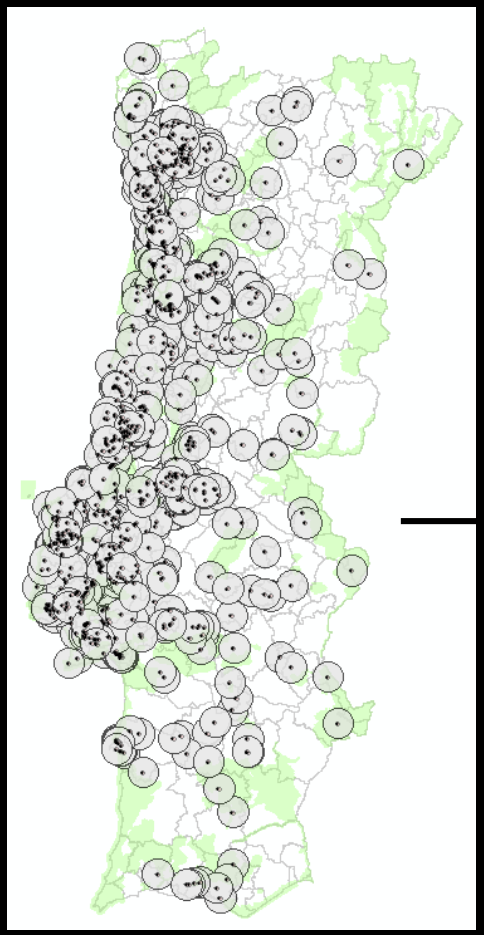
Geoprocessing Tools

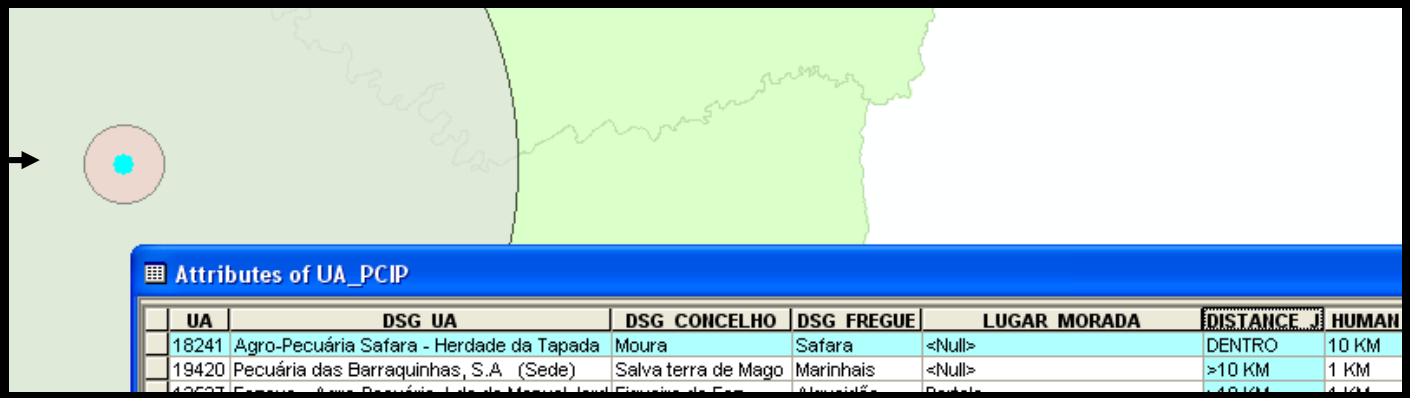
- example: IPPC proximity to Protected Areas in Portugal



Geoprocessing Tools

- How has it been done? (examples: distance to PA, SPA, SIC)



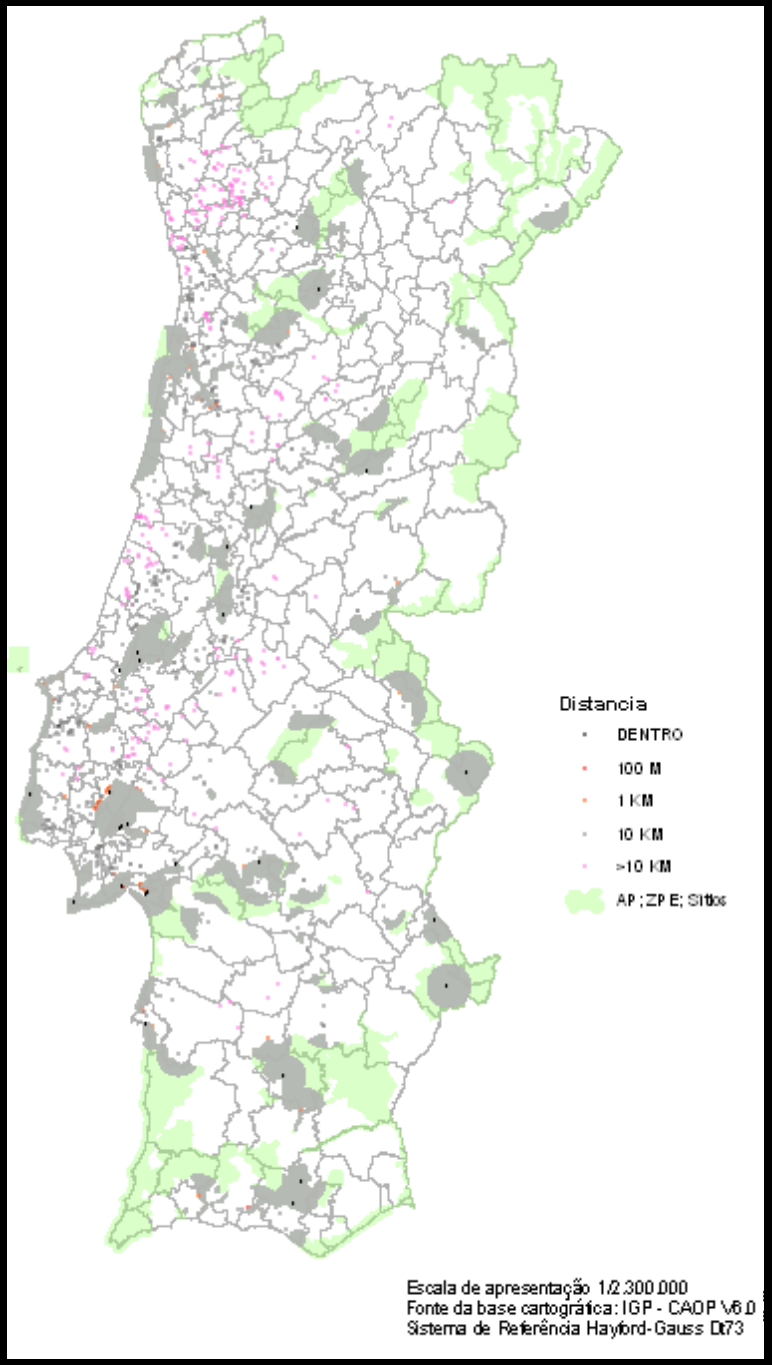


Attributes of UA_PCIP

UA	DSG_UA	DSG_CONCELHO	DSG_FREGUE	LUGAR_MORADA	DISTANCE_J	HUMAN
18241	Agro-Pecuária Safara - Herdade da Tapada	Moura	Safara	<Null>	DENTRO	10 KM
19420	Pecuária das Barraquinhas, S.A (Sede)	Salva terra de Mago	Marinhais	<Null>	>10 KM	1 KM

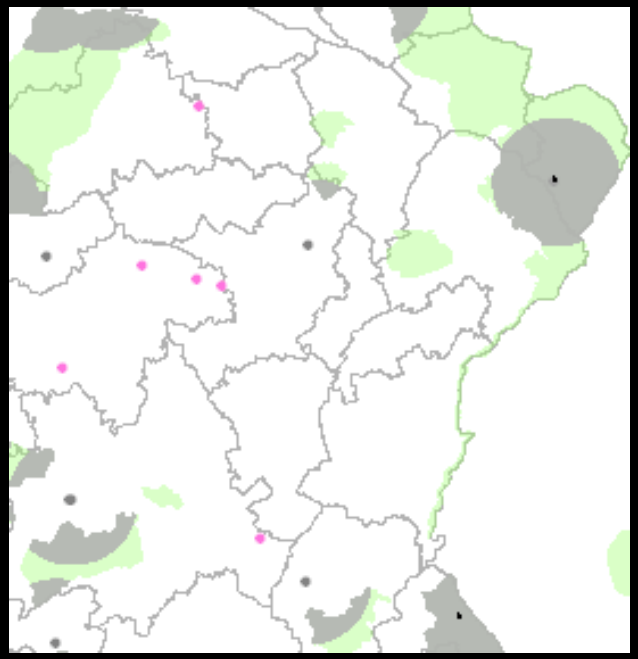
Geoprocessing Tools

- Proximity analysis for Portugal
  - IPPC vrs. Protected Areas



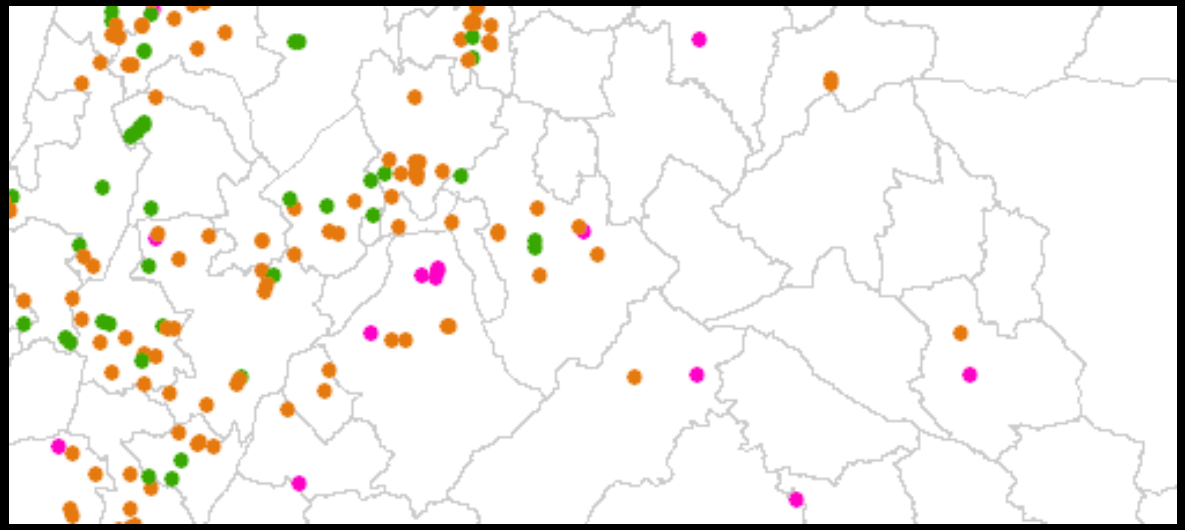
Geoprocessing Tools

- Proximity Analysis: Buffering IPPC Facilities distance to Protected Areas (PA), Special Protected Areas (SPA) and Sites of Community Importance (SIC)
  - Distance between facility and PA, SPA and SIC is:
    - less than 100 m
    - between 100 m and 1 km
    - between 1 km and 10 km
    - more than 10 km
    - within the boundaries of the sensitive area



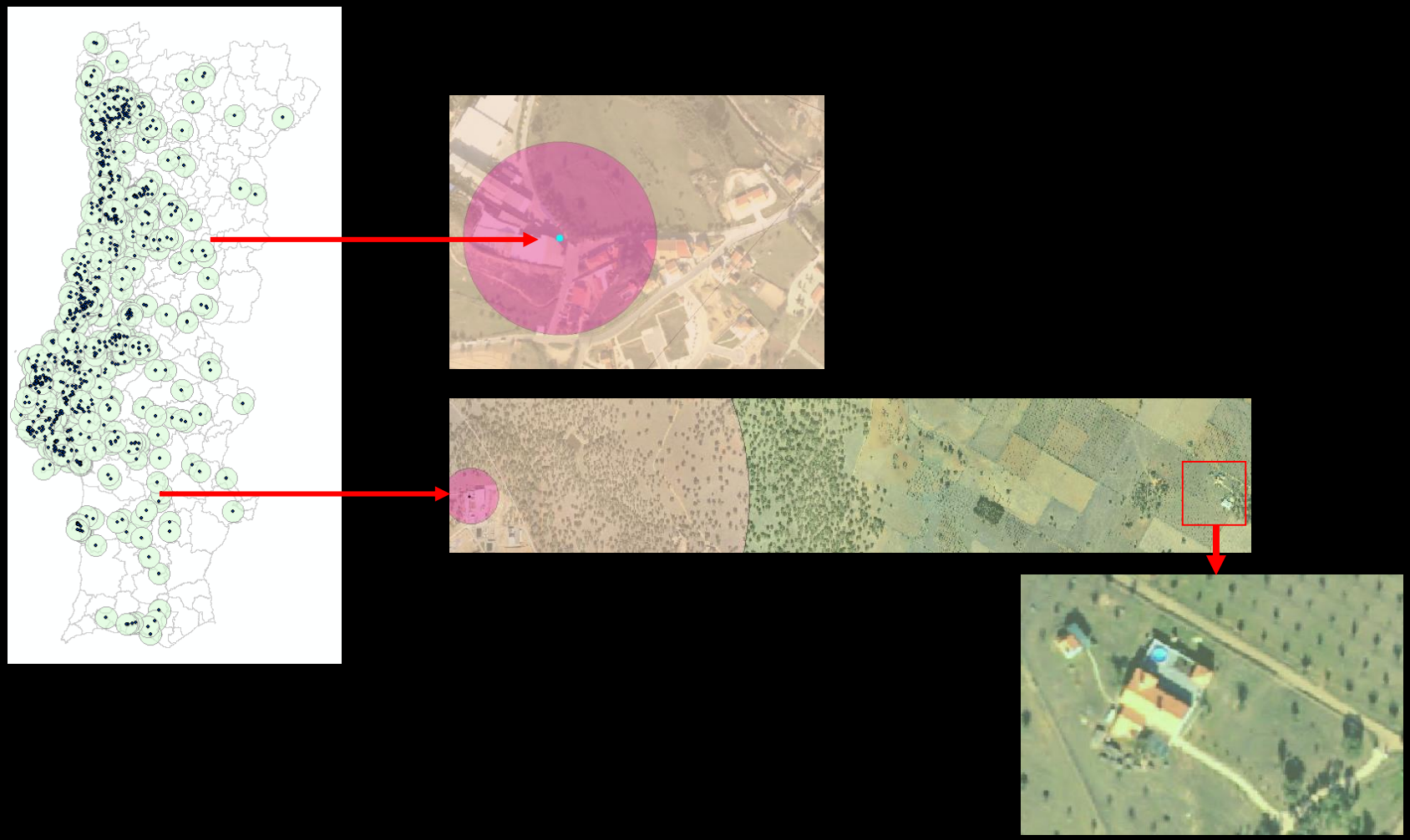
Geoprocessing Tools

- Proximity Analysis: Buffering IPPC Facility distance to Human occupation
  - less than 100 m
  - between 100 m and 1 km
  - between 1 km and 10 km
  - more than 10 km



Geoprocessing Tools

- How has it been done? (examples: distance to Human occupation)



Final remarks

IGAMAOT is in a transition period concerning the system(s) and data dissemination
(Data Base, Spatial Data Infrastructure; GIS and Data Visualization through: Web Services / Viewers / Geobrowsers);

GIS will publish (internal) and integrate (external) geographical information (national and abroad) directly from the producer at real time (WMS/WFS);

Improved cooperation between entities at national and international level through spatial data integration and interoperability;

The development of an Spatial Data Infrastructure is essential to spatial analysis and conflict detection, regarding IGAMAOT activity, especially concerning: Planning, Reporting and monitoring;

Final remarks

Better efficiency through the development of tools for systematic processes and routines, within GIS;

Simplify spatial data visualization for non GIS users by giving access to spatial data (e.g. geobrowsers such as Google Earth);

Implementation of common standards and metadata (within INSPIRE directive);

Gathering public and entities spatial data through geographical viewers (complaints).

Luís Marques: lmarques@igamaot.gov.pt
Susana Silva: ssilva@igamaot.gov.pt

Thank you

IGAMAOT – Inspeção Geral da Agricultura, do Mar, do Ambiente e do Ordenamento do Território

Adress: Rua de "O Século", nº51

1200-433 Lisbon

Phone: 00351 213 215 500

igamaot@igamaot.gov.pt

GOVERNO DE PORTUGAL

IMPEL

themis NETWORK

IGAMAOT
Inspeção-Geral da Agricultura, do Mar, do Ambiente e do Ordenamento do Território