E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

These notes accompany the EFA 3.2 version of the project and are designed to help users get started with the ArcGIS project. Sponsors can download the project from the sponsor's area of the EFA Website (http://www.efafrica.com/sponsors.php). The project is zipped (EFA_V3_2.zip) and will need to be extracted (please ensure that the original directory structure is preserved). If the project is viewed in ESRI ArcCatalog users will see that it consists of a number of directories. Some contain data e.g., Seismic_sections and Burial_History. Other directories contain an ESRI Geodatabase, associated layer files and image files (mostly ESRI Grids). The is also an ArcMap file (africa_mxd) which contains all the various layers and another mxd called EFA_Basins which contains data related to African basins. Users can also try out a number of layers in Google Earth. A number of preliminary Google Earth kmz files can be found within the Google Earth directory. Layered pdf files are also available in the sample_pdf_maps folder.

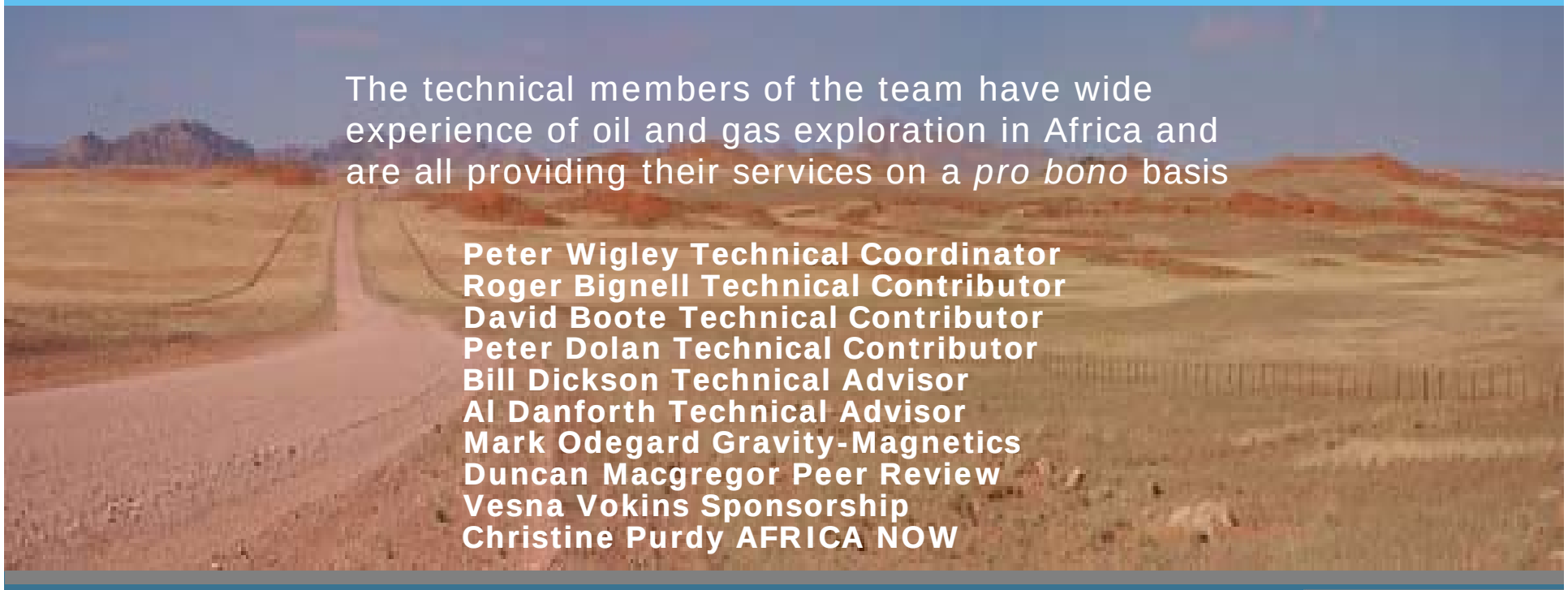
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

WHAT'S NEW IN VERSION 3.2

- REVISED BASIN LOCATIONS
- REVISED BASIN AGES
- REVISED BASIN CLASSIFICATION (KINGSTON)
- REVISED SEDIMENT THICKNESS
- REVISED DEPTH-TO-BASEMENT

E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

THE EFA TEAM



The technical members of the team have wide experience of oil and gas exploration in Africa and are all providing their services on a *pro bono* basis

Peter Wigley Technical Coordinator
Roger Bignell Technical Contributor
David Boote Technical Contributor
Peter Dolan Technical Contributor
Bill Dickson Technical Advisor
Al Danforth Technical Advisor
Mark Odegard Gravity-Magnetics
Duncan Macgregor Peer Review
Vesna Vokins Sponsorship
Christine Purdy AFRICA NOW

Additional data providers

The EFA team gratefully acknowledge the contribution of additional data from the these companies and organisations

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS 1917 AAPG

LYNX Information Systems

ION GX TECHNOLOGY

DIGs

GrizGeo

The Geological Society

CGGVERITAS

E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

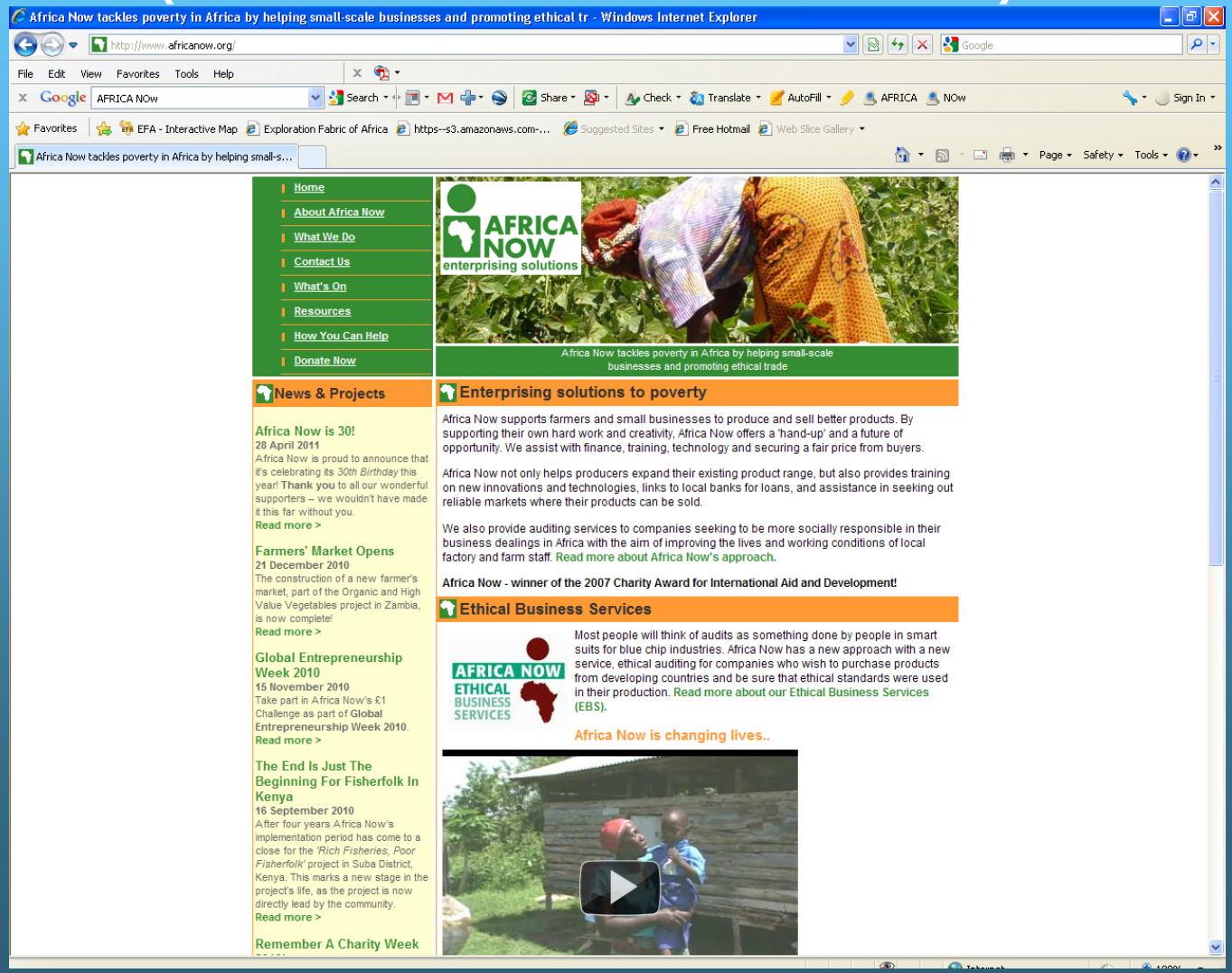
Exploration GIS Sponsorship

The EFA project is sponsored by a number of companies with interest in Africa. Financial contributions from sponsors are being used to prepare the Exploration GIS, the Interactive Internet map, hardcopy maps and other digital output which will be published by AAPG. In return sponsors will have unrestricted use the GIS, all hardcopy and digital products. Access to the GIS is only available to sponsors. This final GIS will be completed during March 2012, prior to that time a number of beta versions and other digital files will be available for download via the sponsor area on this web site. EFA sponsorship is still available to new companies and organisations.

The EFA Team gratefully acknowledges the sponsorship and support of the following companies and organisations:
AAPG, Afren, BHP, BP, CGG Veritas, Chevron, Faroe Petroleum, Fugro, The Geological Society, Hanno Resources, Hess, HRT Canada, ION, Lynx, Maersk, Marathon, Moyes & Co, Murphy, Nexen, Nippon, Ophir, PGS, Rift Energy, RWE, Sapetro, Sasol, Shell, Serica, Sipetrol, Statoil, Svenska, TGS, The Geological Society,Total, and Tullow

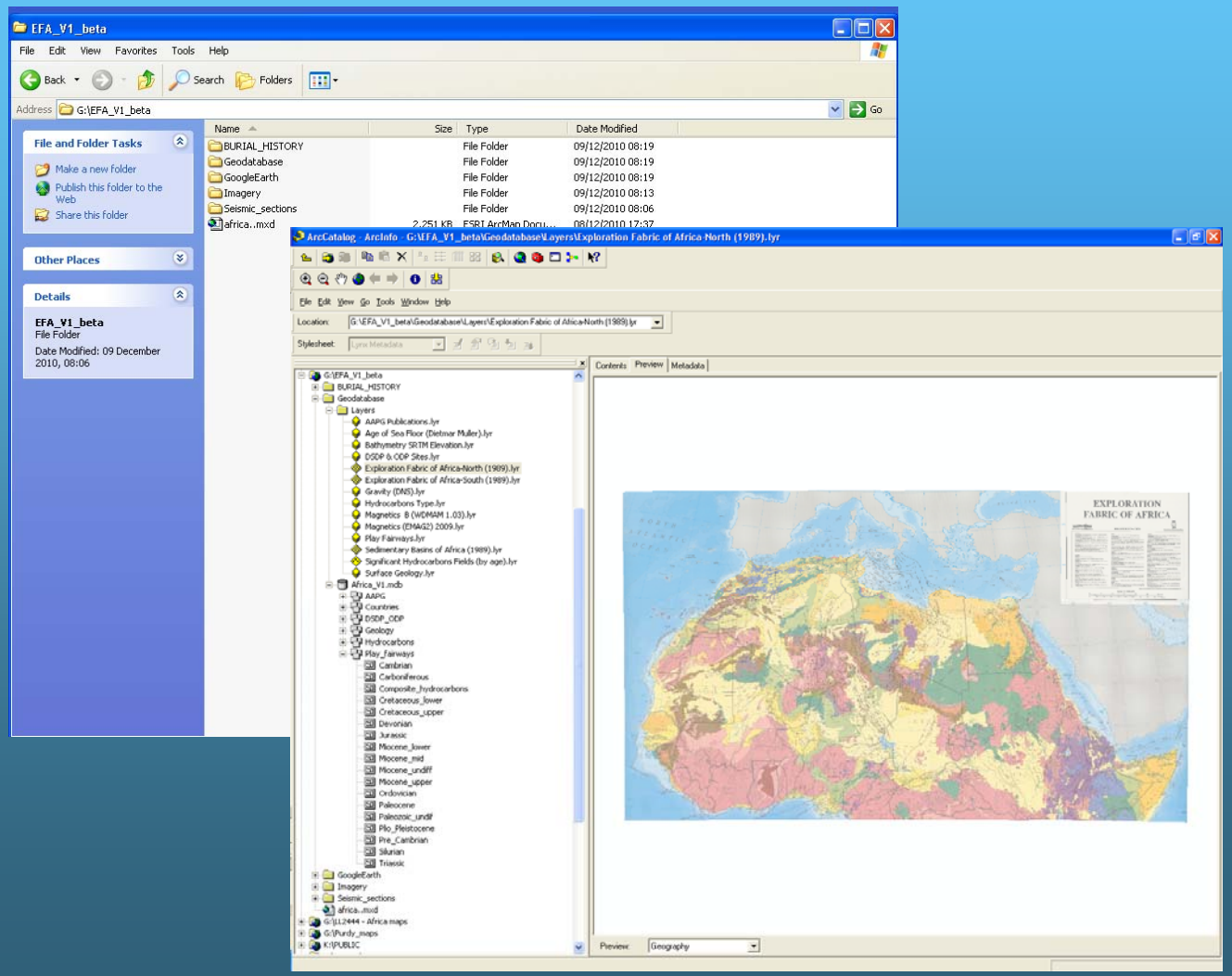
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

CHARITABLE DONATION TO AFRICA NOW (NOW PART OF SELF HELP AFRICA)



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ARCGIS PROJECT

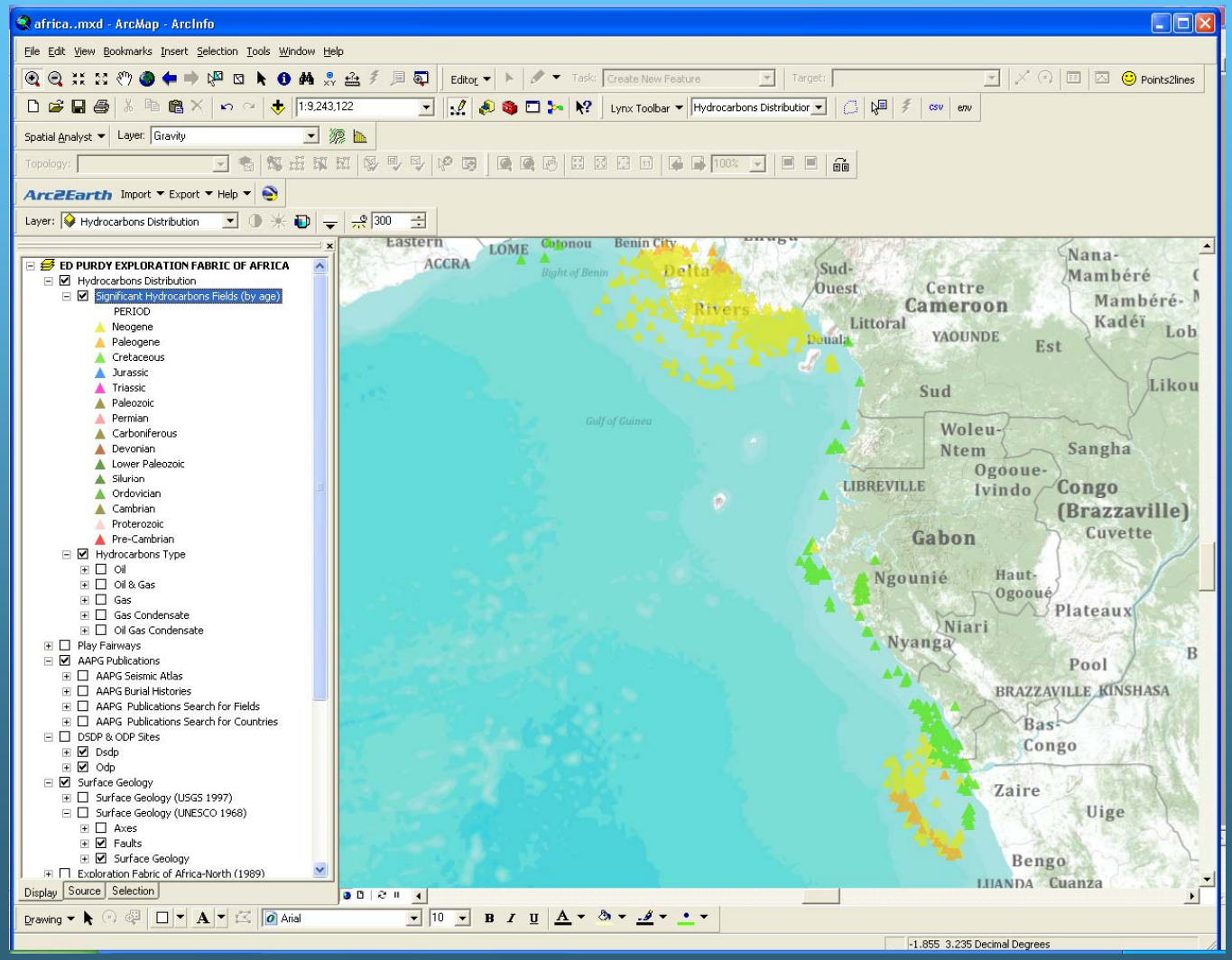


E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

The following series of slides show the various layers in the project starting with the distribution of hydrocarbons fields (shown by age). The field locations have some basic attributes including field name, hydrocarbon type, chronostratigraphic and lithostratigraphic information. The hydrocarbon types layer has been constructed by creating a 10 km buffer around known hydrocarbons. These buffers have then been merged where they overlap and then smoothed. The various play fairway layers show information at a very preliminary stage. Currently they show the distribution of hydrocarbons according to age and have been created using the same technique as described for hydrocarbons type. In future versions this basic play fairway data will be supplemented with additional facies and source rock information

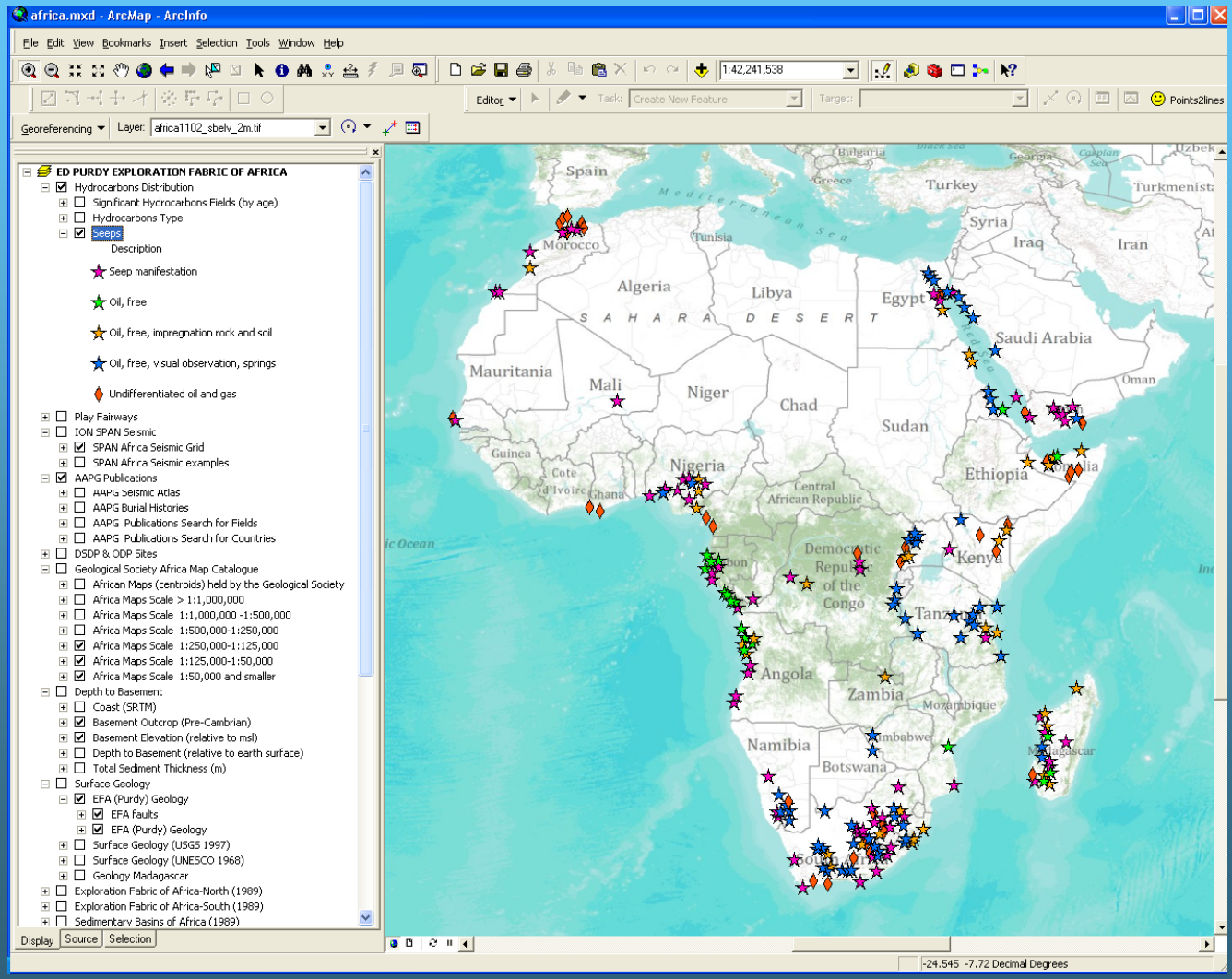
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

FIELD DISTRIBUTION



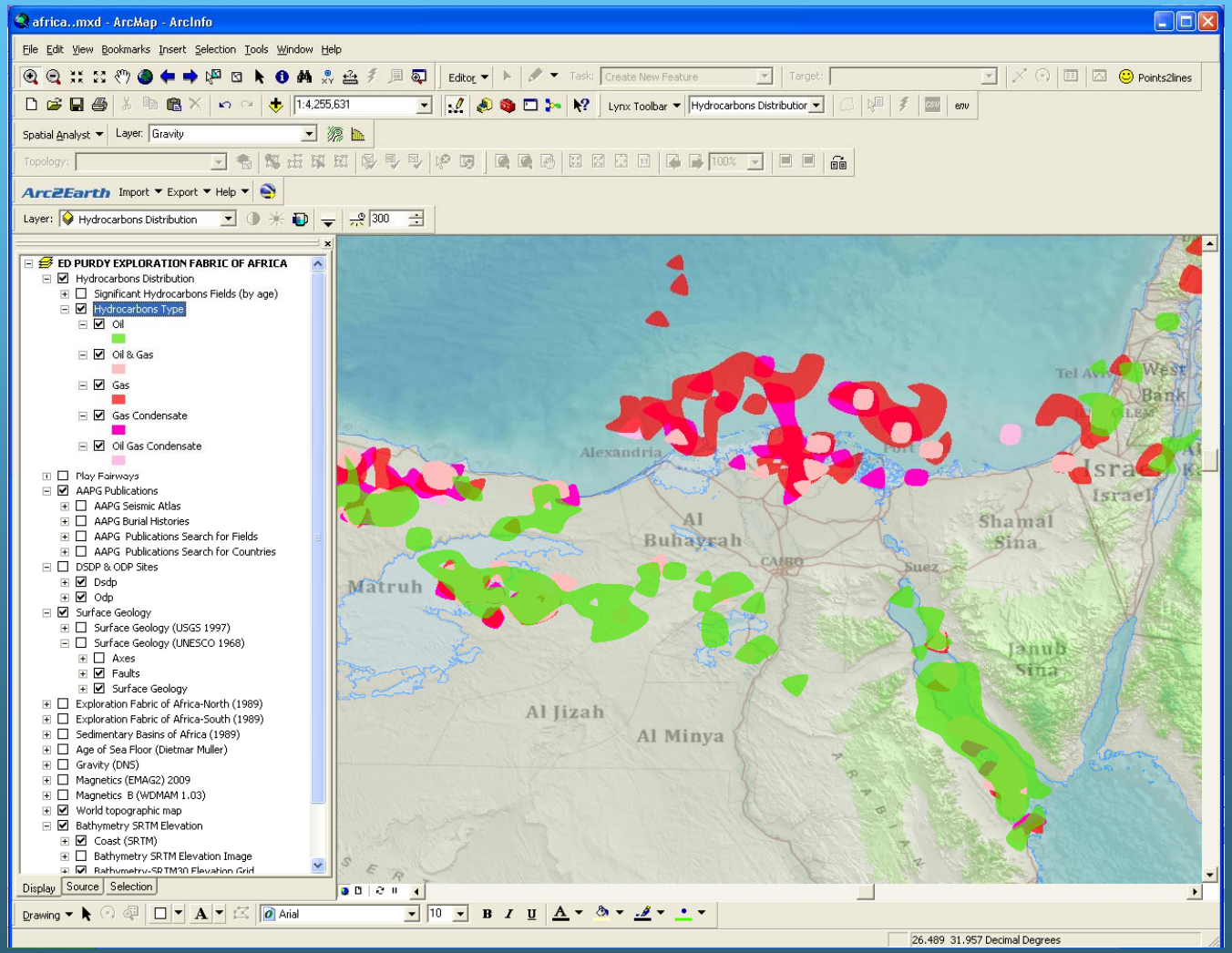
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

SEEPS



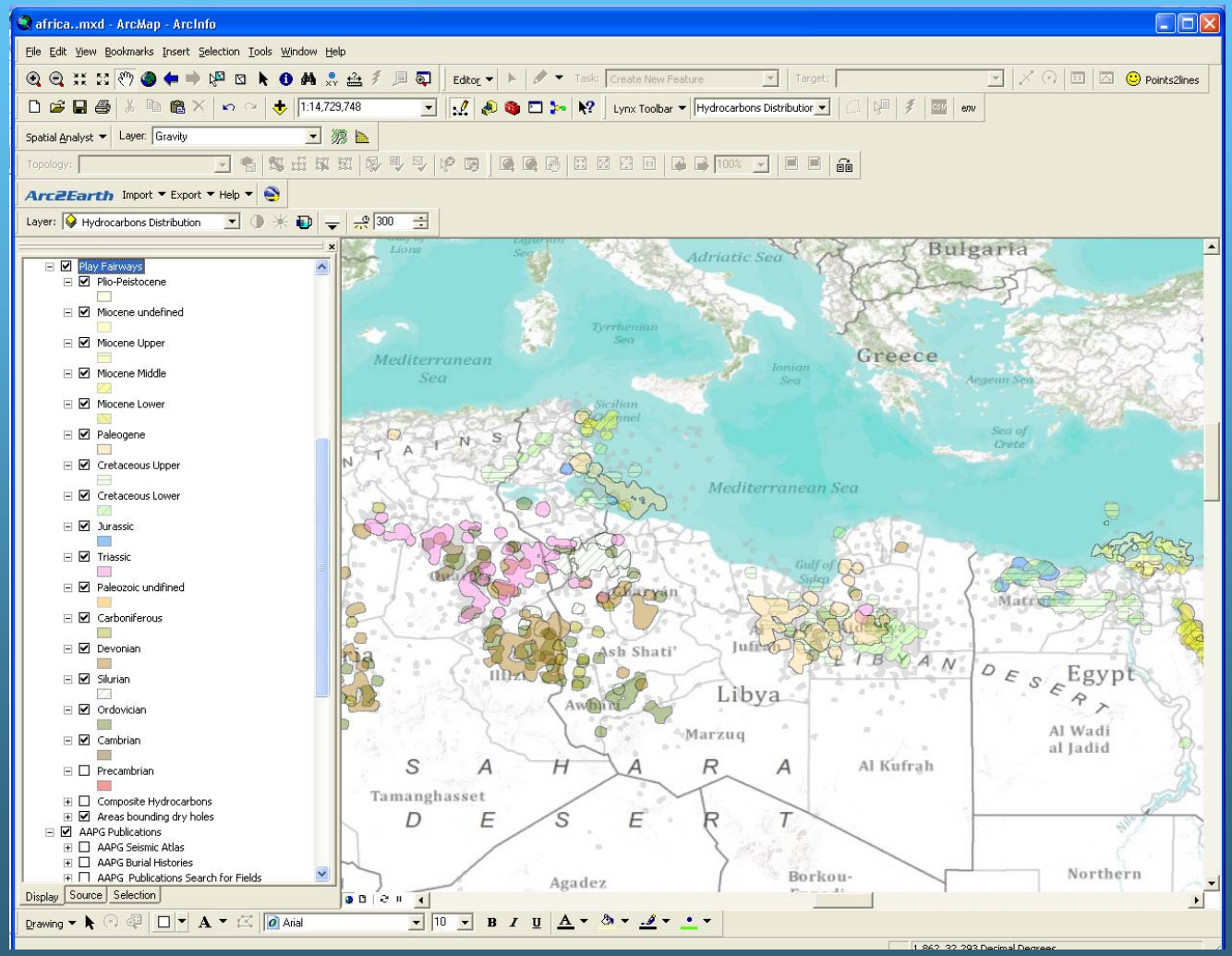
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

HYDROCARBONS TYPE



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

PLAY FAIRWAYS



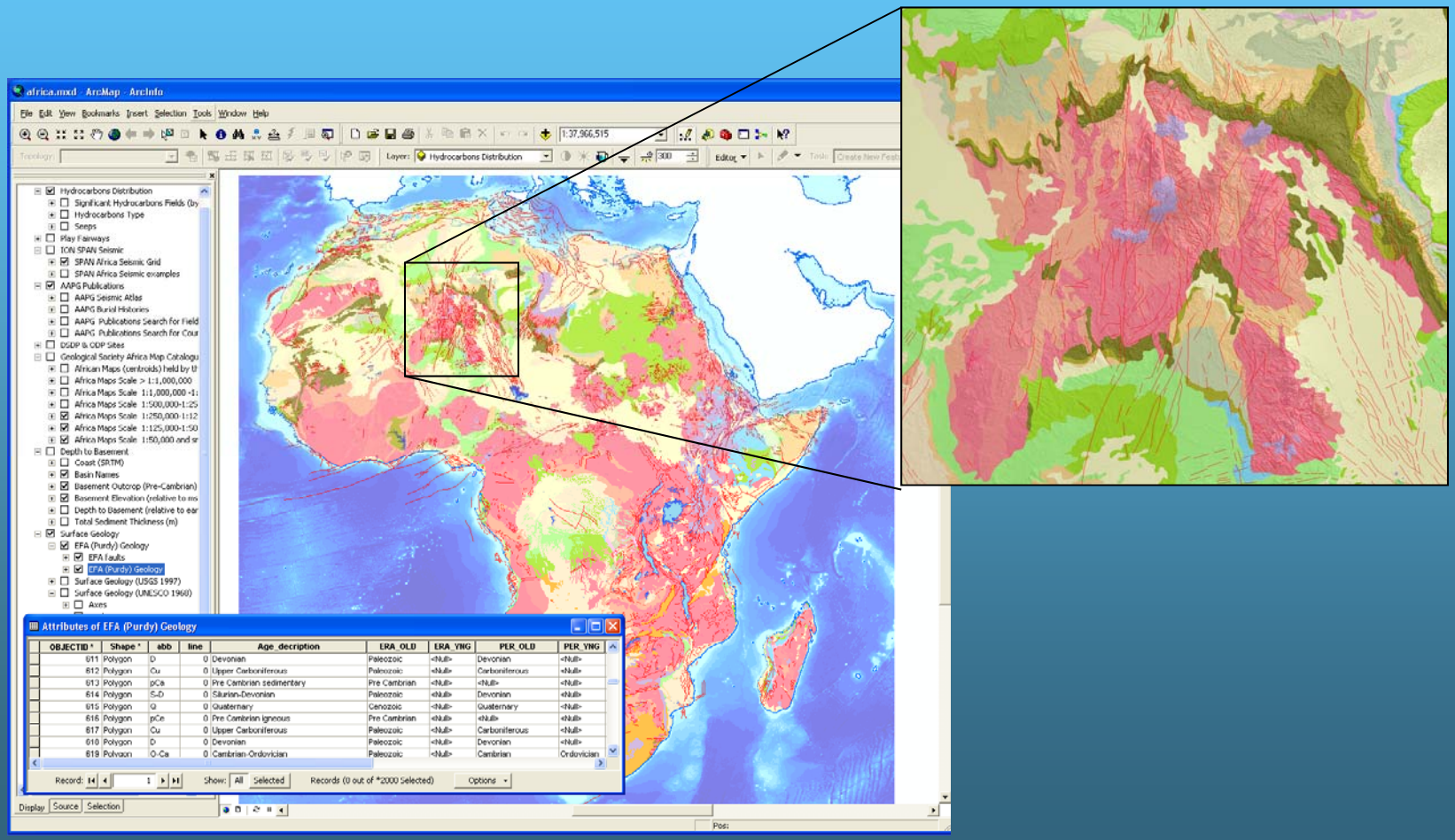
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

DIGITAL GEOLOGY OF AFRICA

There are currently three digital geology datasets for Africa included in the project, these are the E.G. Purdy 1989 Exploration Fabric of Africa data (now fully vectorised and attributed) USGS 1997 data and a digital geological dataset derived from the 1968 UNESCO maps of Africa. These data contain polygon topologies which shows the outcrop geology and each polygon has been attributed with both chronostratigraphic and lithostratigraphic information. In addition certain elements (faults and sediment thickness) have been included from the CGMW Tectonic map of Africa (2010) The original 1989 Exploration Fabric of Africa and African Basins map images have been georectified and included in the project for reference purposes. Image data showing the age of the sea floor around Africa derived from Dietmar Mullers's work is also included.

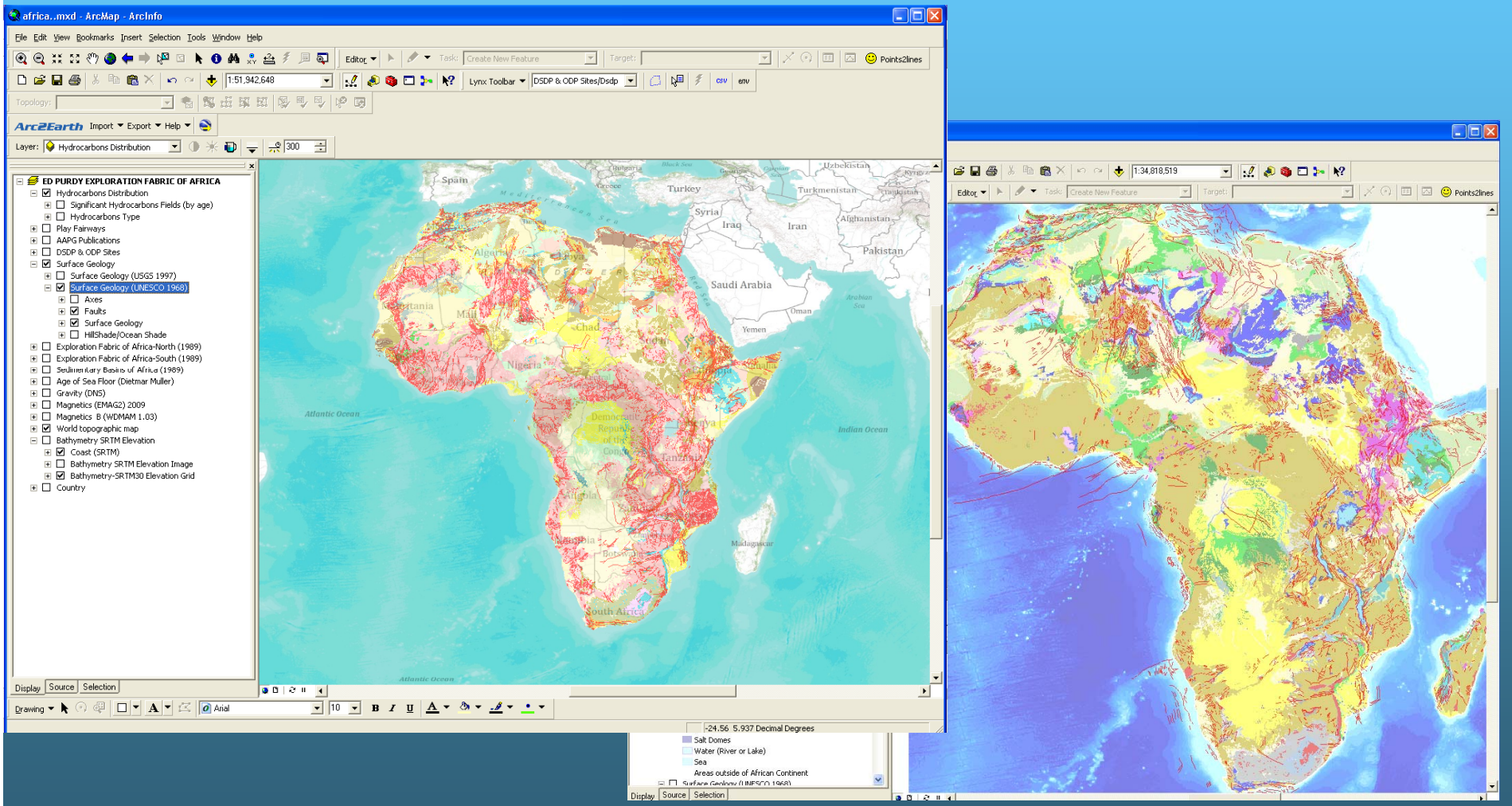
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

EG PURDY DIGITAL GEOLOGY OF AFRICA



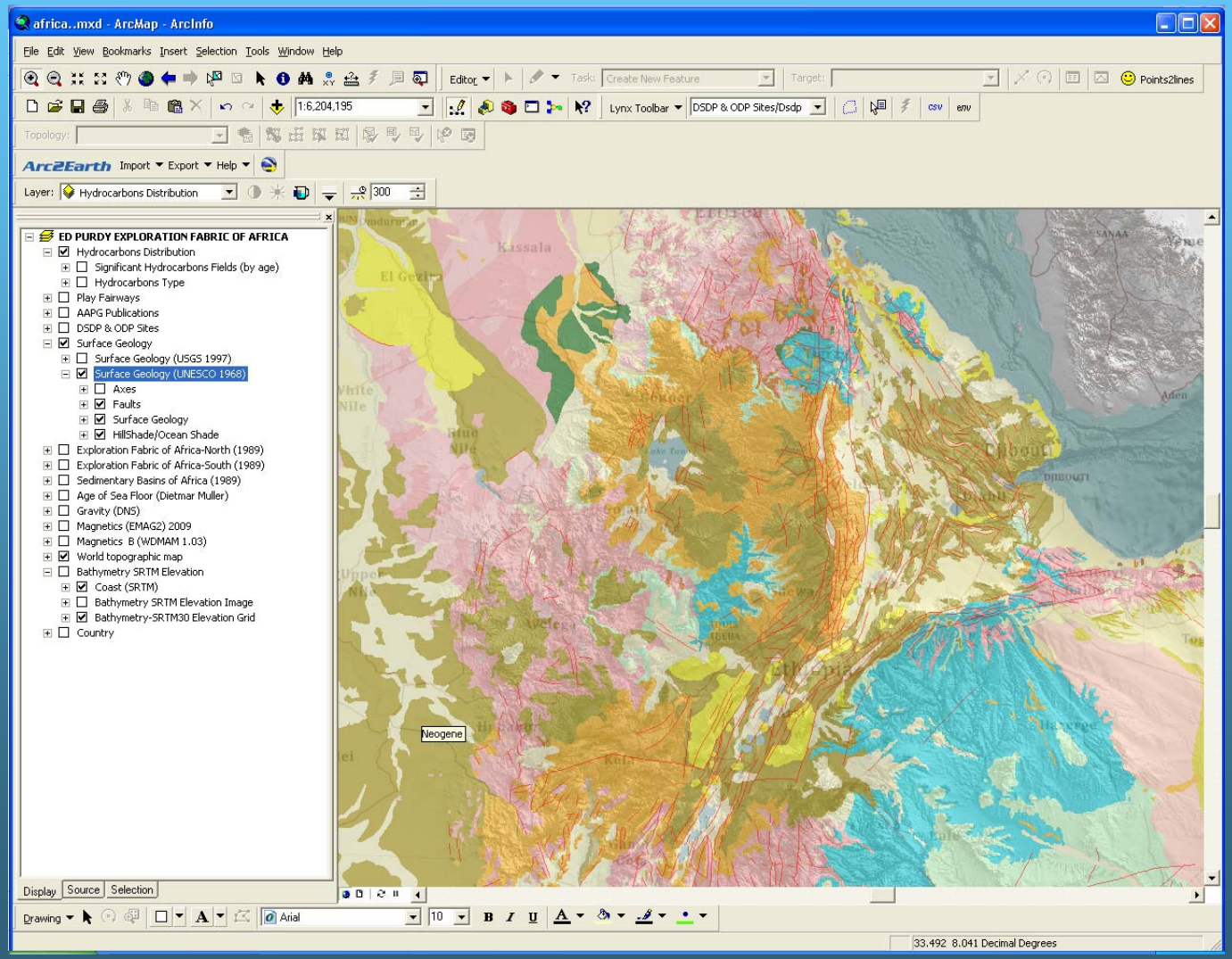
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

UNESCO & USGS DIGITAL GEOLOGY OF AFRICA



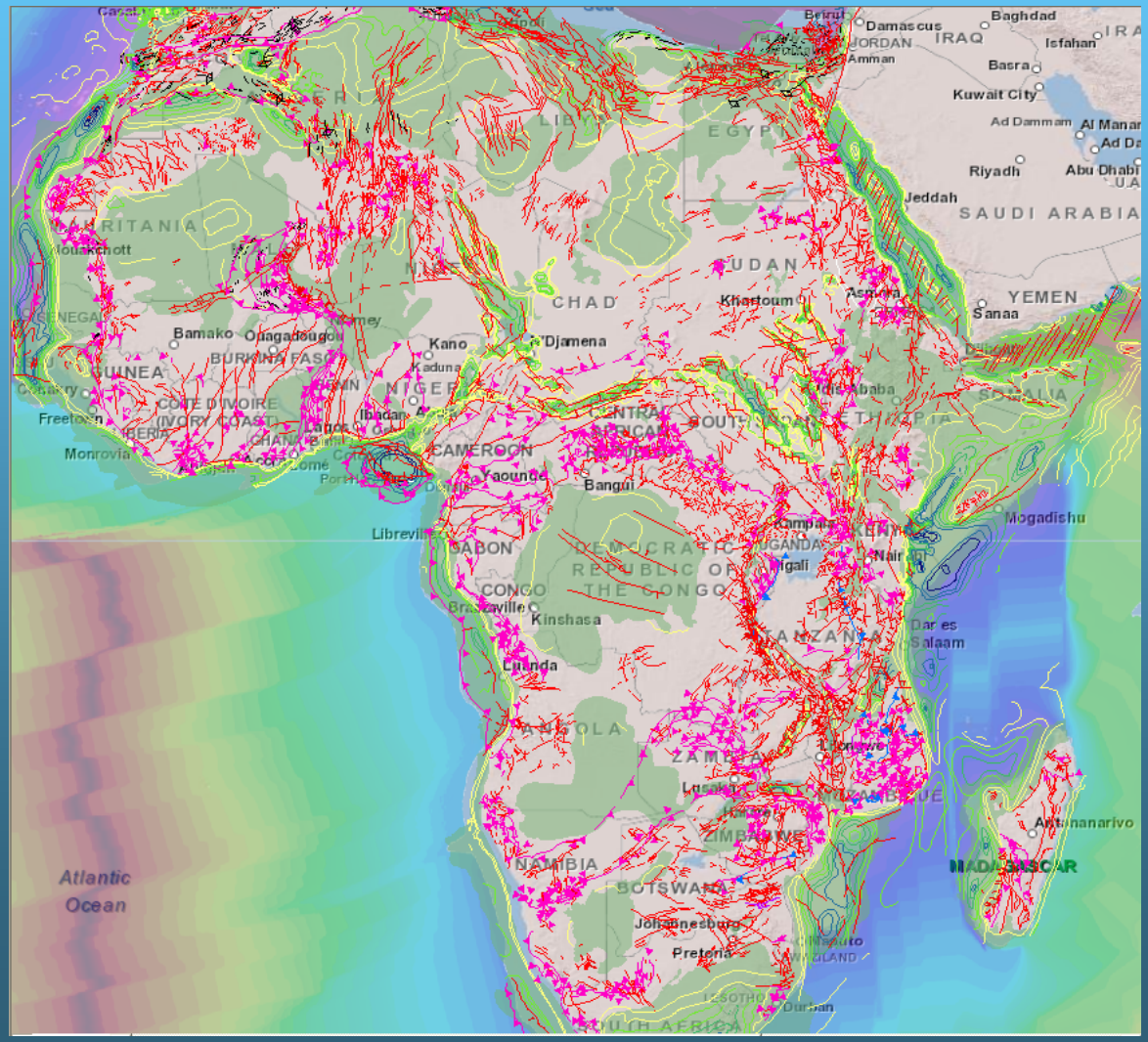
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

DIGITAL GEOLOGY OF AFRICA WITH RELIEF SHADE



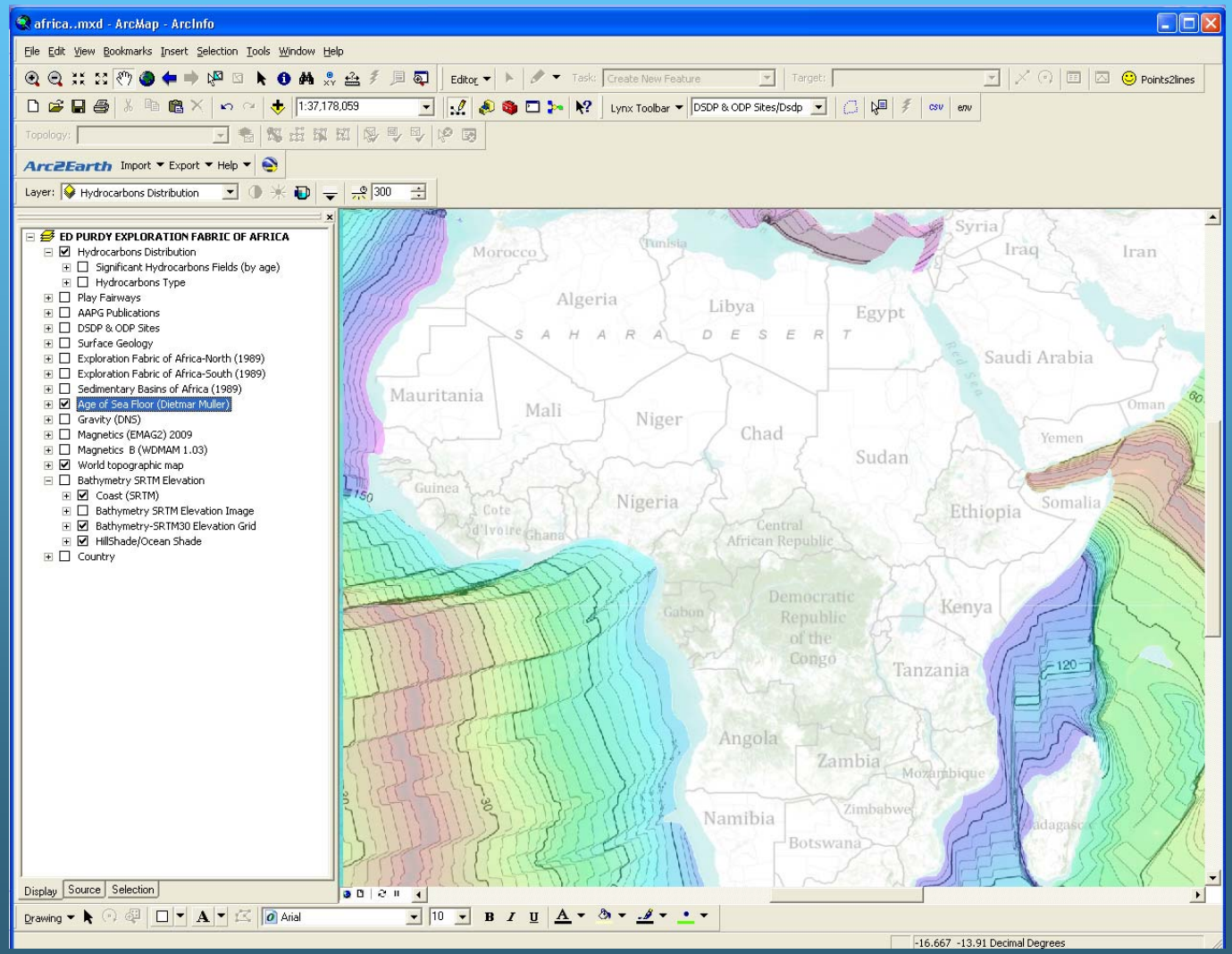
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

Tectonic Framework and Sediment thickness modified from Tectonic Map of Africa - CGMW (2010)



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AGE 0F SEA FLOOR (DIETMAR MULLER)



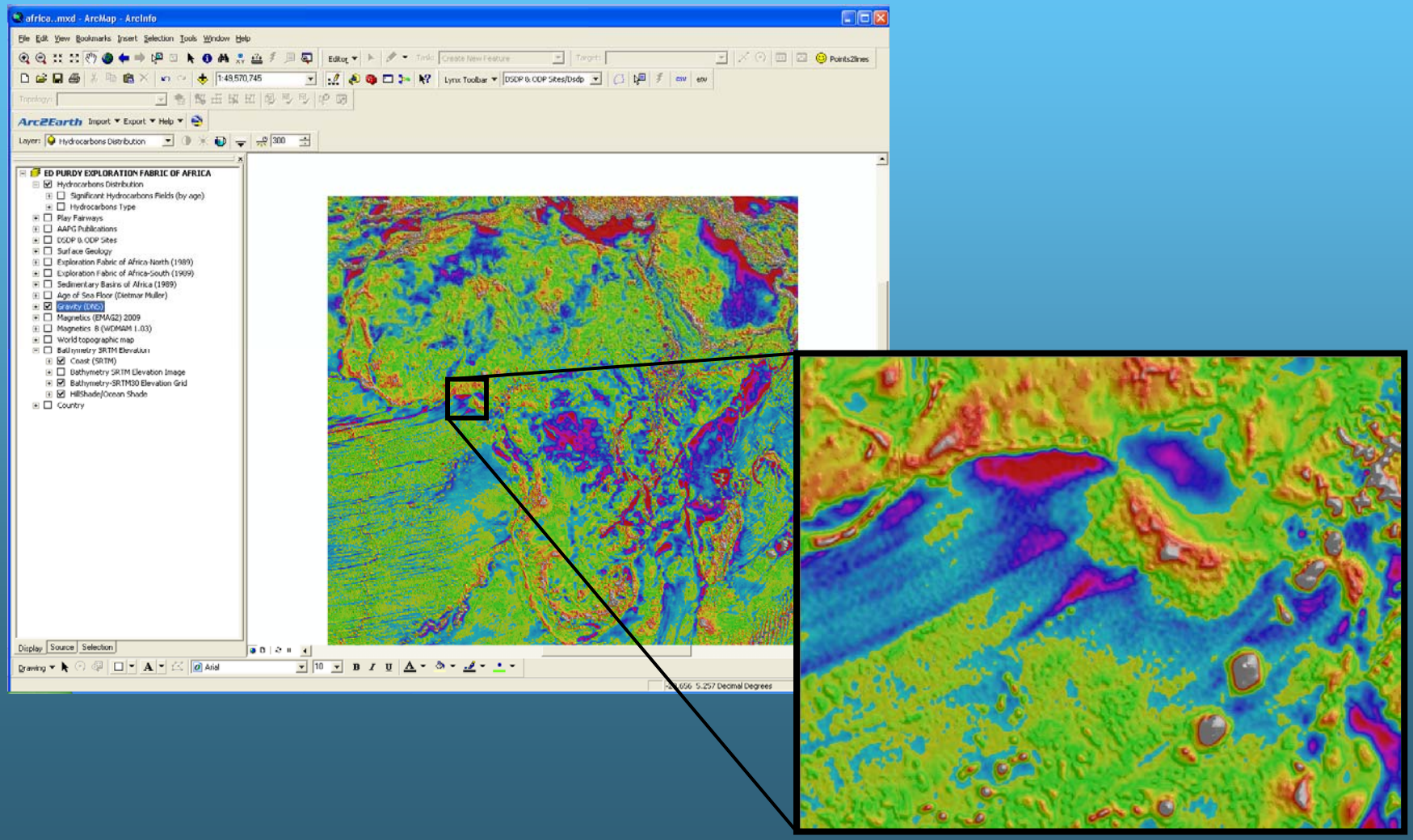
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

REMOTE SENSING DATA

Three remote sensing datasets (one gravity and two magnetics) have been converted from the original released ascii to ESRI grid format. Shade grids are provided for each of these layers in order to give an enhanced 3D effect Other grids have been prepared to show bathymetry (based on Gebco data) and relief from SRTM 90m data. These datasets have now been reprocessed by Mark Odegard and new Free Air, Bouguer and Isostatic Gravity layers are now included

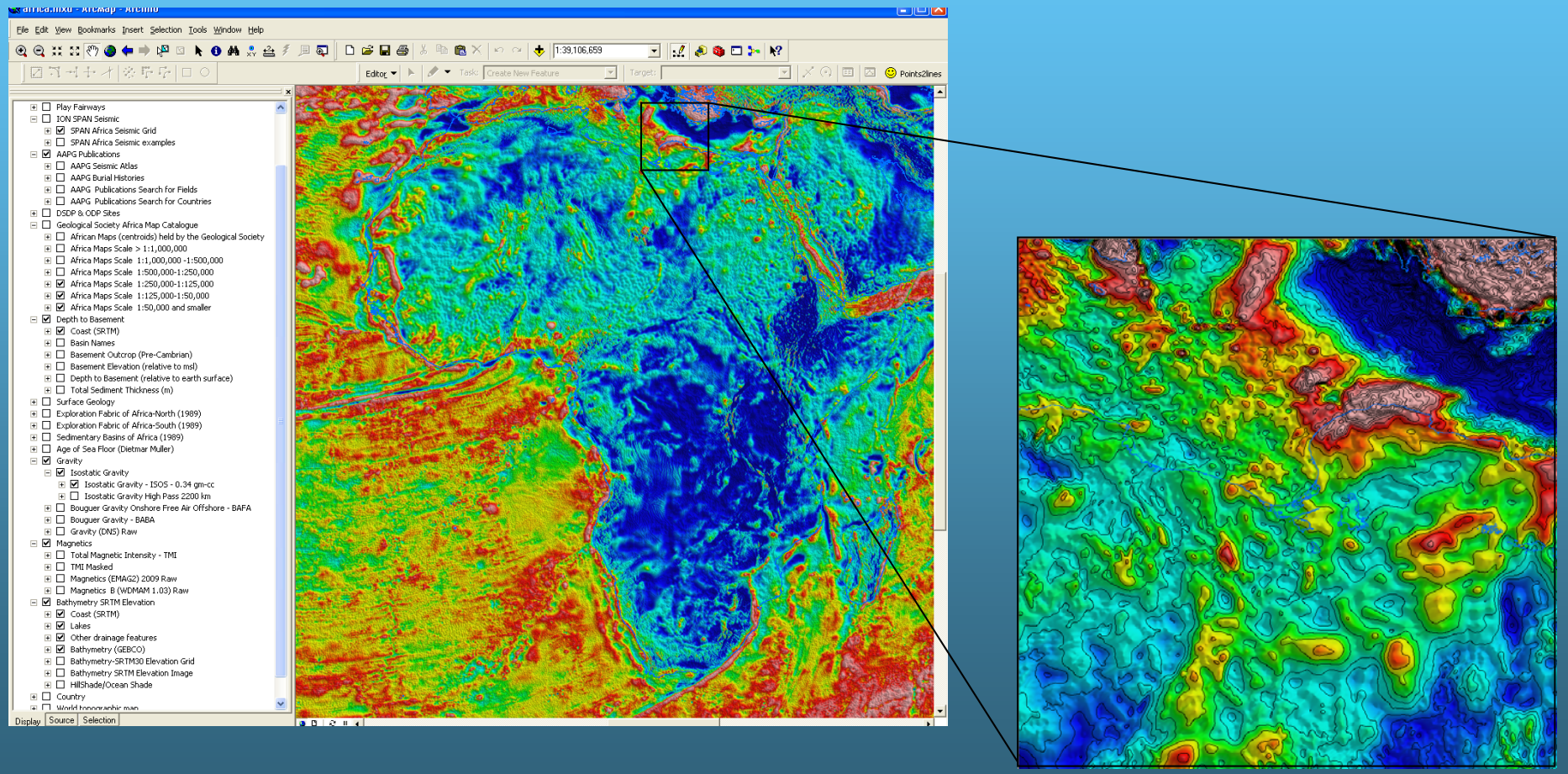
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

GRAVITY (DANISH NATIONAL SPACE AGENCY) RAW



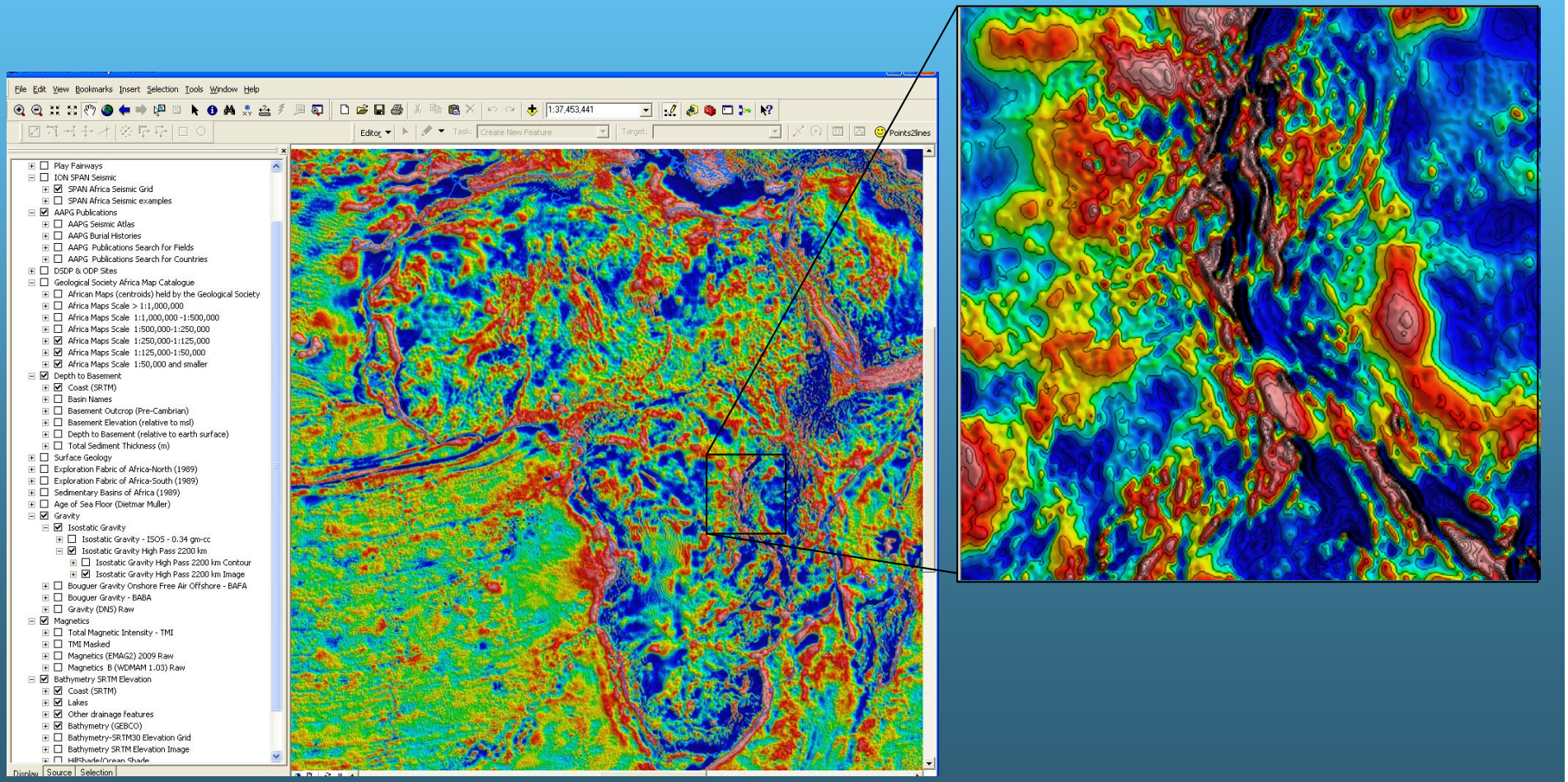
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ISOSTATIC GRAVITY (ISOC 0.34 gm/cc)



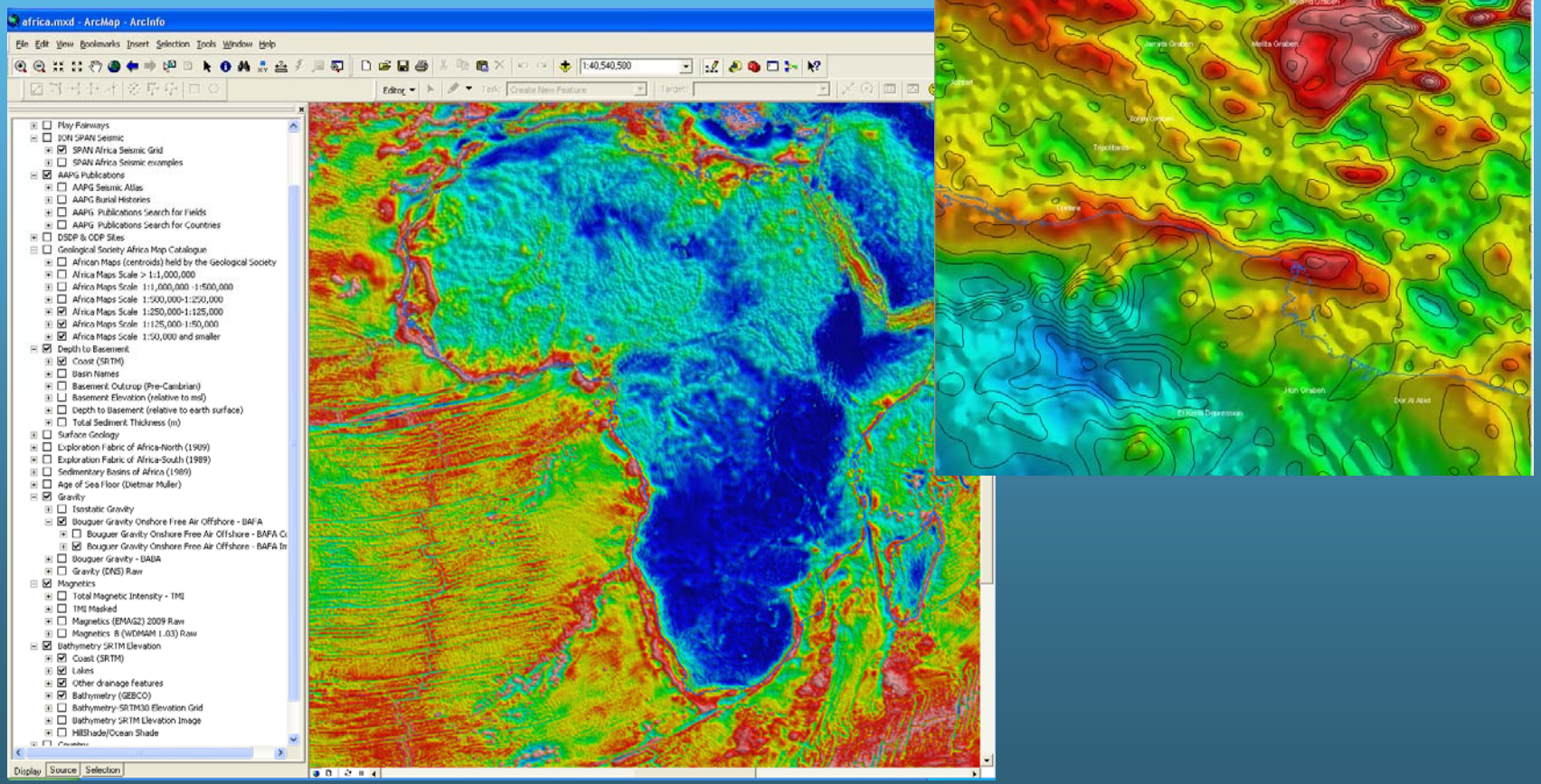
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ISOSTATIC GRAVITY (HIGH PASS 2200 km)



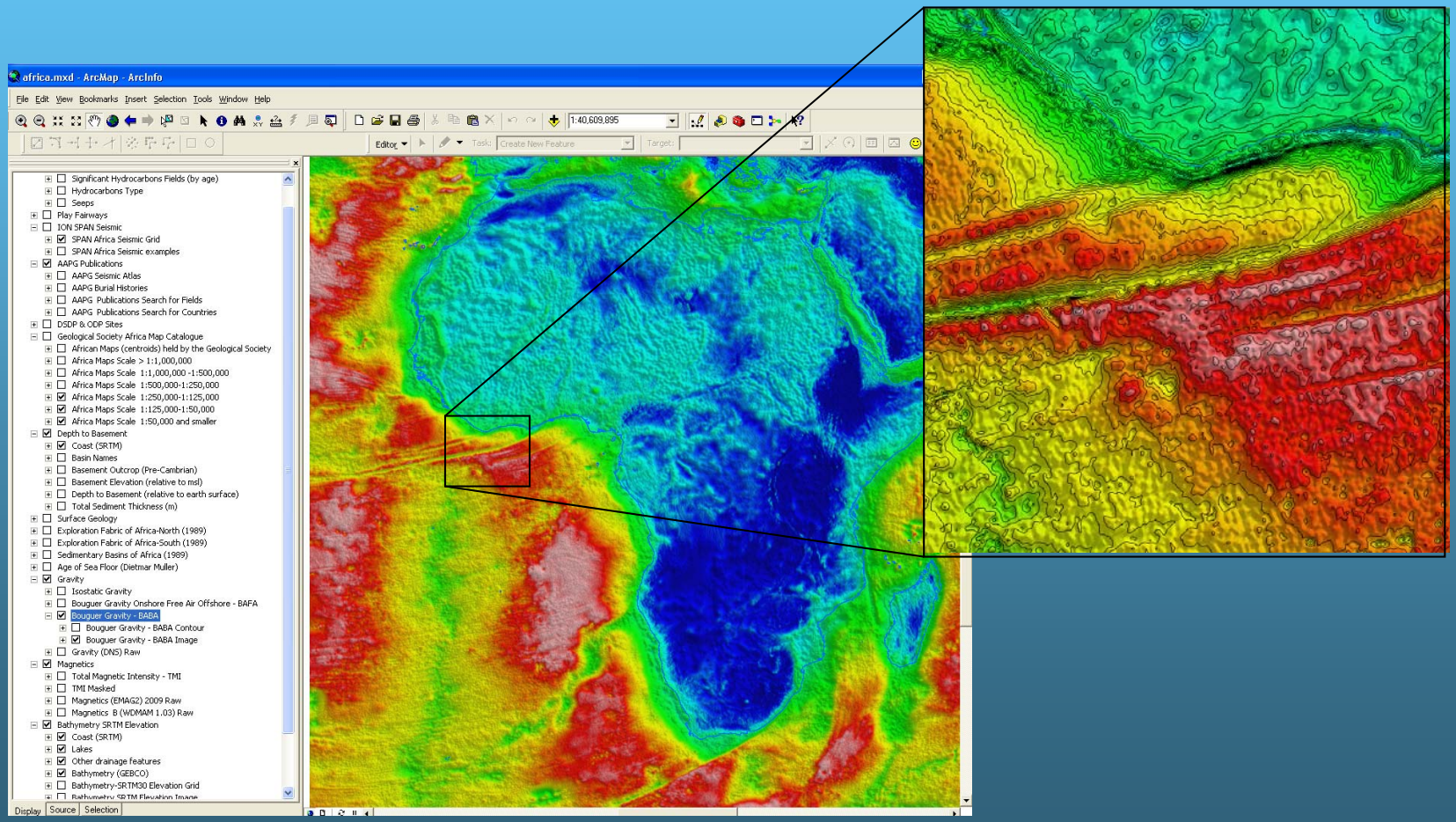
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

Bouguer Gravity Onshore Free Air Offshore - BAFA



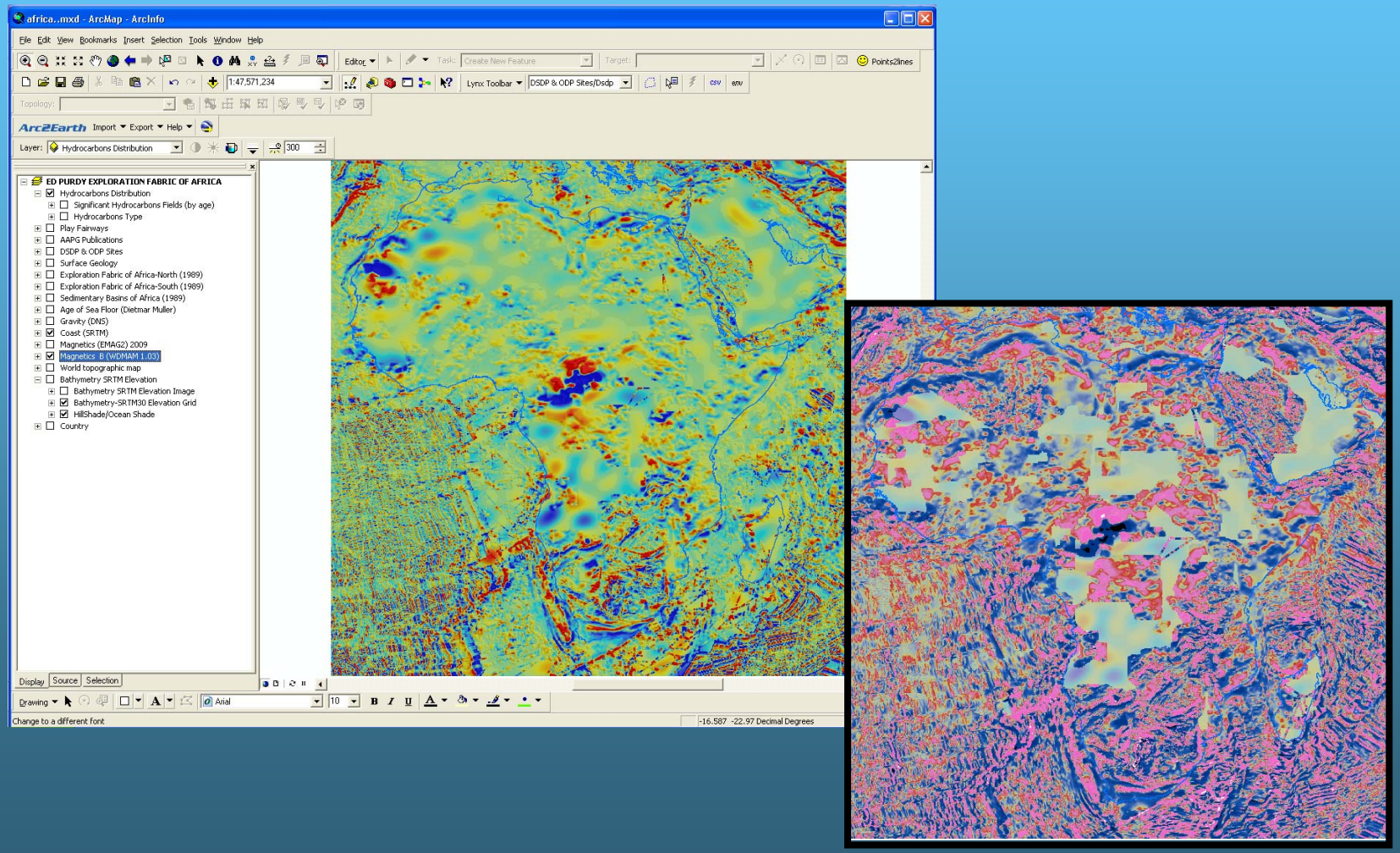
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

Bouguer Gravity - BABA



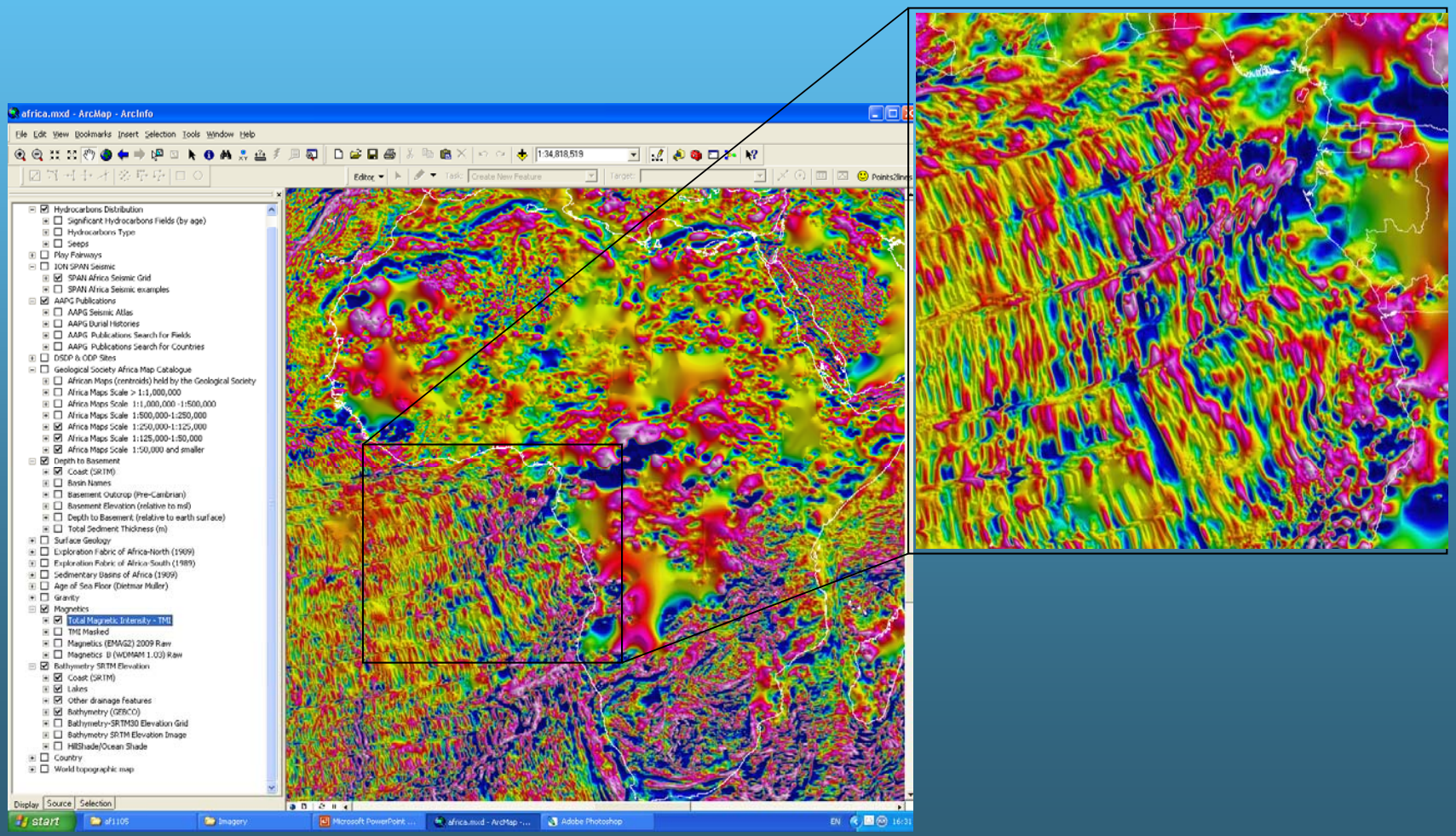
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

MAGNETICS (WDMAM 2007 AND EMAG2 2009) RAW



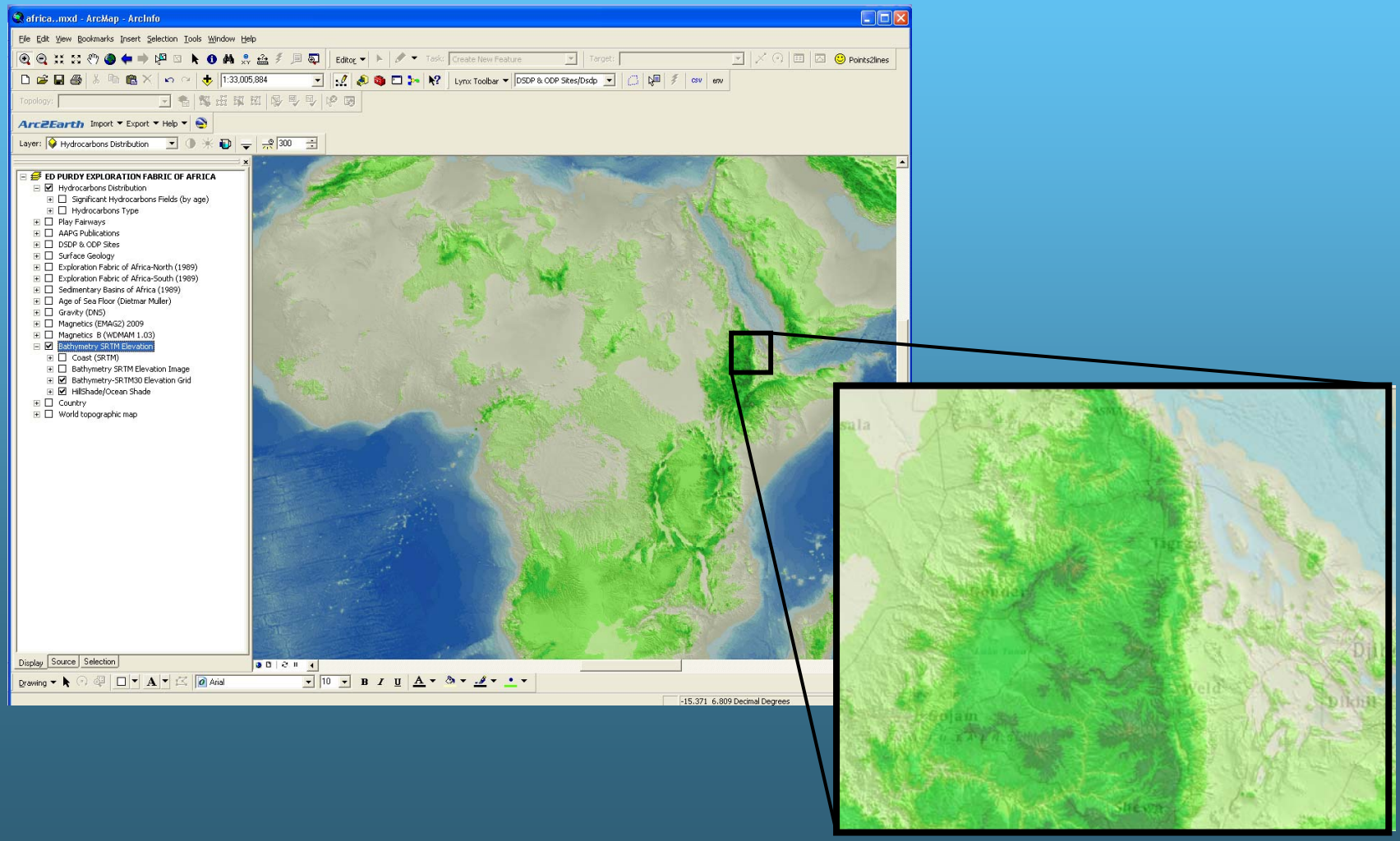
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

REPROCESSED MAGNETICS - TMI



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

SRTM ELEVATION AND GEBCO BATHYMETRY



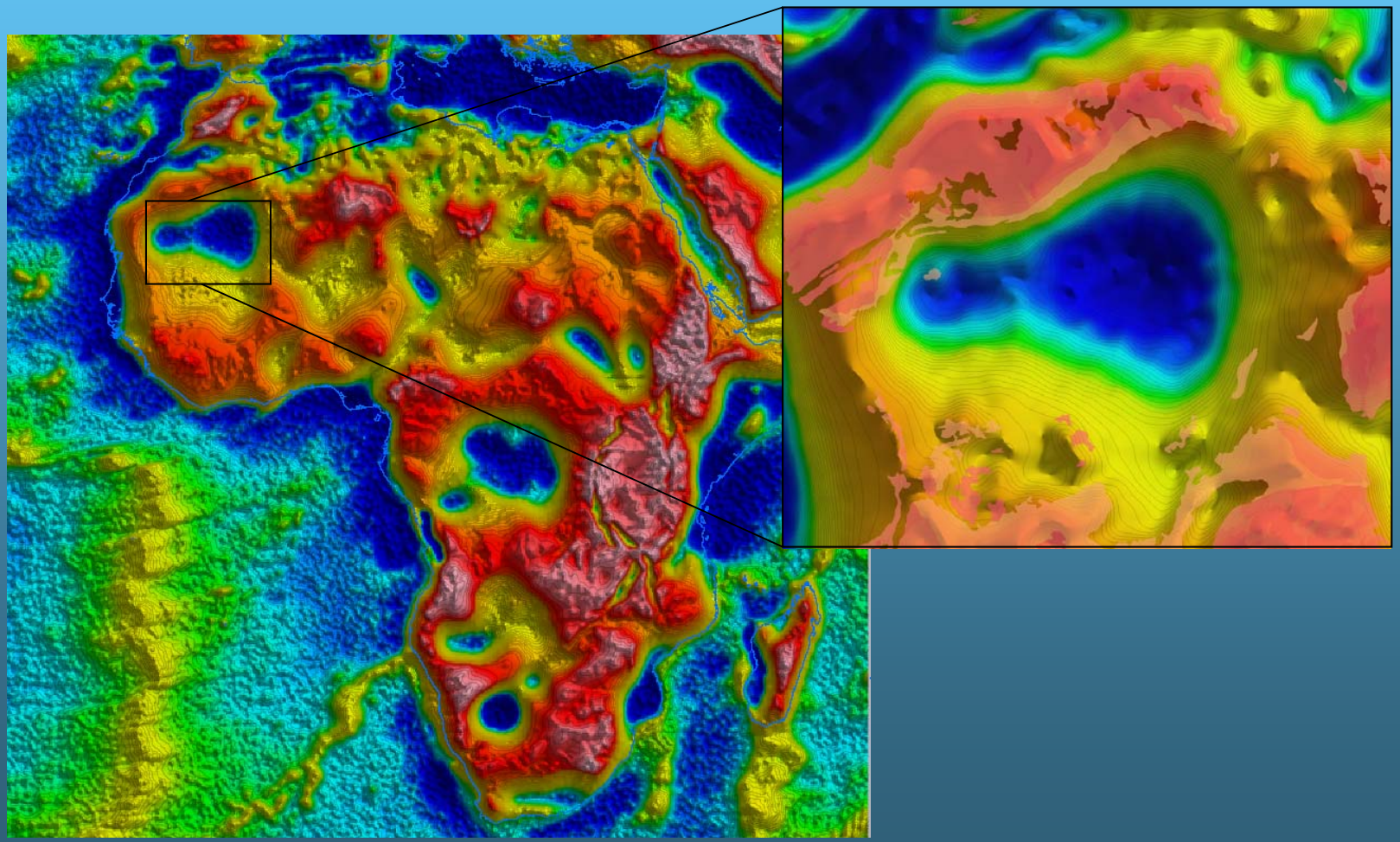
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

DEPTH-TO-BASEMENT

Depth to Basement and Total Sediment thickness maps have been prepared by Mark Odegard. They are based on the DNS Gravity and EMAG2 Magnetics. These inversions have been calibrated to a variety of G&G data (wells, seismic etc). In the East African rift the inversion technique used did not sufficiently resolve the depth to basement. For the EARS a series of grids have been included derived solely from published information. In Version 3.2 Mark has integrated these grids into the Depth-Basement and Total Sediment thickness layers

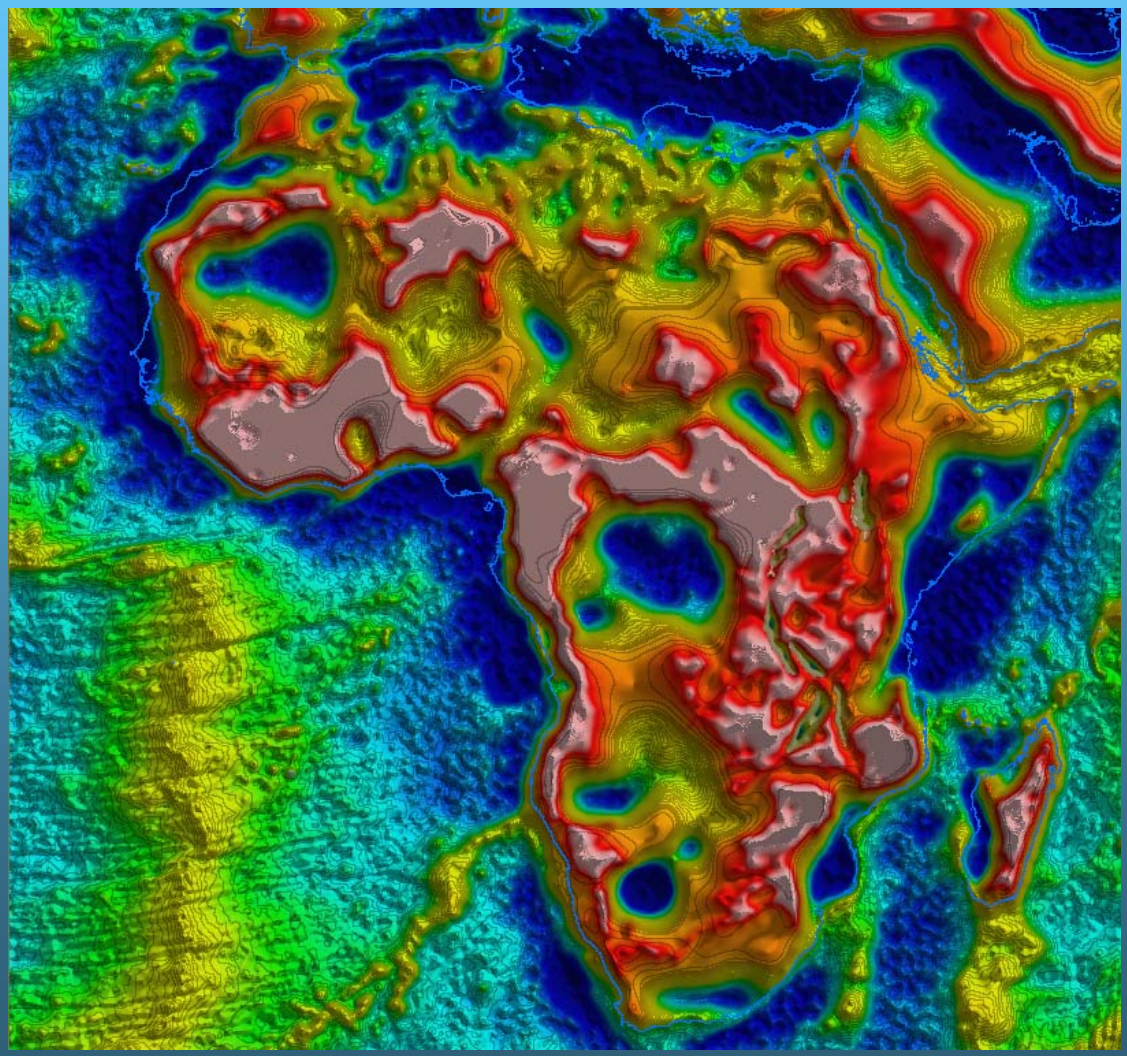
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

BASEMENT ELEVATION (MSL) GRAVITY/MAG INVERSION



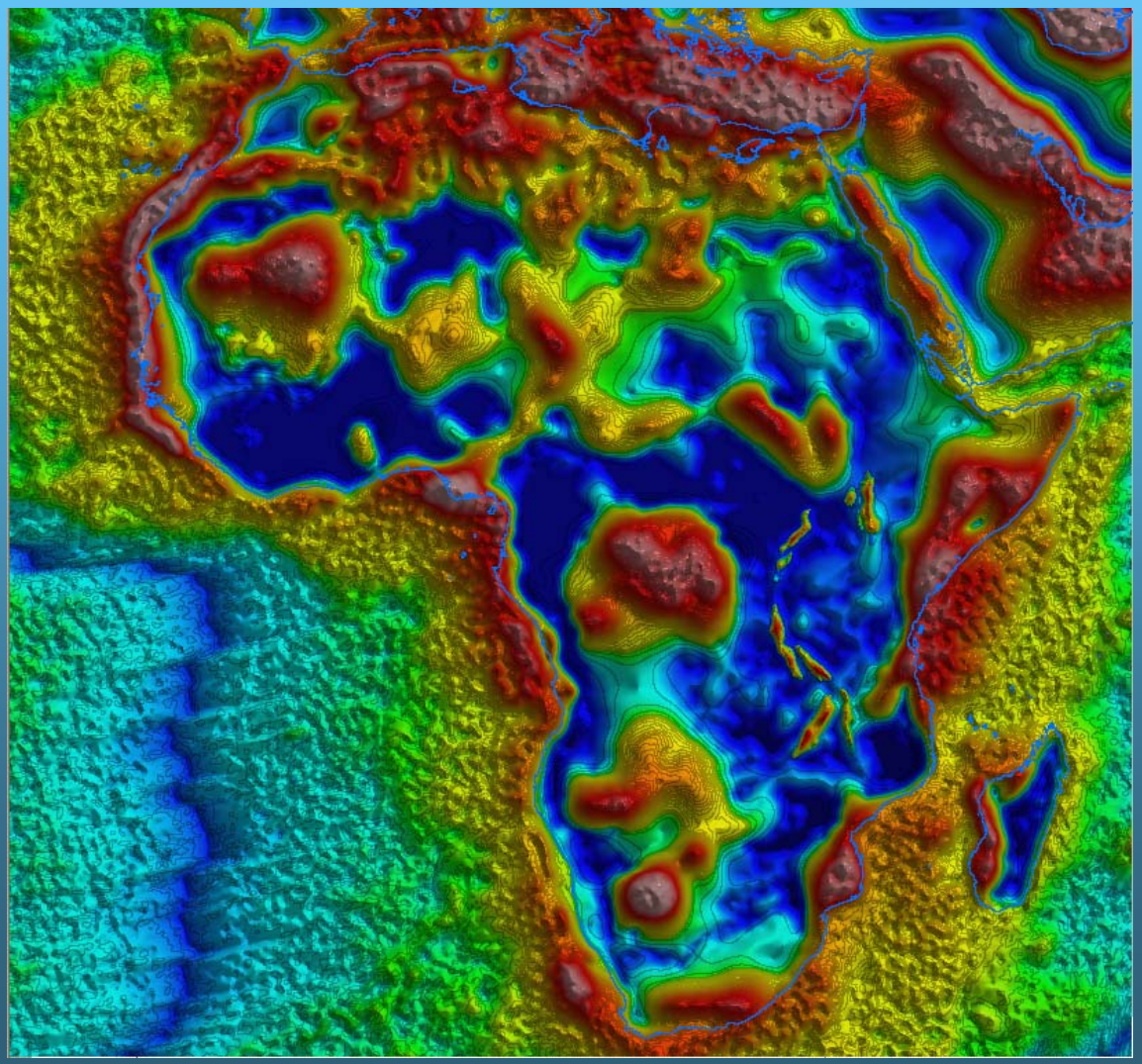
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

DEPTH-TO-BASEMENT GRAVITY/MAG INVERSION



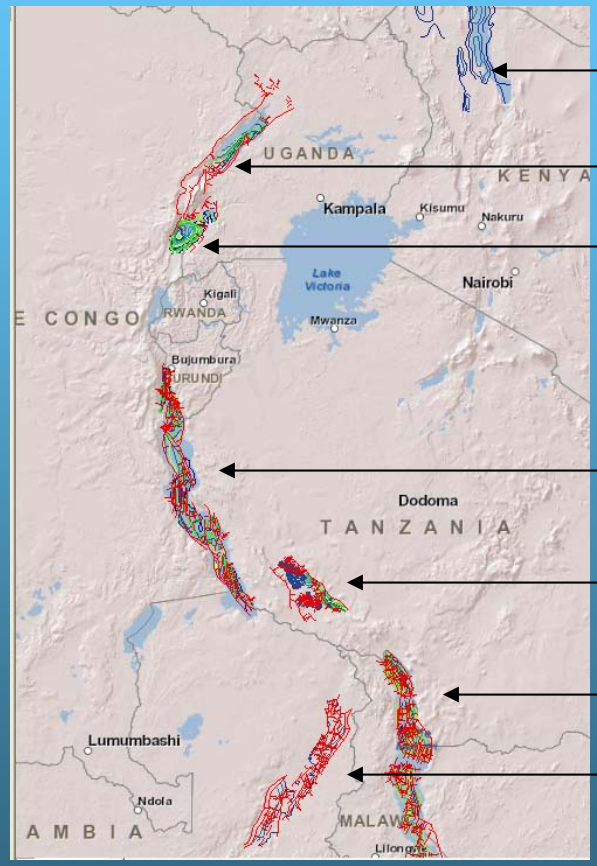
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

TOTAL SEDIMENT THICKNESS GRAVITY/MAG INVERSION



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

DEPTH-TO-BASEMENT EARS



CGMW Tectonic Map of Africa (2010)

Upcott et al (1996)

Dominion Petroleum (2011)

Sander and Rosendhal (1989)

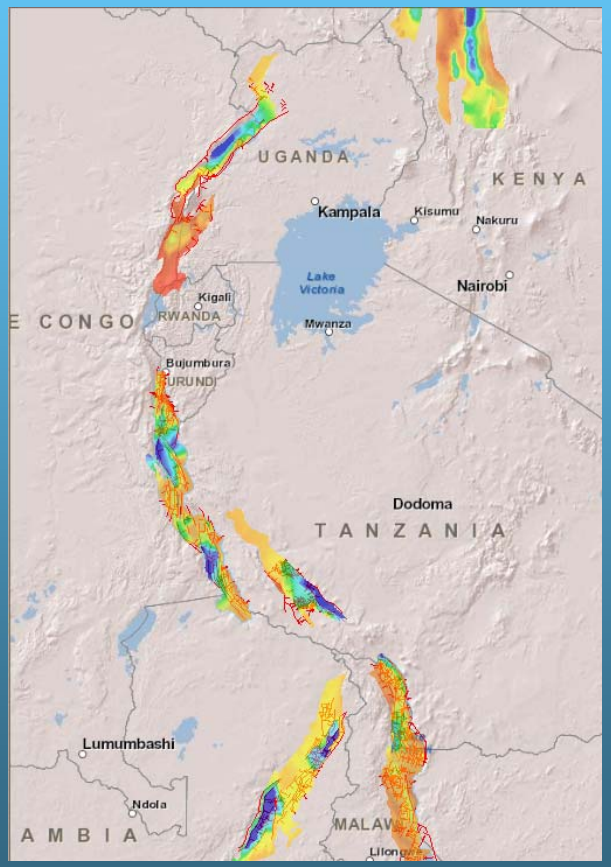
Morley et al (1999)

Flannery and Rosendhal (1989)

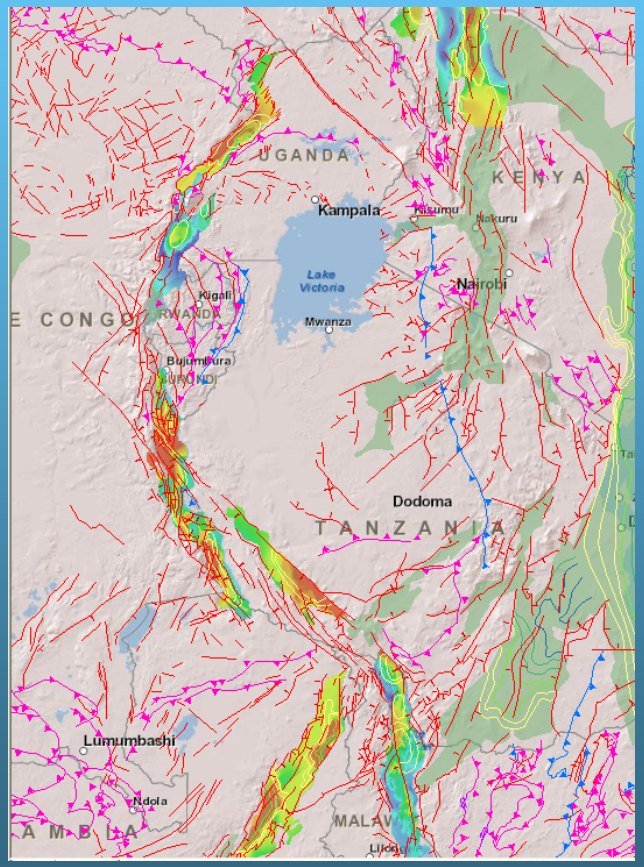
Banks et al (1995)

E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

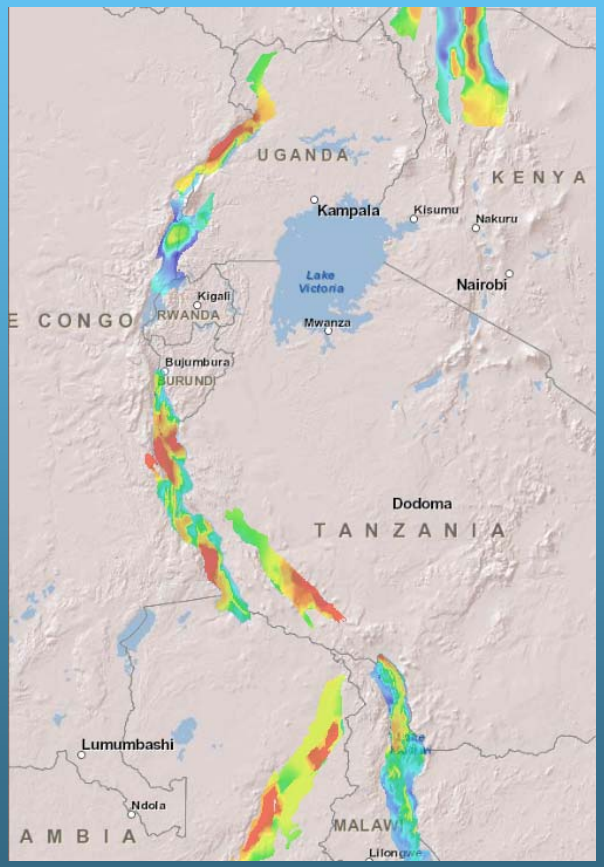
DEPTH-TO-BASEMENT EARS



Basement Elevation (msl)



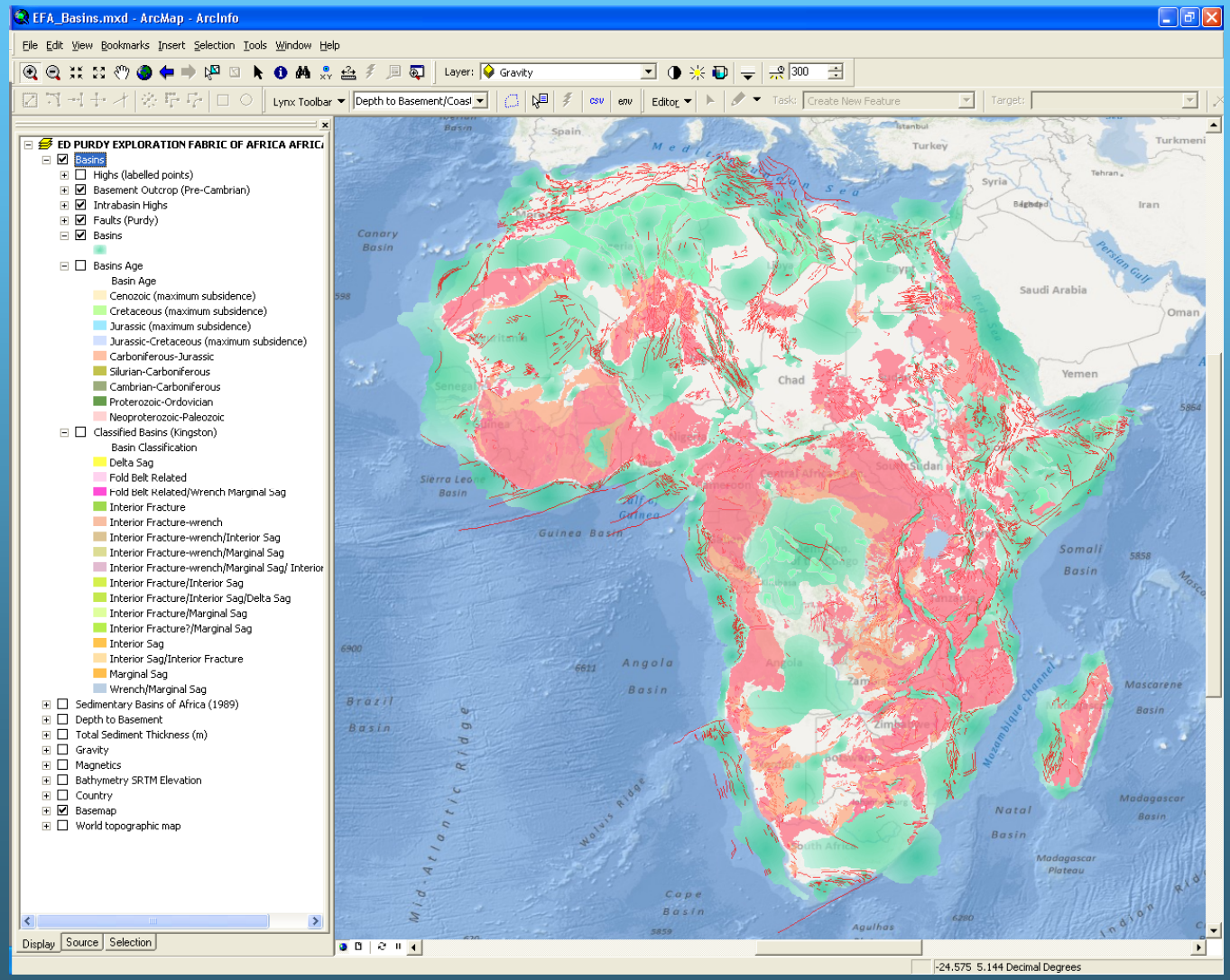
Basement Elevation (gl)



Sediment thickness (m)

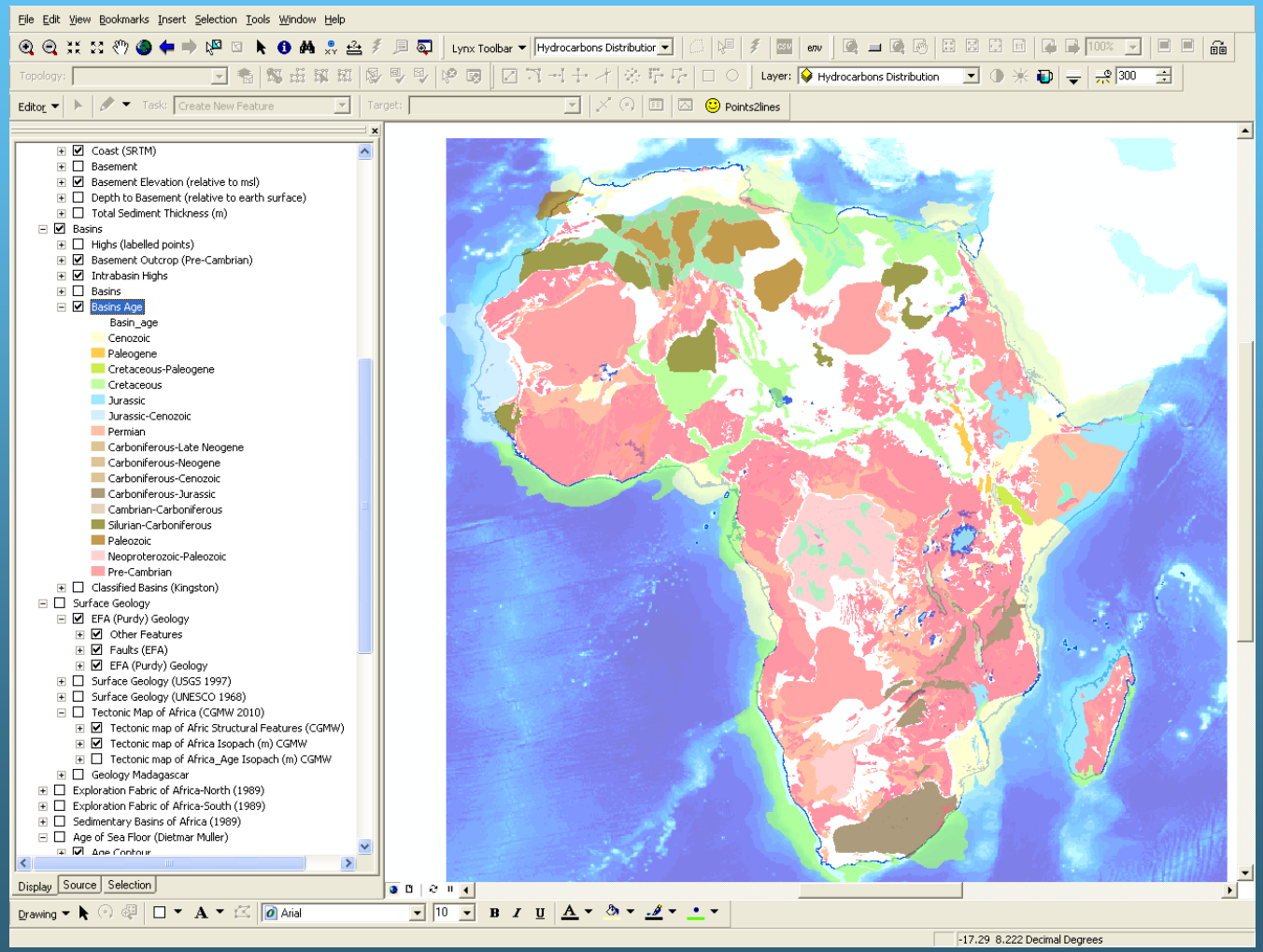
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AFRICAN BASIN LOCATION



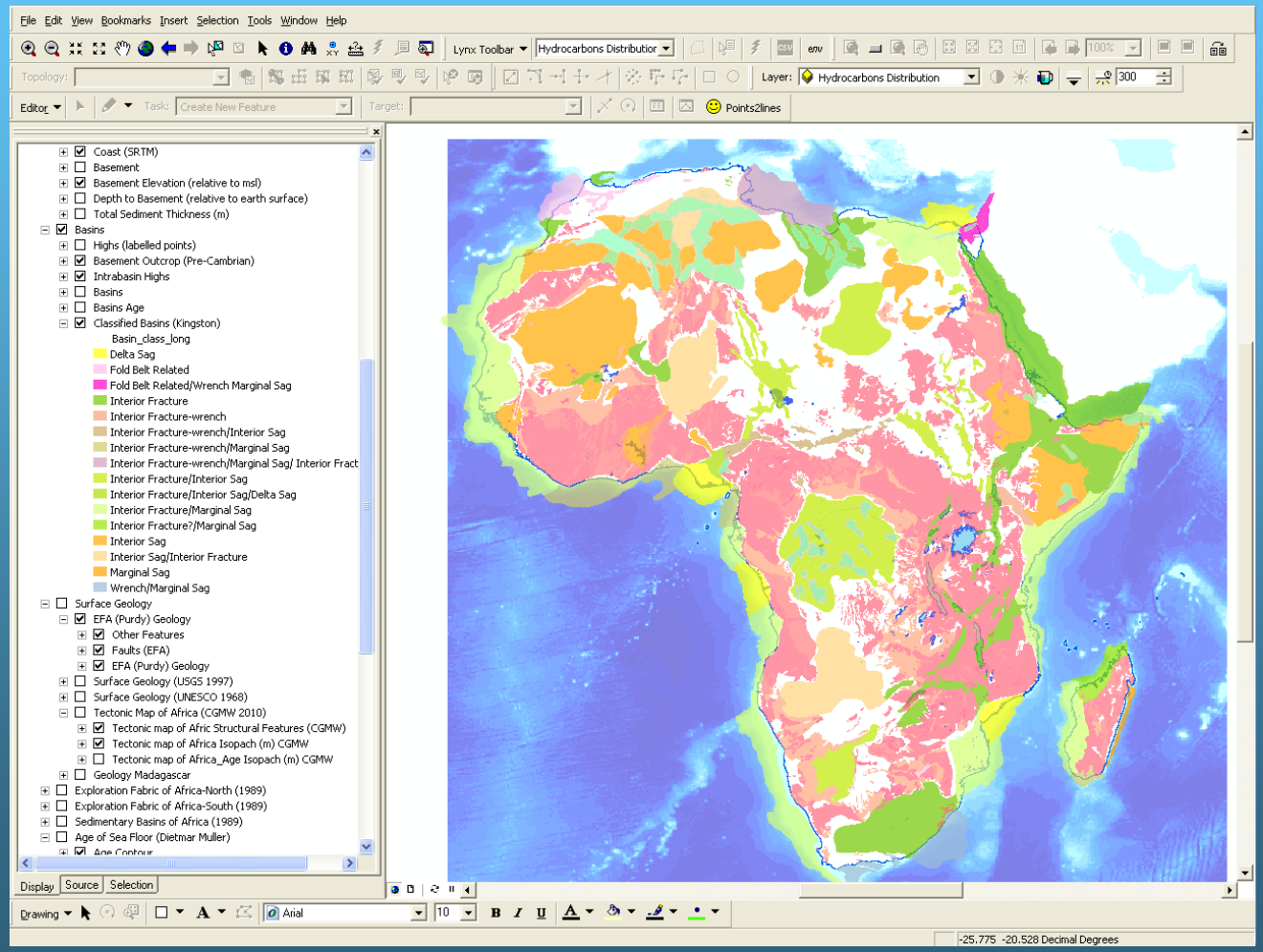
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AFRICAN BASIN AGE



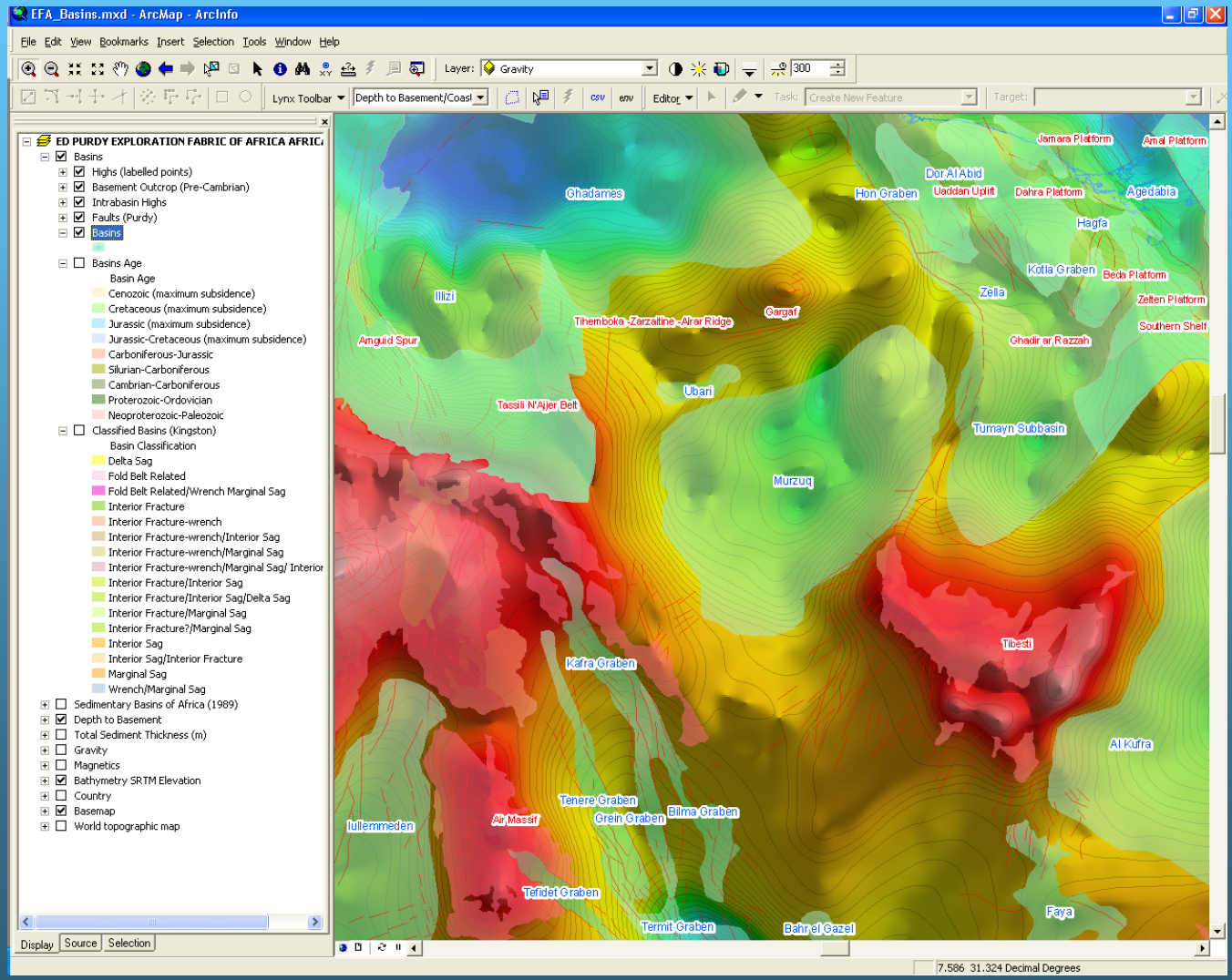
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AFRICAN BASINS (KINGSTON CLASSIFICATION)



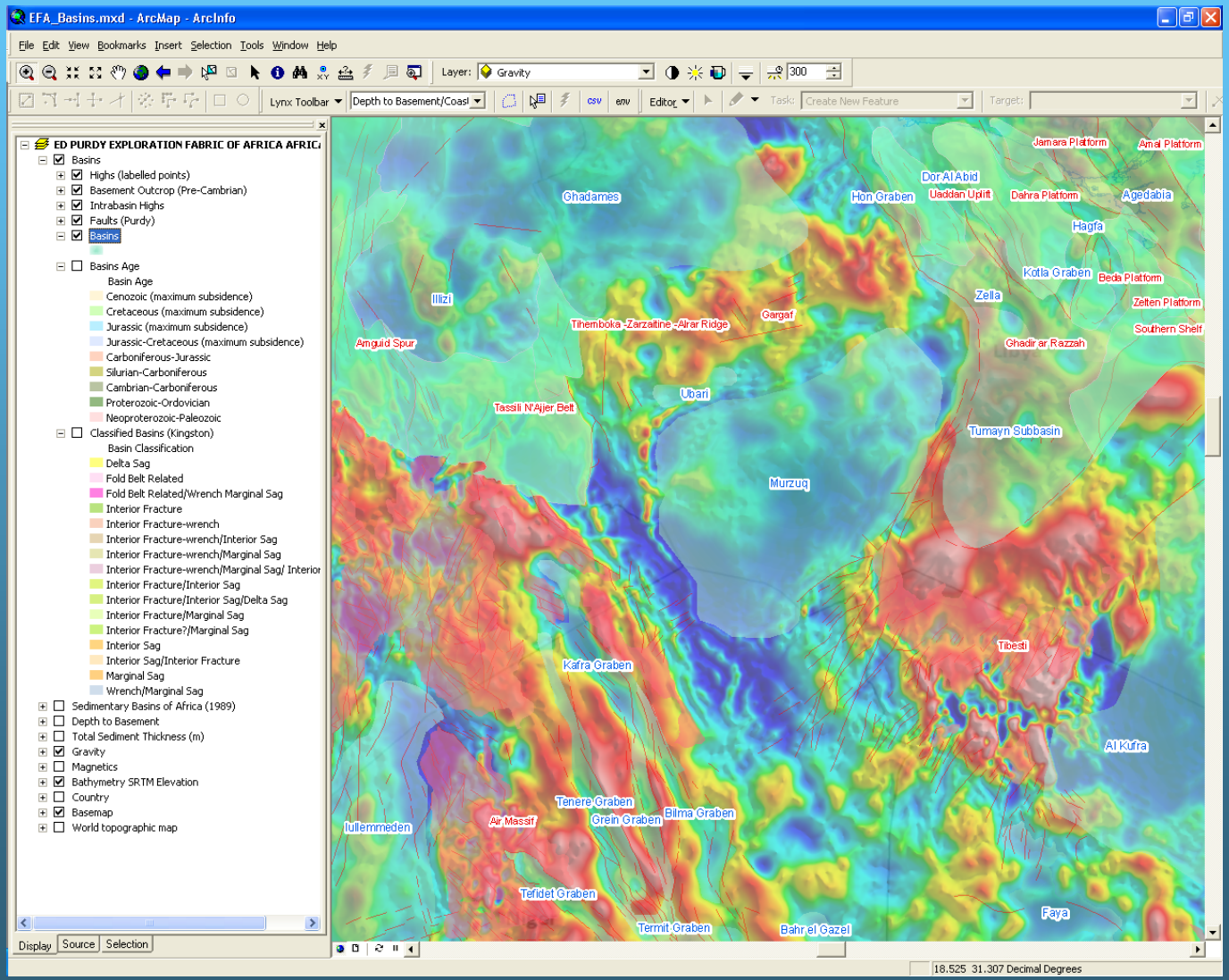
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AFRICAN BASINS (detail with depth-to-basement)



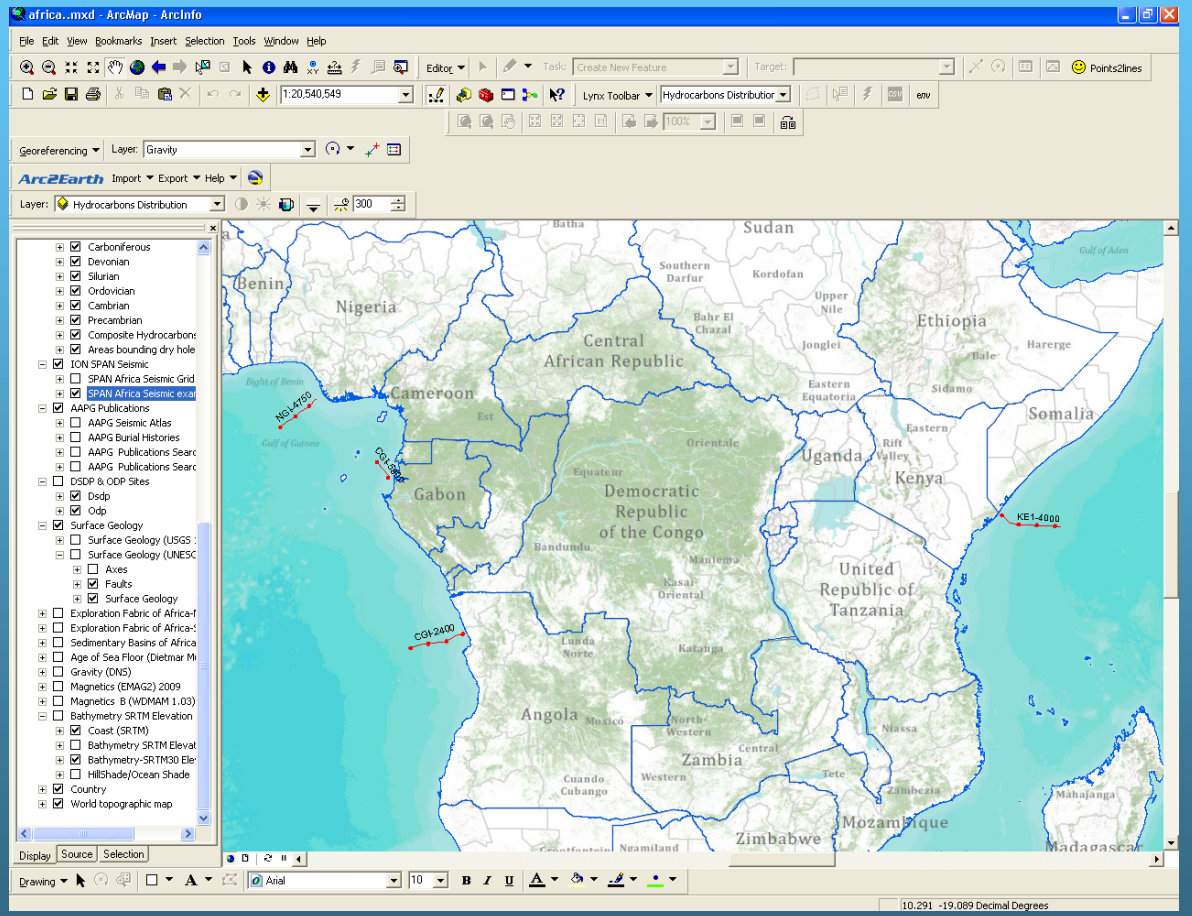
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AFRICAN BASINS (detail with Isostatic Gravity)



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ION GXT AFRICA SPAN SEISMIC LINES

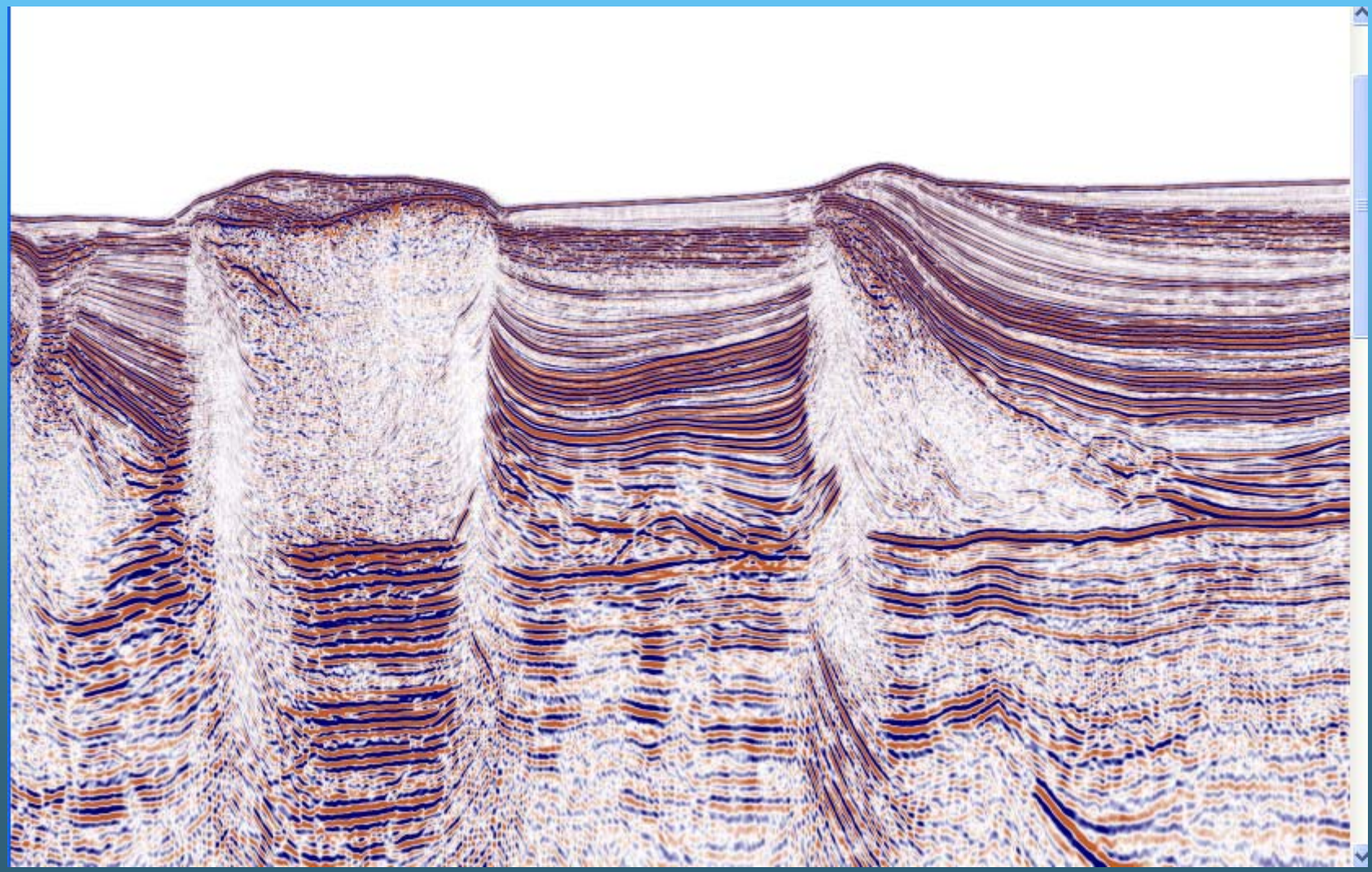


ION GXT have made four seismic examples from their AfricaSPAN data available to the project. The examples are hyperlinked from their locations. The locations of other lines in the surveys is also shown

E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

GX TECHNOLOGY

ION GXT AFRICA SPAN SEISMIC EXAMPLE



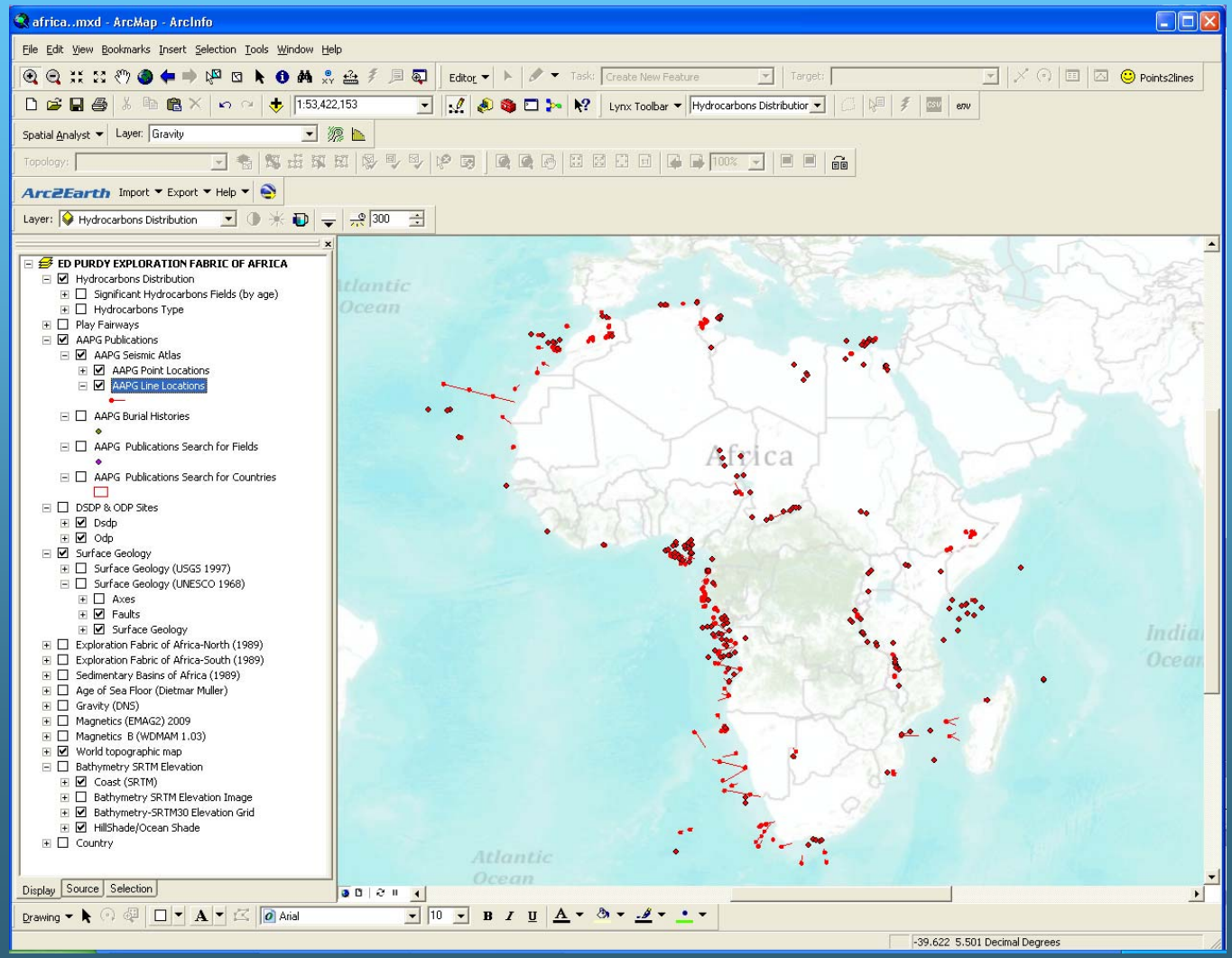
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG HYPERLINKED LAYERS

The AAPG group of layers all contain hyperlinks which allow searching of AAPG Datapages publications. The AAPG Seismic Atlas layer contains links to published seismic images in and around Africa. The seismic images can be viewed by using the identify icon and then clicking the hyperlink icon by the File_path field displayed in the identify box (NB seismic location can either be lines or points). Source information for the seismic images is also displayed in the identify box. Users using the Lynx ClickRelate toolbar can use this tool to locate and display hyperlinked data. AAPG Burial histories (in Excel spreadsheets) can be displayed in the same way as the seismic images. Users can also search for AAPG and associated publications based on field name or country. There are three search options, the first is via the AAPG Search and Discovery site which is free to all users. The second is via the AAPG Pay-Per-View site which list all publications meeting the search criteria and allows users to purchase individual publications. Finally for AAPG corporate subscribers with a registered IP address there is free access to all publications via the AAPG-Datapages Combined Publications Search.

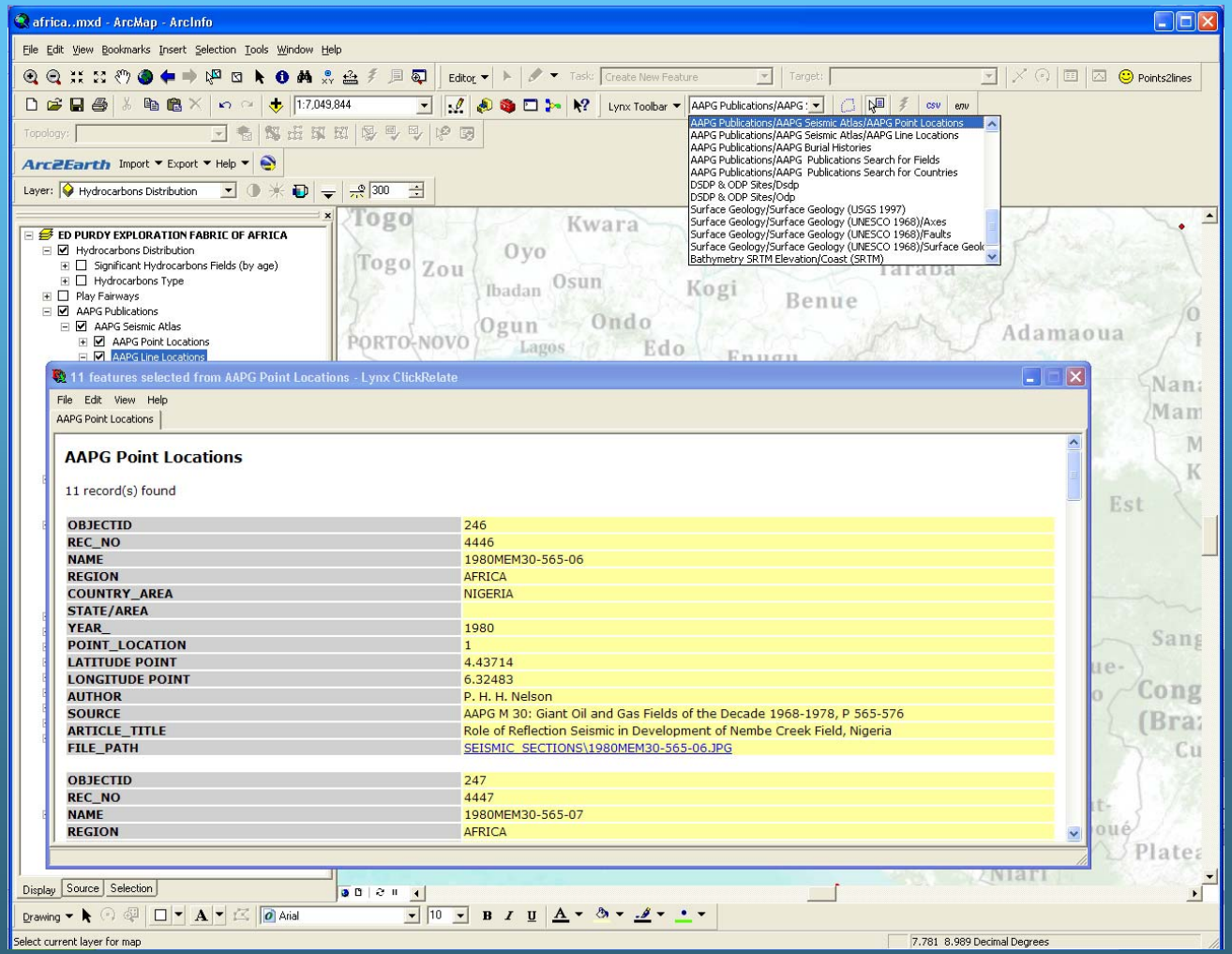
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG AFRICAN SEISMIC IMAGES LOCATION



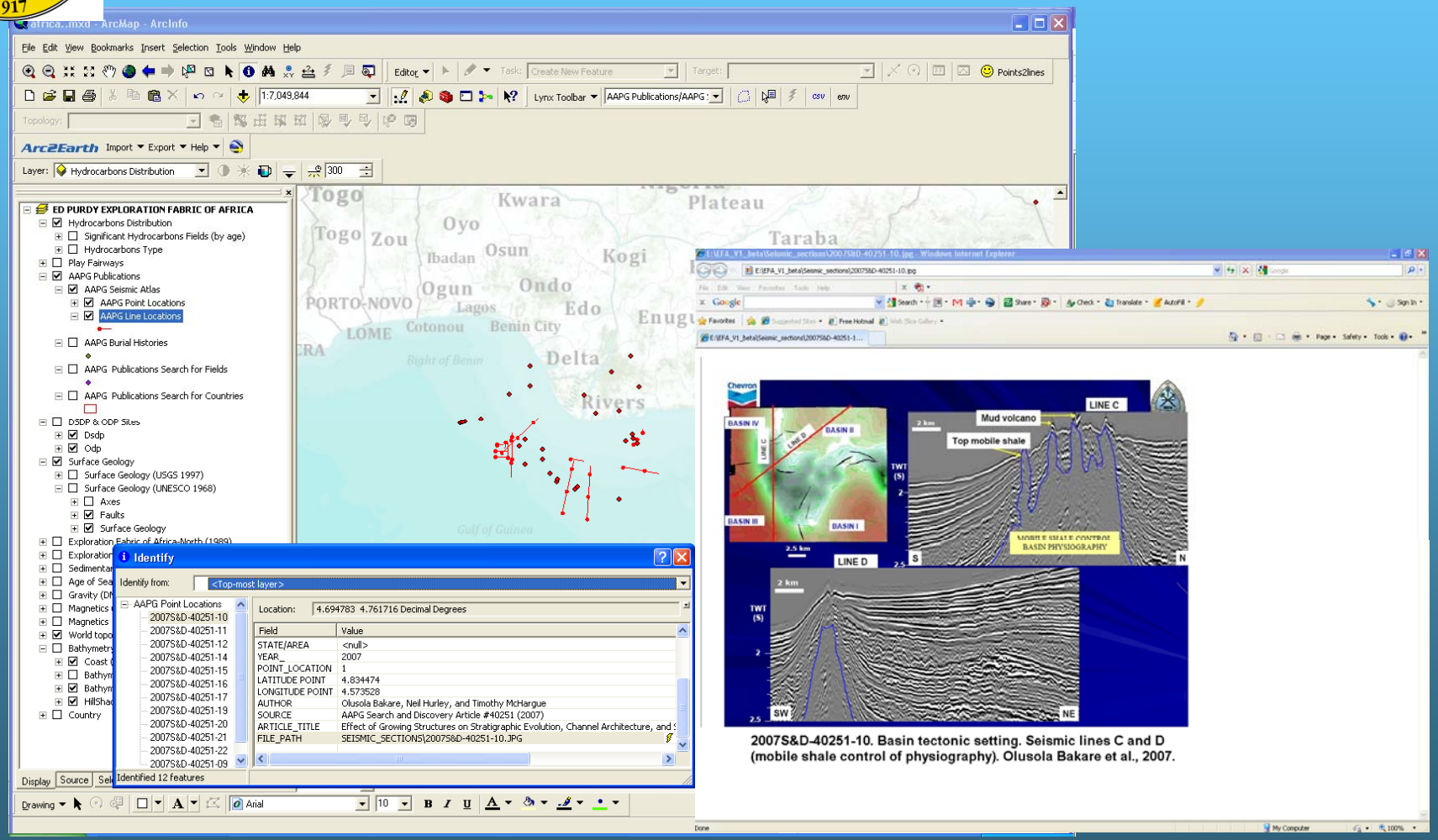
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG SEISMIC IMAGE SELECTION



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

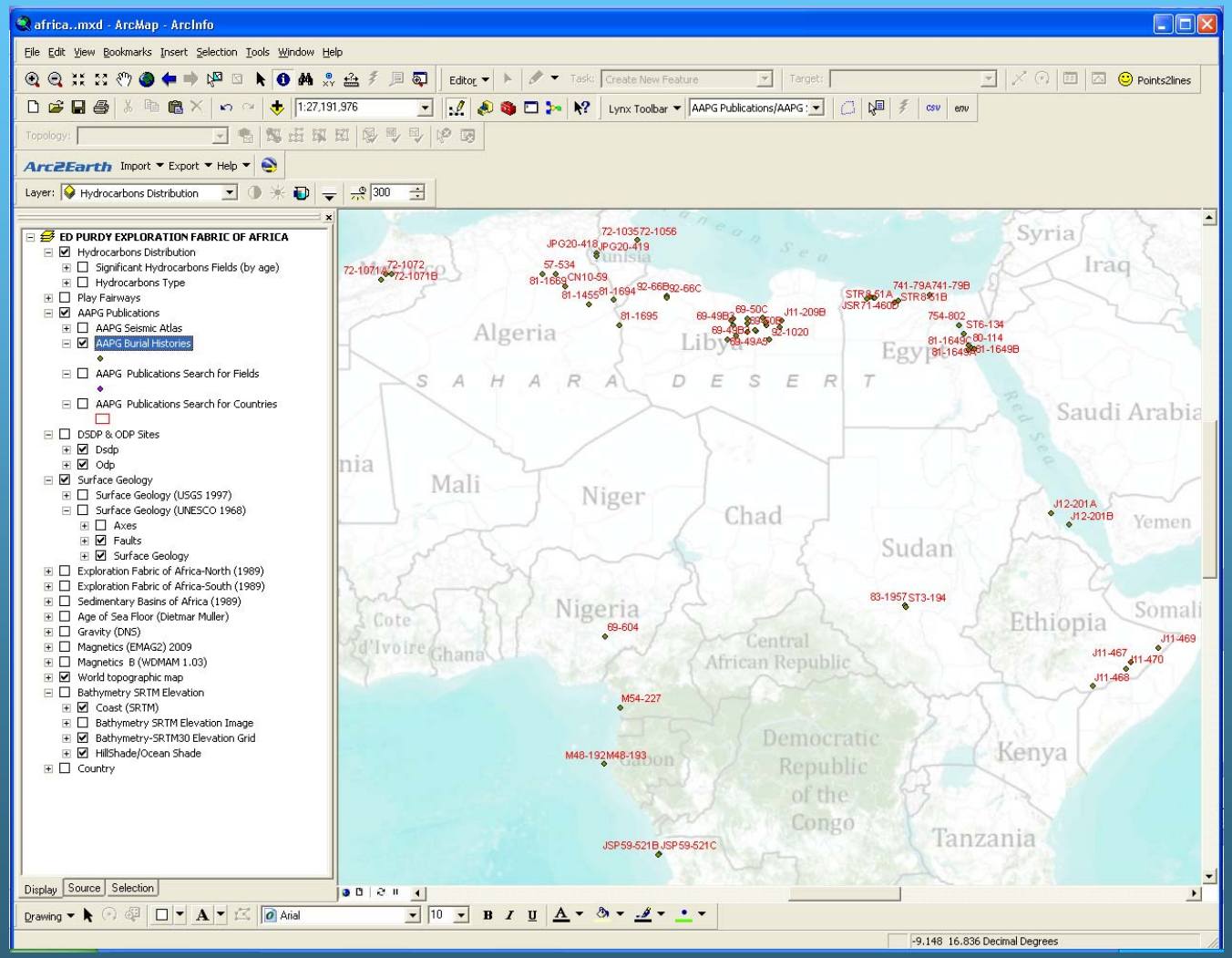
AAPG SEISMIC IMAGES



2007S&D-40251-10. Basin tectonic setting. Seismic lines C and D (mobile shale control of physiography). Olusola Bakare et al., 2007.

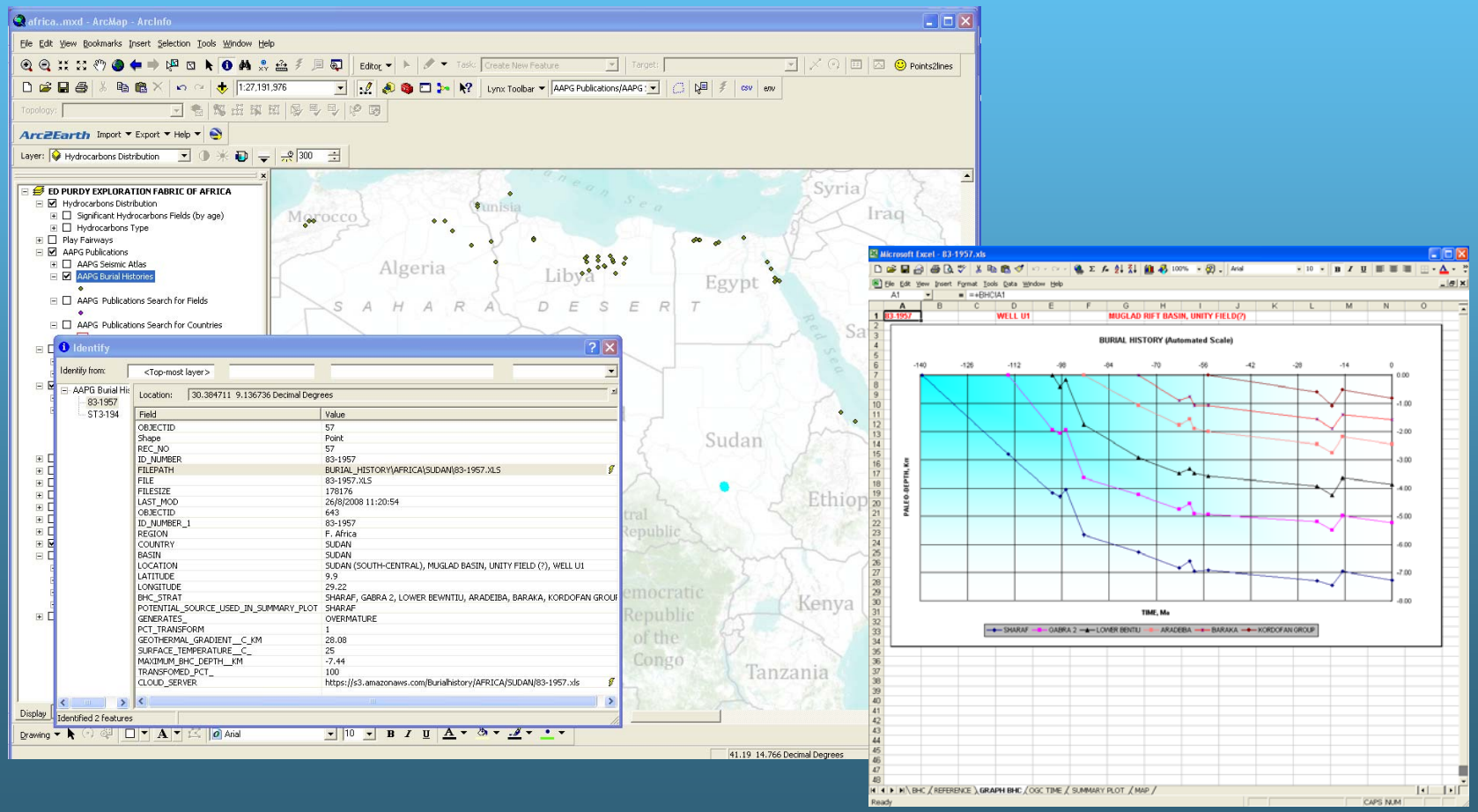
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG BURIAL HISTORIES LOCATIONS



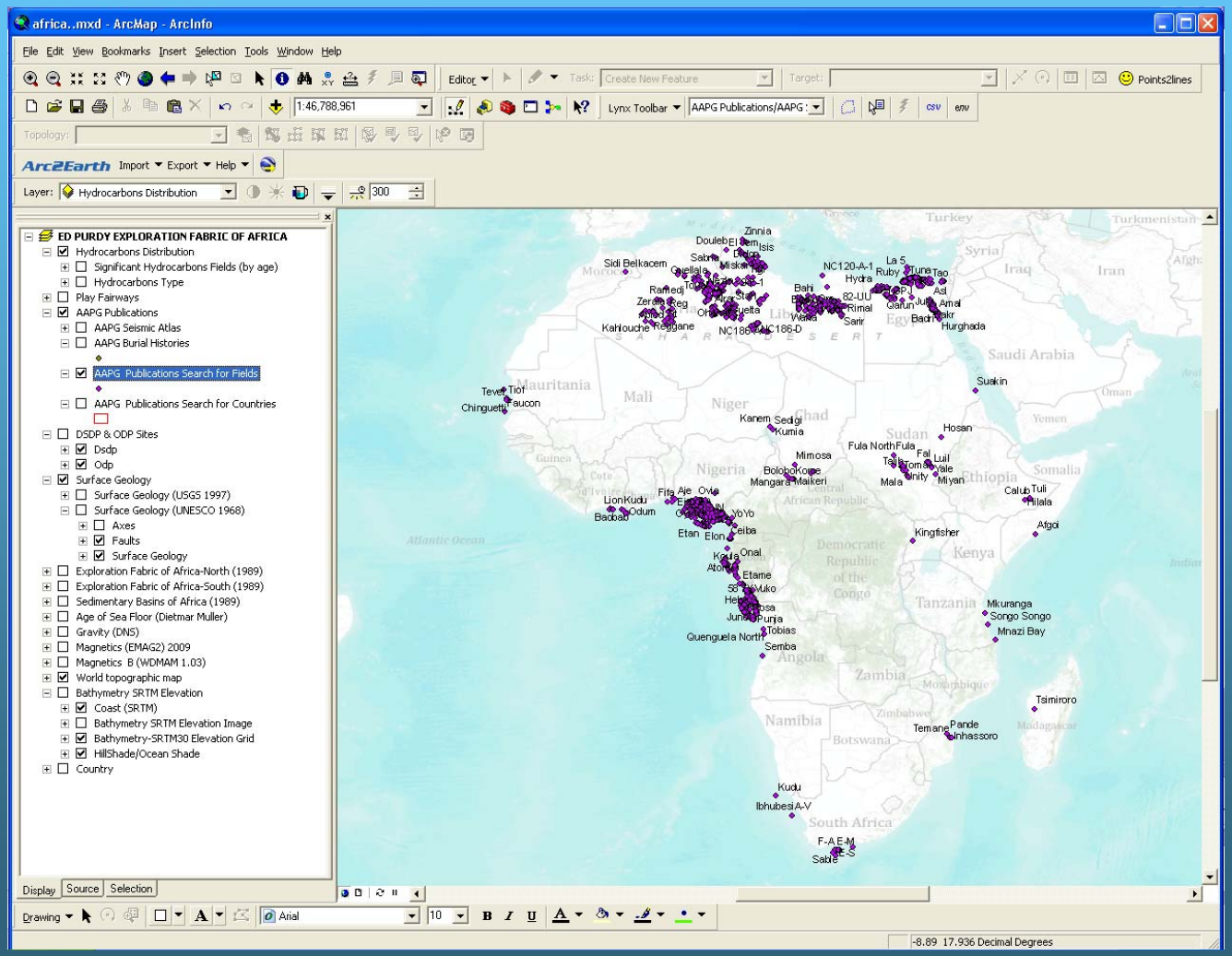
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG BURIAL HISTORIES EXAMPLE



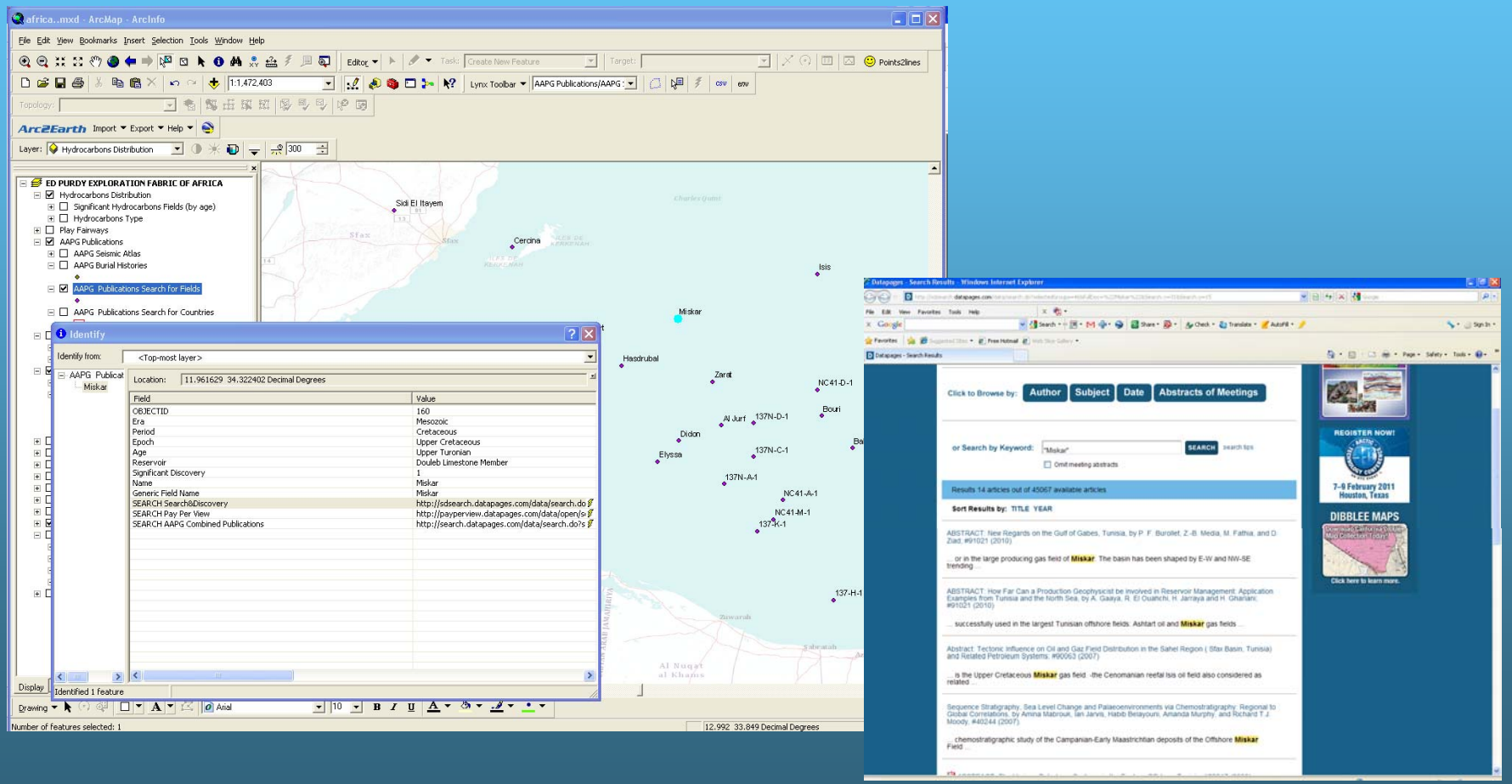
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG PUBLICATIONS SEARCH -- FIELDS



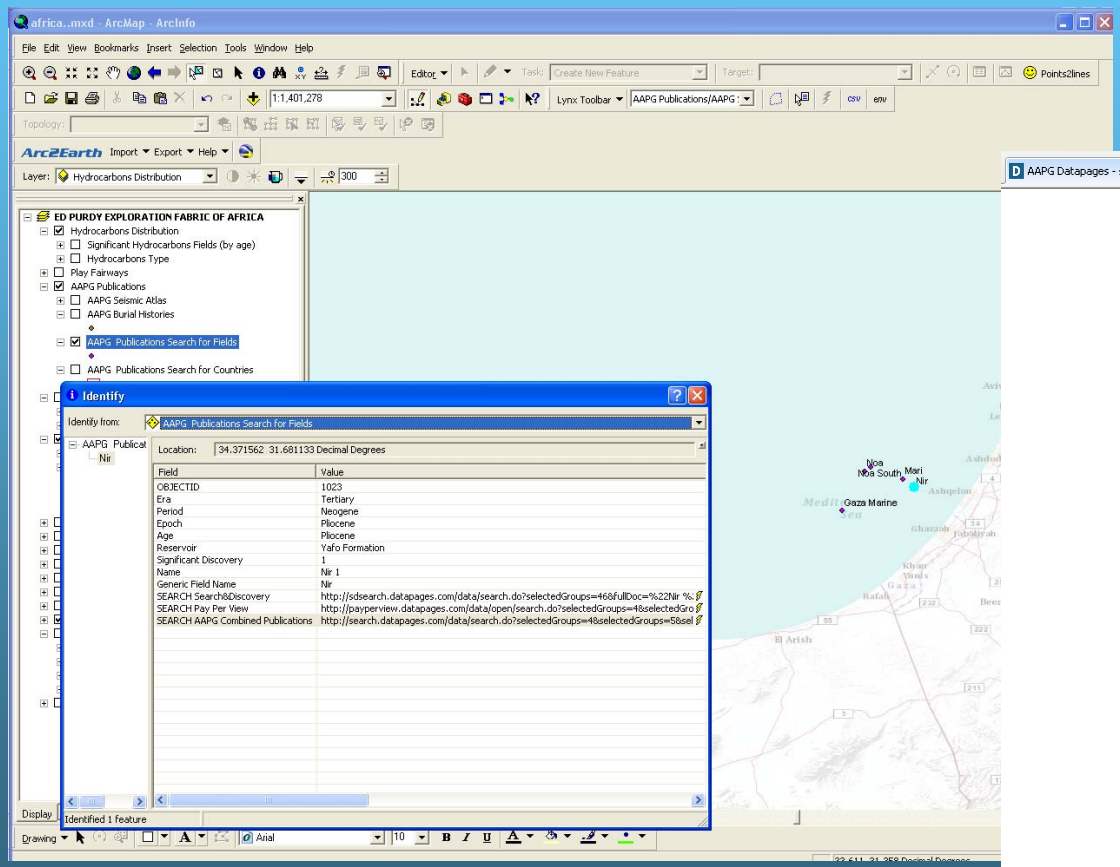
E G PURDY EXPLORATION FABRIC OF AFRICA
FINAL GIS VERSION EFA V3.2

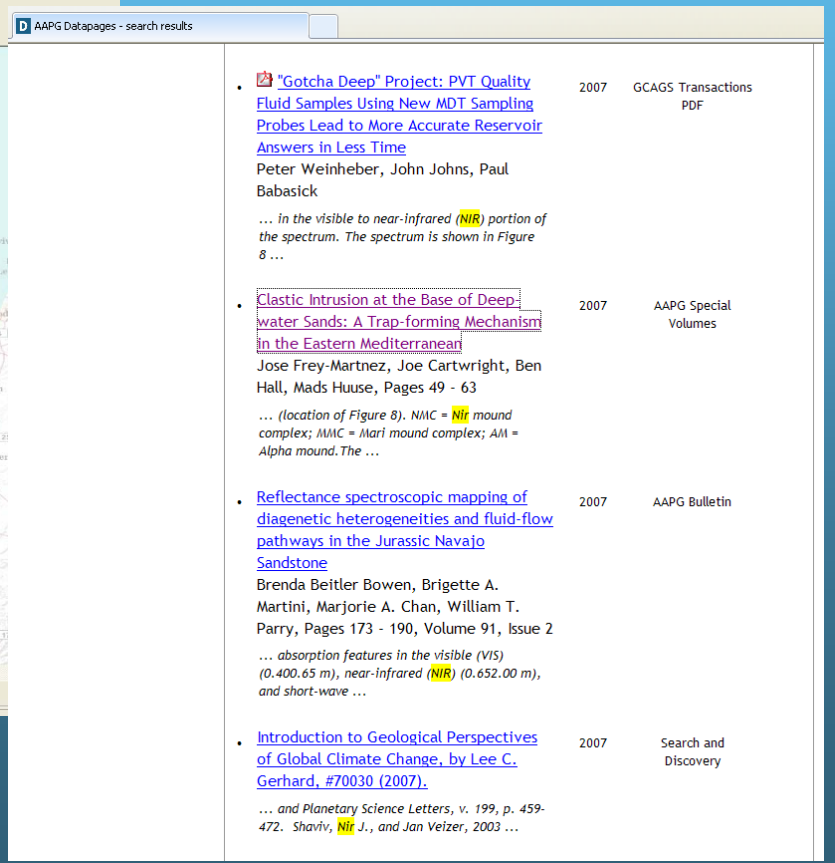
AAPG SEARCH & DISCOVERY -- FIELDS



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

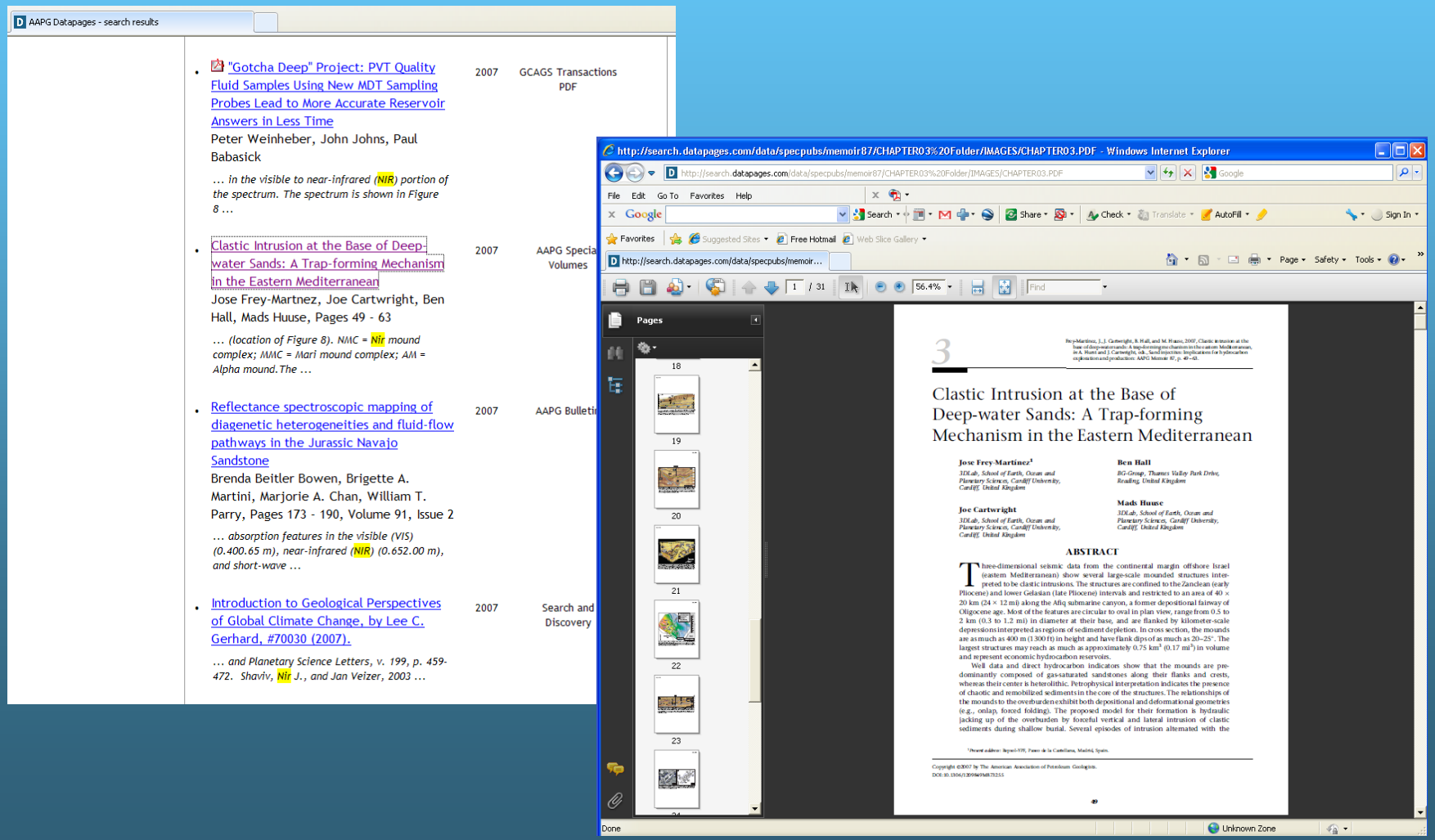
AAPG COMBINED PUBLICATIONS -- FIELDS





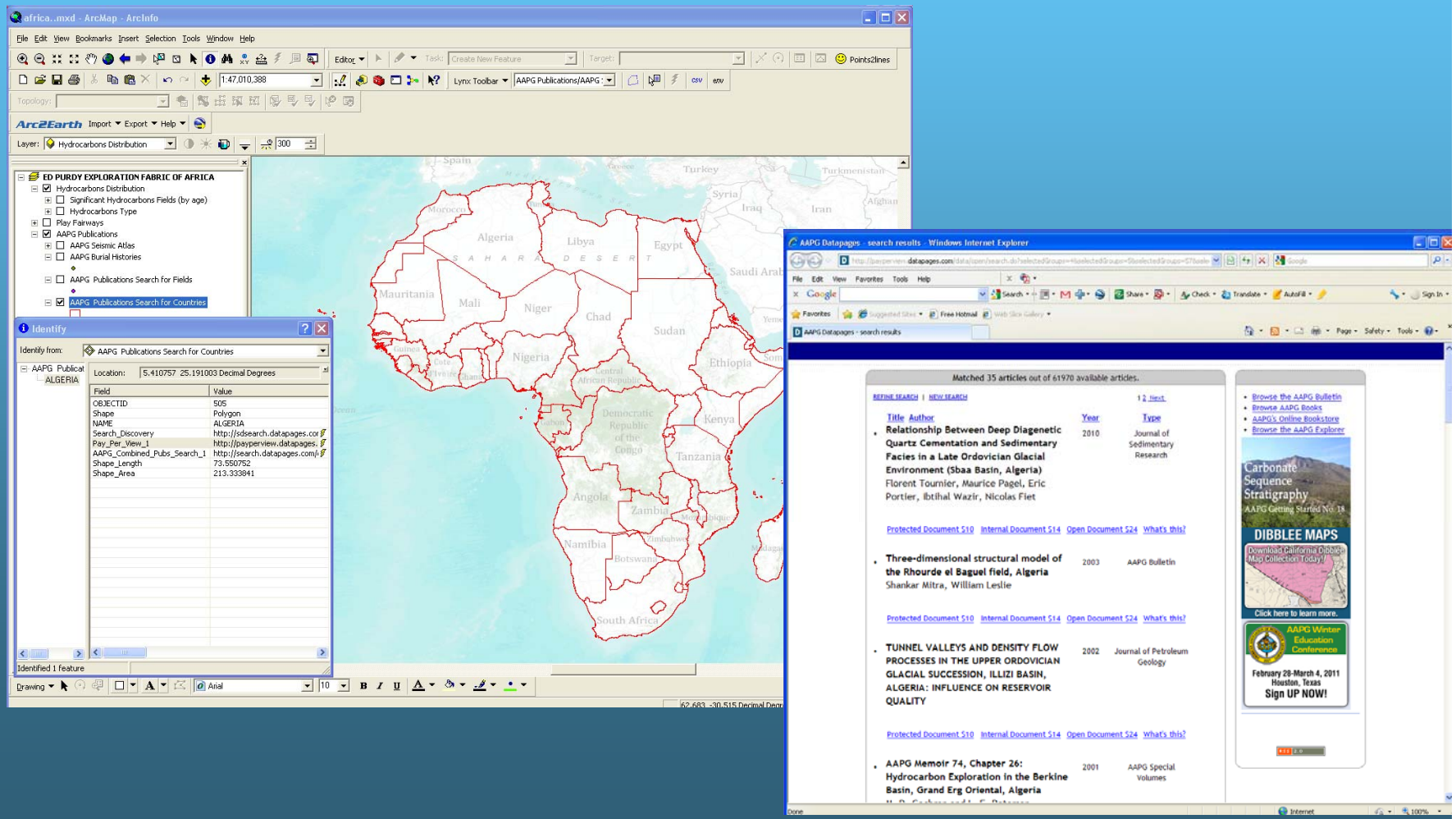
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG COMBINED PUBLICATIONS -- FIELDS



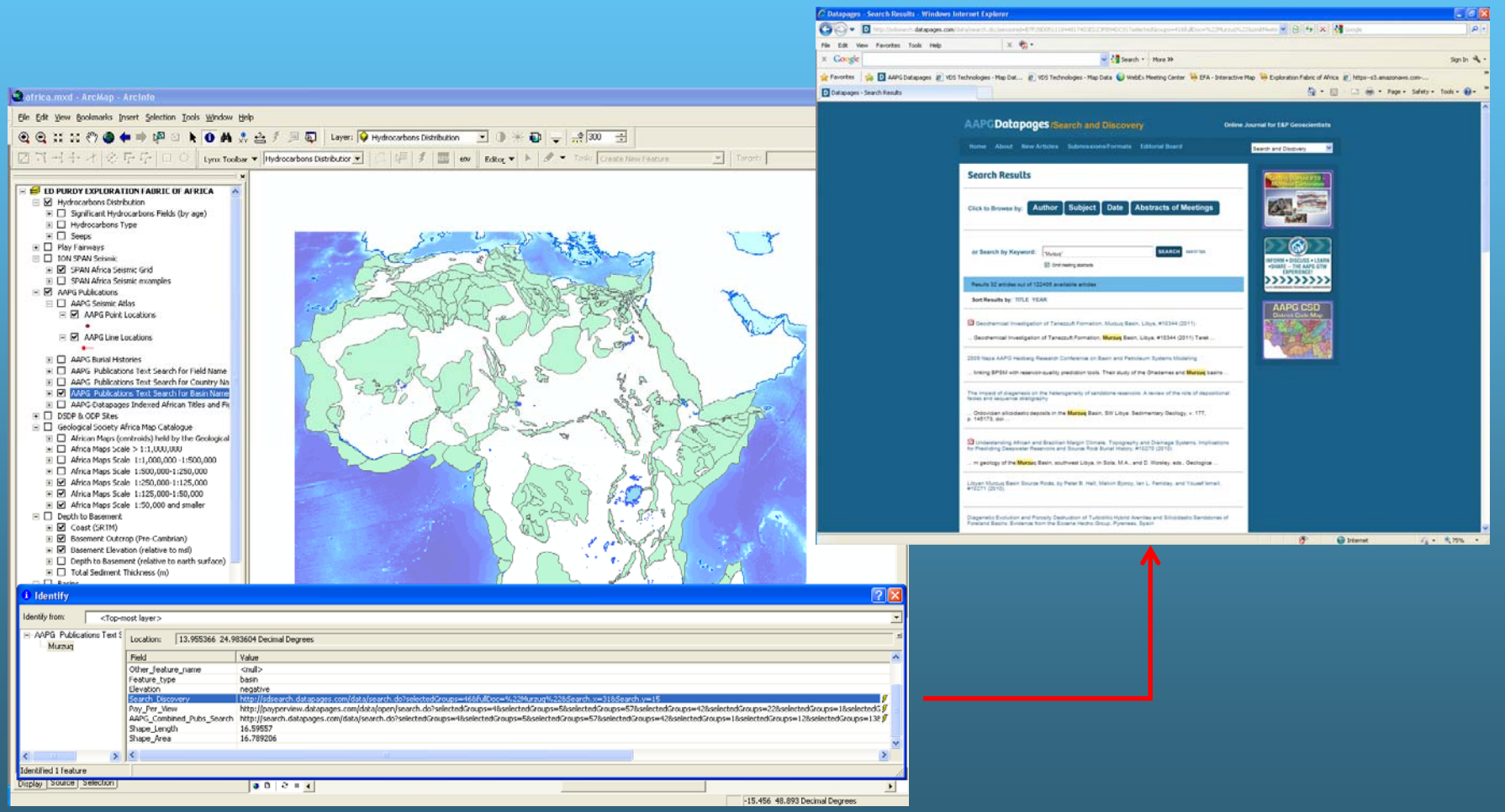
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG PAY-PER-VIEW – AFRICAN COUNTRIES



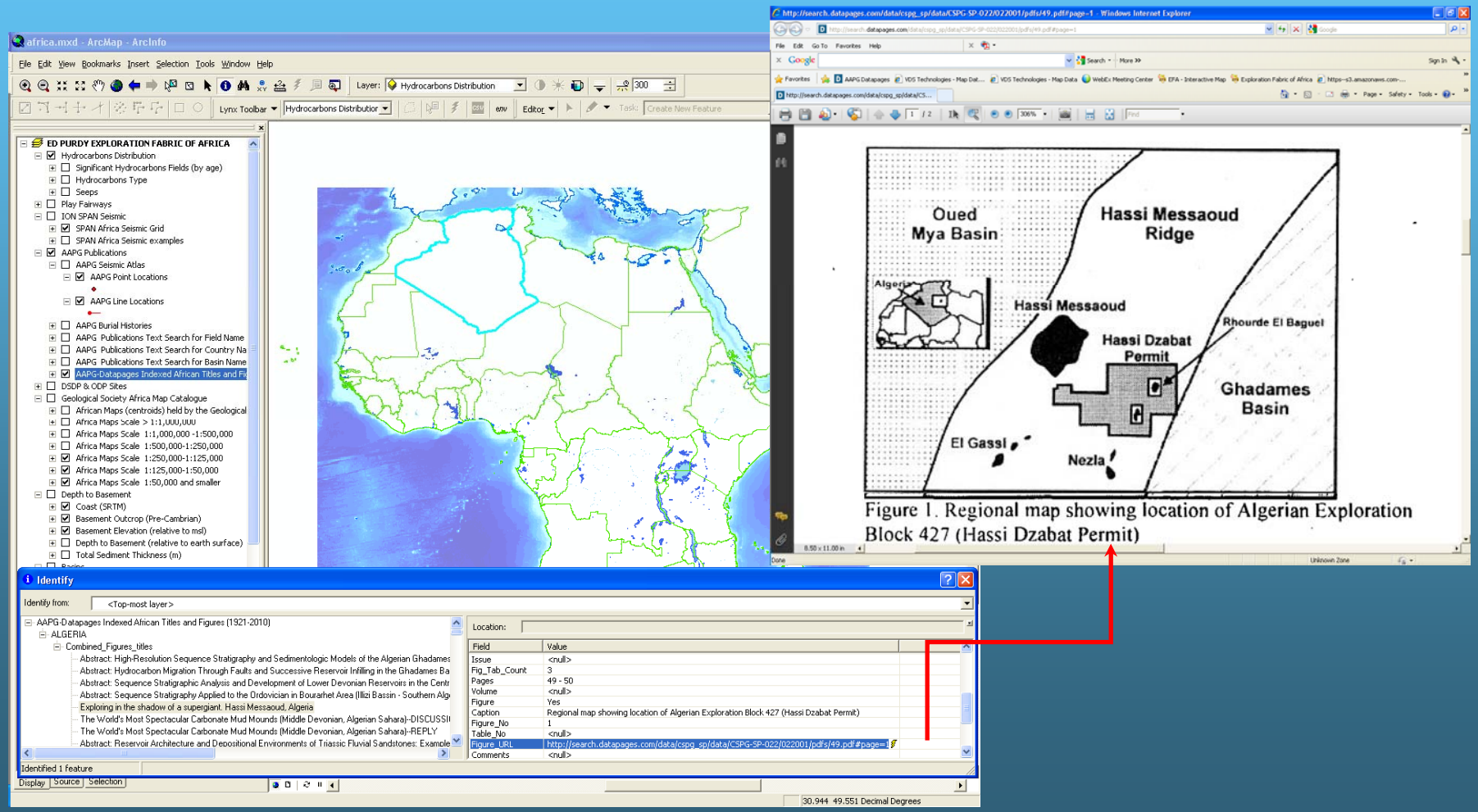
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG SEARCH AND DISCOVERY – BASIN NAMES



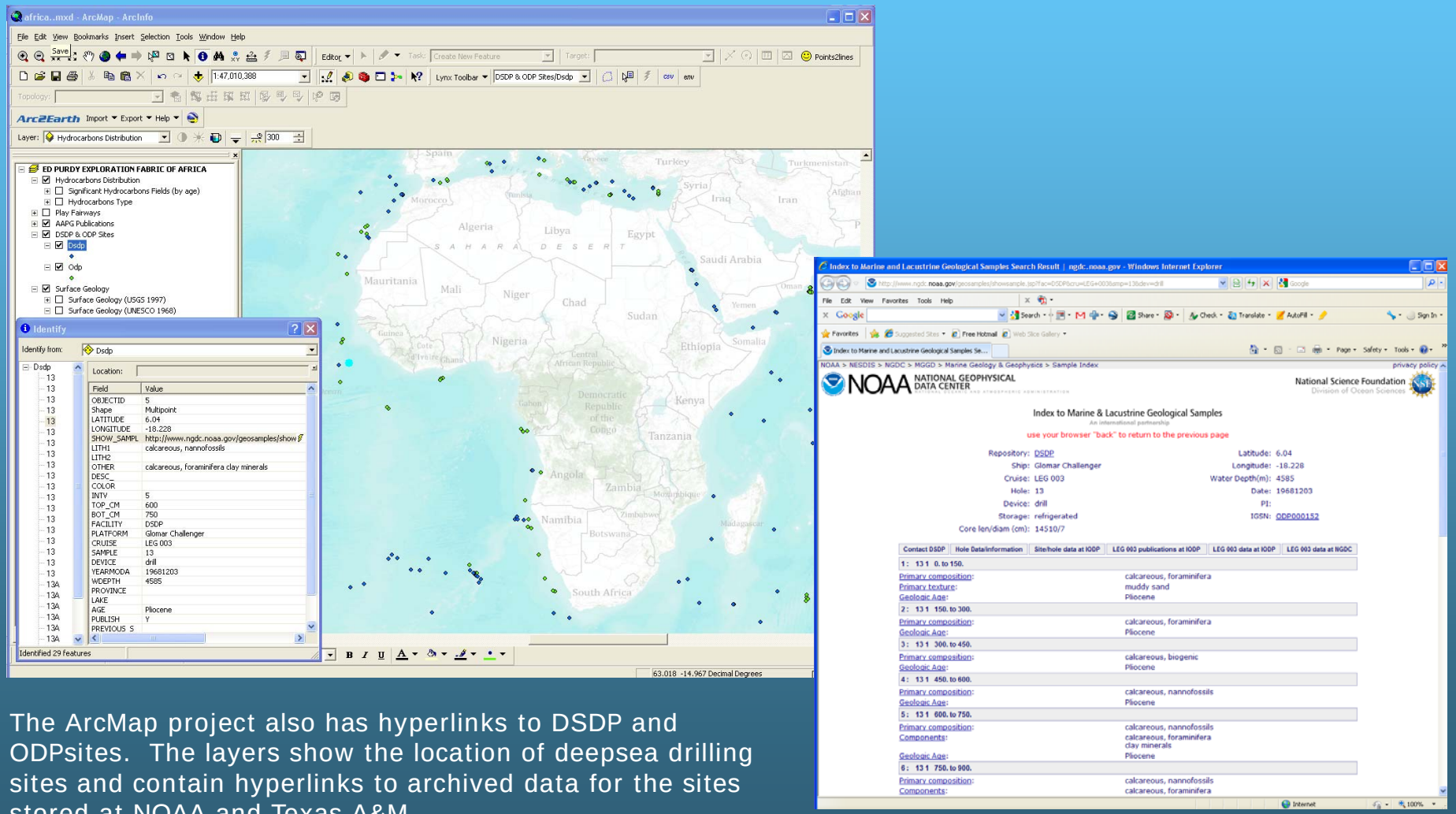
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

AAPG INDEXED FIGURES AFRICAN COUNTRIES (1921-2010)



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

DSDP-ODP SITES SEARCHING



The ArcMap project also has hyperlinks to DSDP and ODPsites. The layers show the location of deepsea drilling sites and contain hyperlinks to archived data for the sites stored at NOAA and Texas A&M.

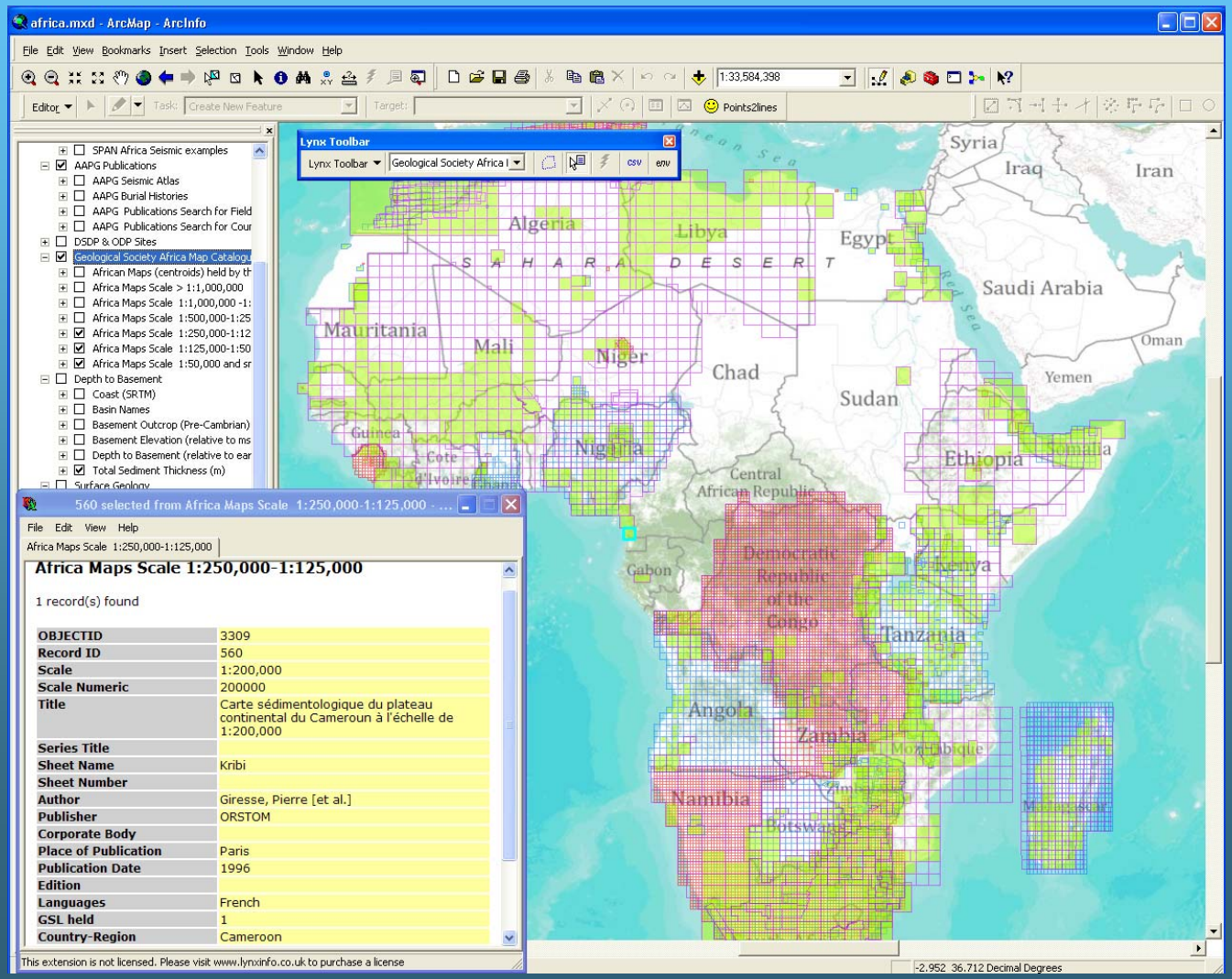
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

GEOLOGICAL SOCIETY MAP INDEX

The Geological Society have kindly allowed the EFA Team to incorporate the Africa part of the Society's spatial map index into the project. The index shows the location of over 2,700 maps held in the map library at the Geological Society. In addition to the map locations (which are displayed according to scale), each map outline has associated information including author, title, date etc. The catalogue also shows the locations of other maps which may have been produced or are intended to be produced but which are not available from the Geological Society

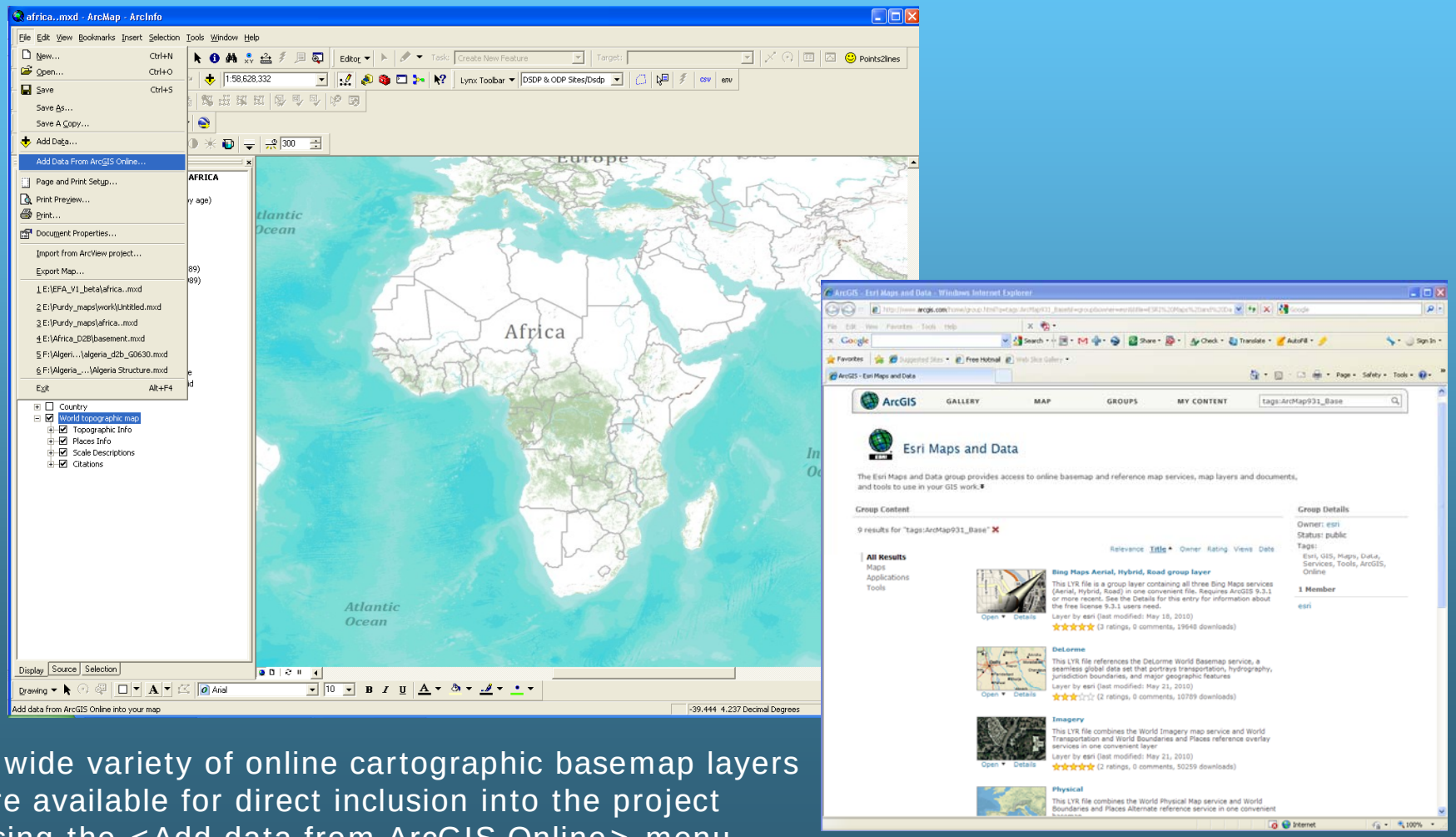
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

SPATIAL INDEX OF GEOLOGICAL SOCIETY AFRICA MAPS



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

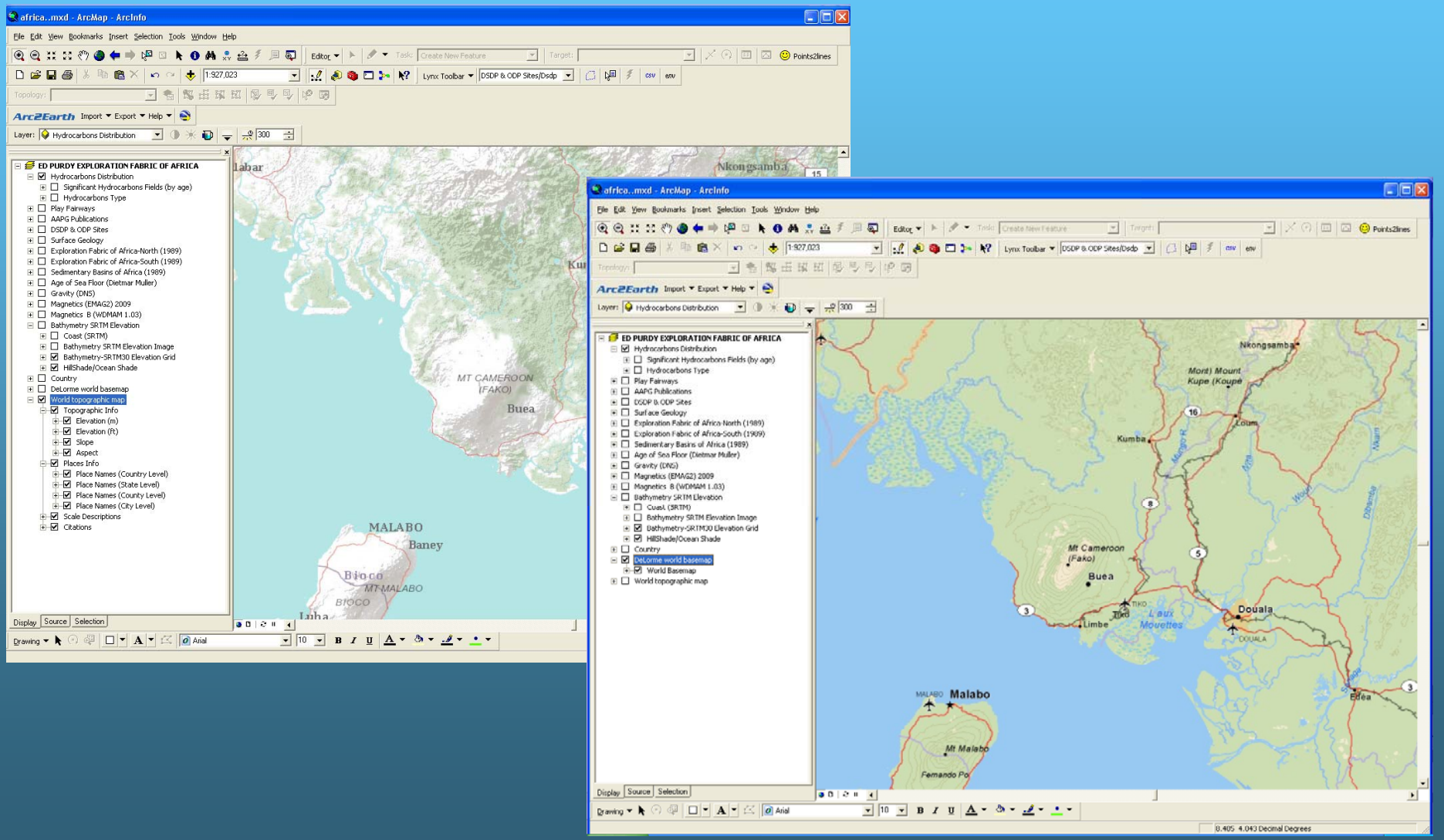
ONLINE CARTOGRAPHIC BASEMAP LAYERS



A wide variety of online cartographic basemap layers are available for direct inclusion into the project using the <Add data from ArcGIS Online> menu option (under File)

E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ONLINE CARTOGRAPHIC BASEMAP LAYERS



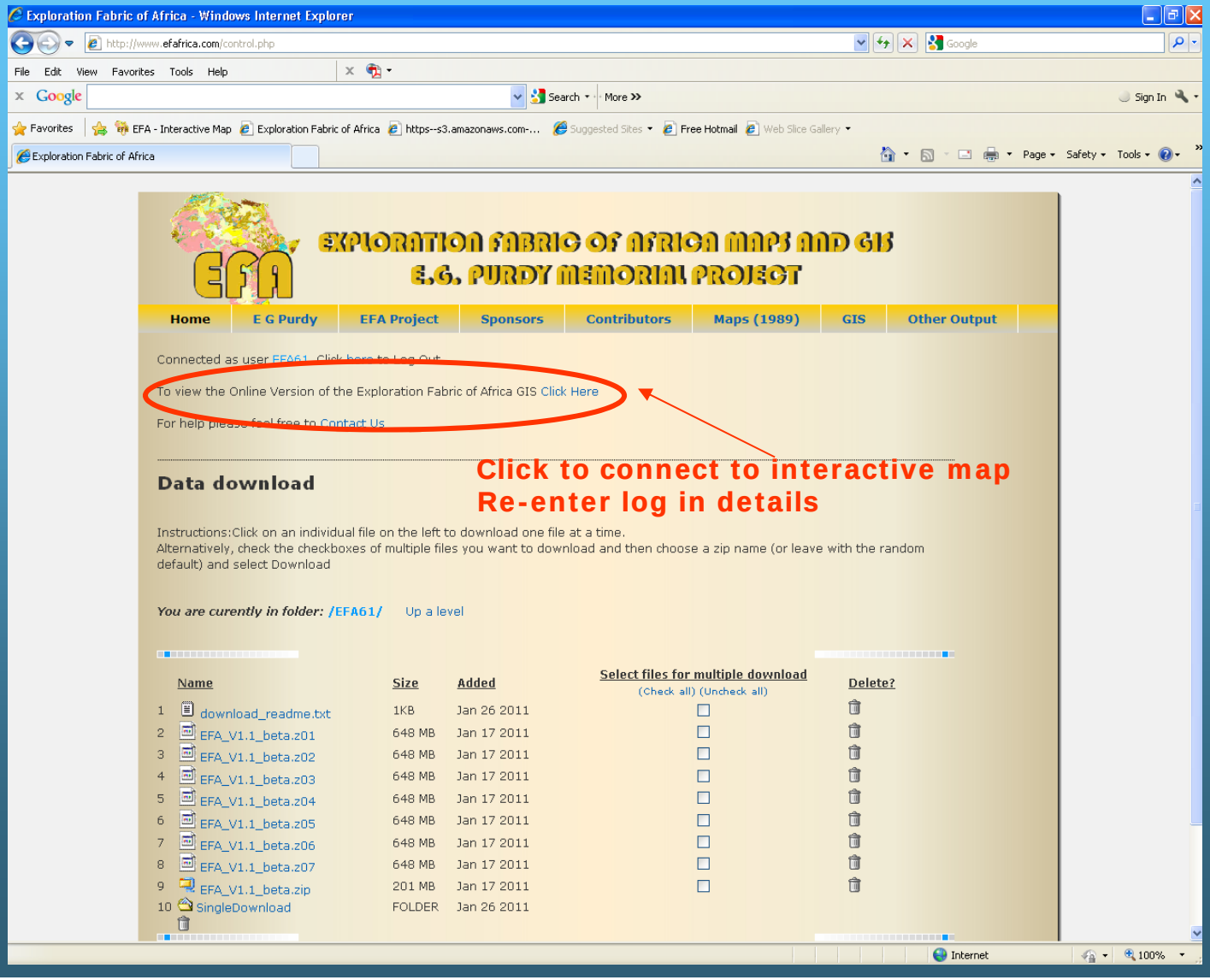
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

INTERNET BROWSER INTERACTIVE MAP

http://www.efafrica.com/sponsors.php

E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

INTERNET BROWSER INTERACTIVE MAP



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

INTERNET BROWSER INTERACTIVE MAP

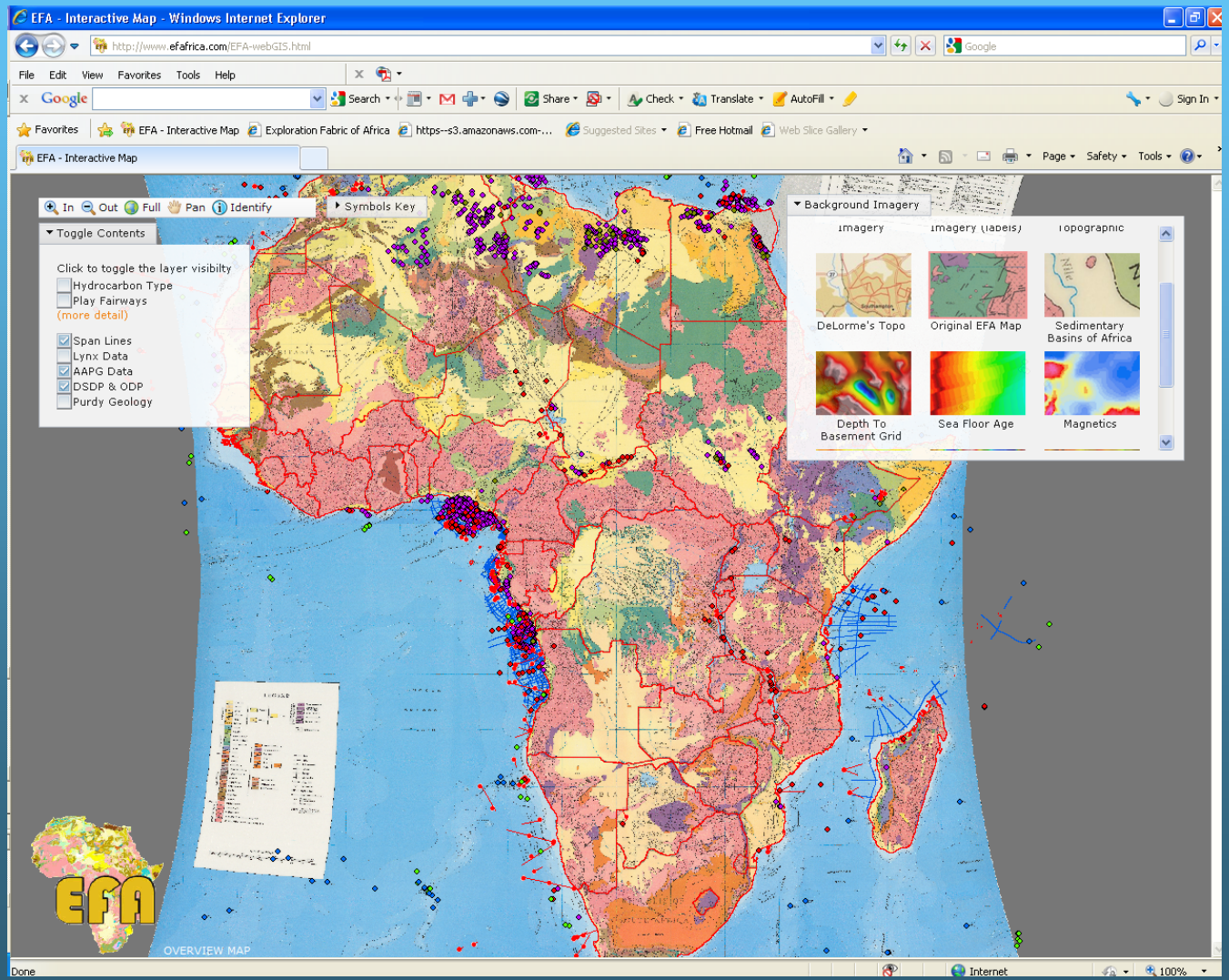
When the map is opened users will see a drop down list of currently available backgrounds for the map on the right hand side of the display, click on the thumbnail of the required background, initially it may takes a short time to display as it caches on the server at the begining of each session, after that backgrounds will display immediately.

On the left hand side of the display users will see navigation and selection tools (Mag in, Mag out, Full, Pan and Identify). Beneath that toolbar is a drop down list of vector layers. This is only a small selection of what will eventually be available, and only a few have associated attributes at this time. So for example if users want to see the Purdy Geology, click in the box and the map will display. There is a drop down Symbols Key which allows users to see the legends. Some layers e.g., AAPG have associated data. Activate that layer and zoom in, users will see red dots and lines which show locations of seismic images for Africa in AAPG publications. Click on them with the Identify cursor users will see an Identify Results Call Out Box, click the AAPG tab in it to see thumbnails of the seismic images and associated metadata (click on images to download). The purple dots are centroids of fields, if users click the identify cursor on these and click the fields tab the field name and a limited amount of associated information will be displayed. Click AAPG Data tab and users can search Search and Discovery, Pay-per-view or the Combined AAPG Archives (latter only if you are a subscriber). The field search is based solely on the field name and may not necessarily return any hits. If there are any hits they will be listed in the scroll down list, clicking on the title will download the article. In onshore areas users can also search on the county name, and this will shortly be extended to searching on basin name. The DSDP-ODP layer will connect to NOAA or TAMU for further information on the sites. The Play fairways will eventually have many more associated attributes as will the Purdy map. All the other tectonic and geologic layers are due to be added in the next release. Users can also display the Plays in a new window, in this case users can toggle plays on and off according to age. Close that window to go back to the main map.

Sometimes users may experience the situation whereby the Identify Call Out Box which is static (at the moment) obscures other information or tools, in this case use the pan tool (or click and hold in the map) to move around

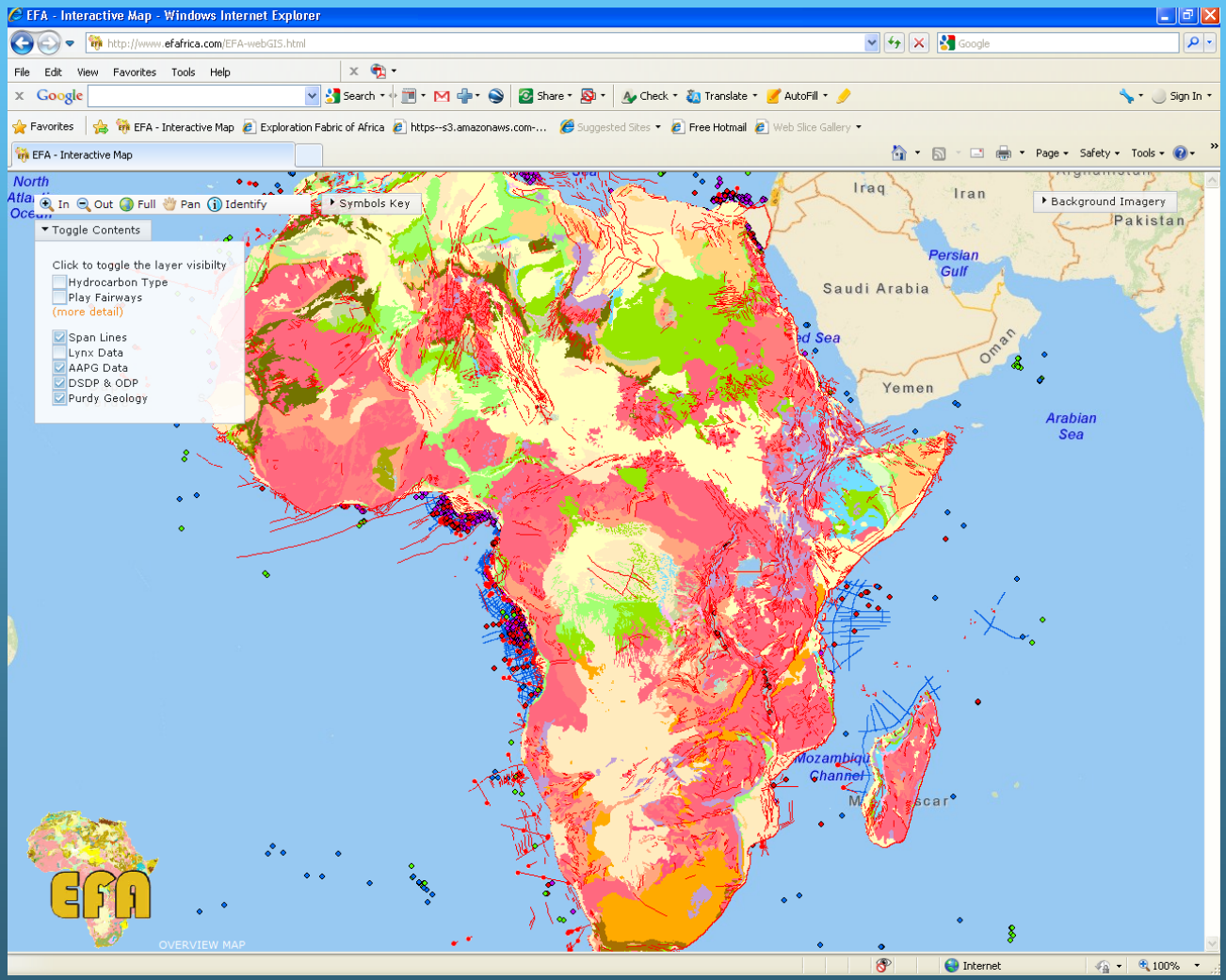
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ONLINE INTERACTIVE MAPS FROM ARCGIS SERVER



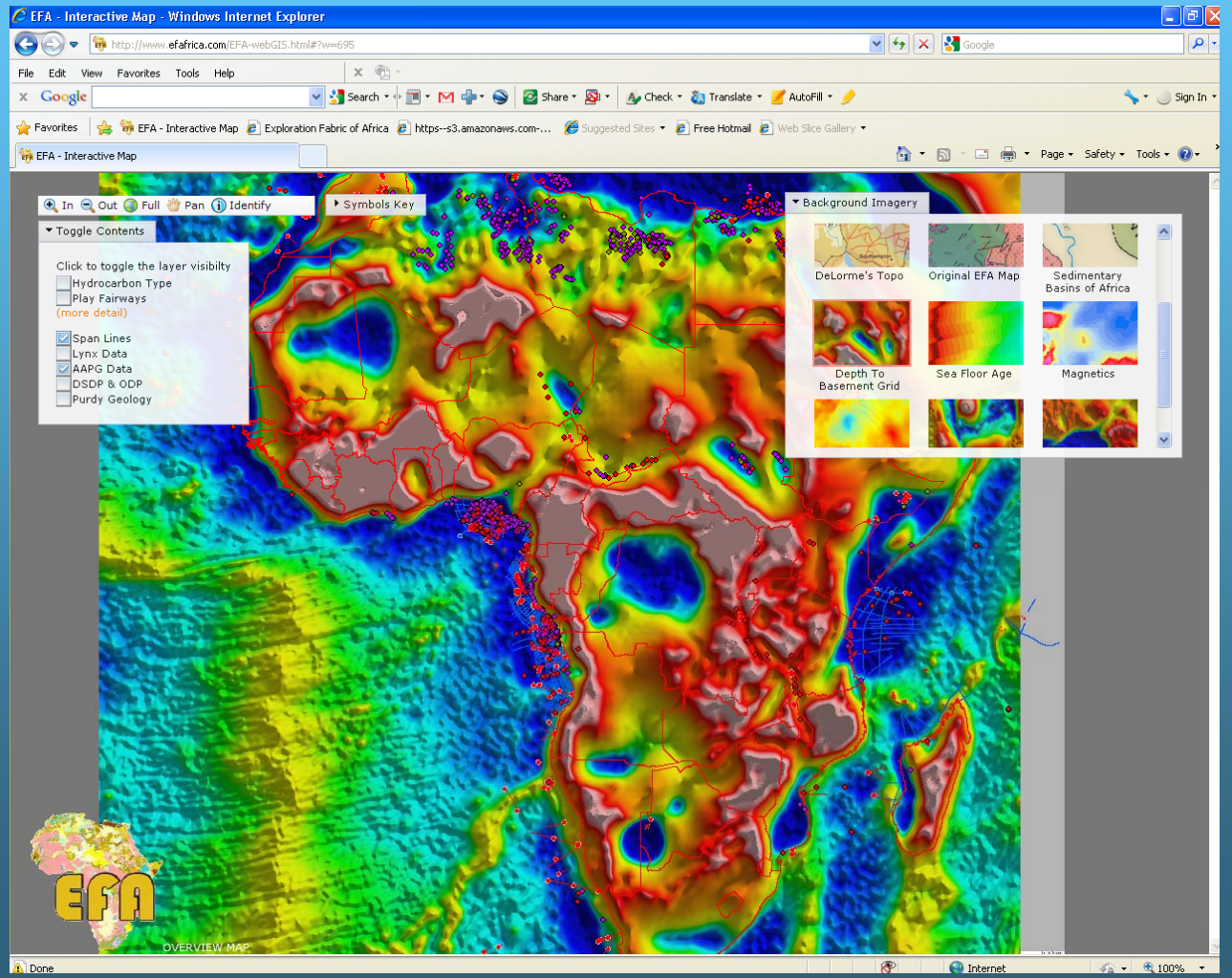
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ONLINE INTERACTIVE MAP FROM ARCGIS SERVER



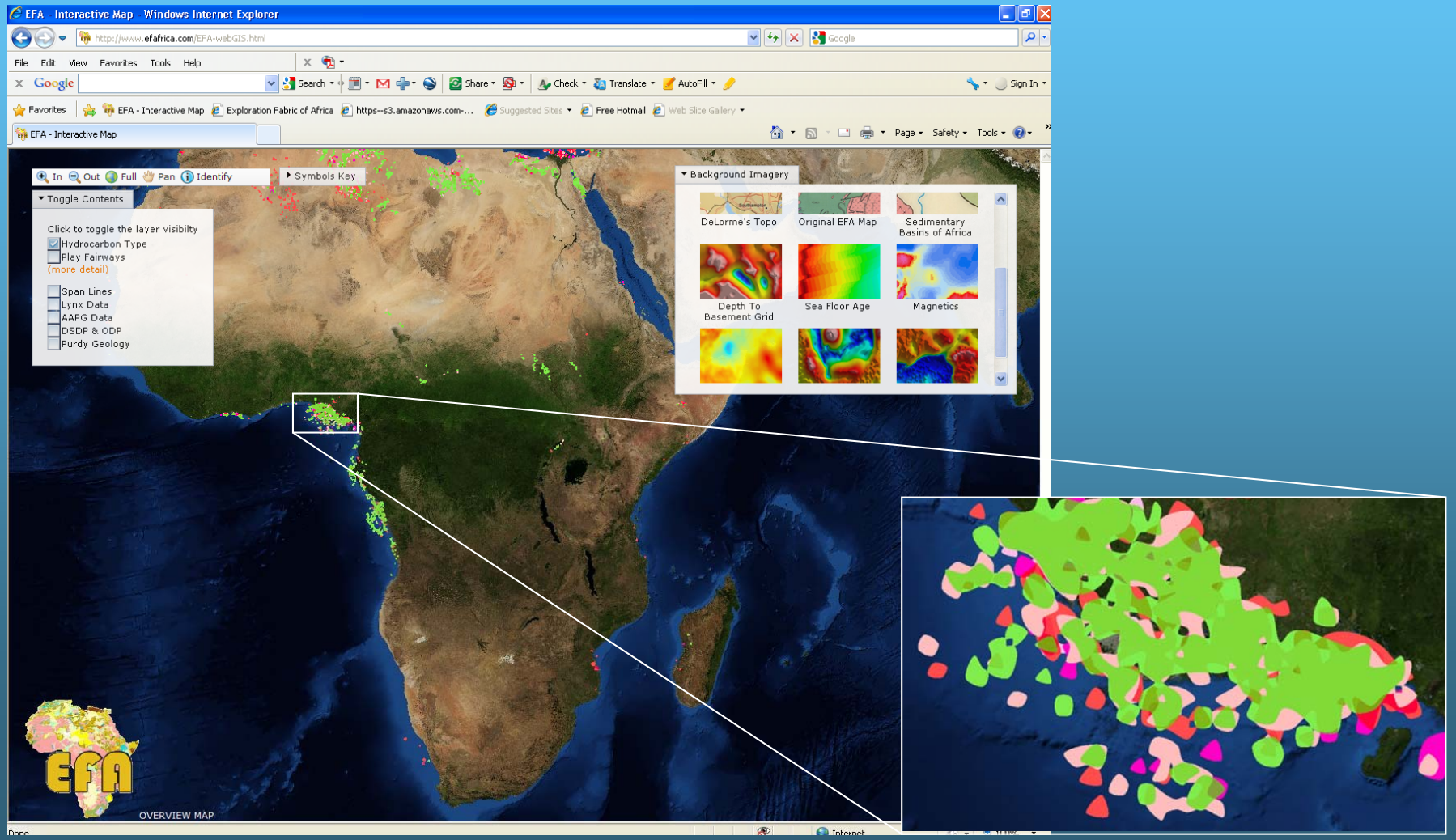
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ONLINE INTERACTIVE MAP FROM ARCGIS SERVER



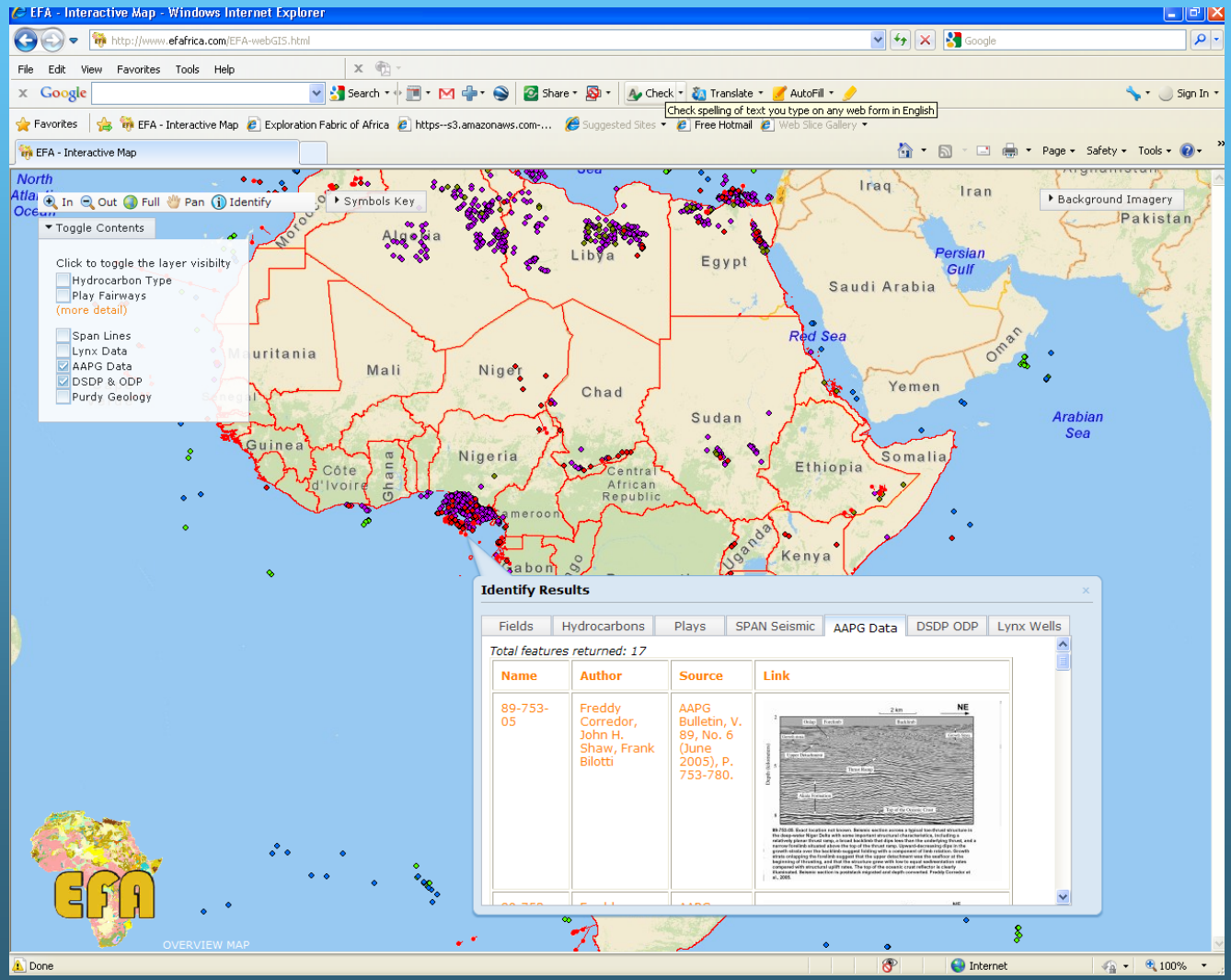
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ONLINE INTERACTIVE MAP FROM ARCGIS SERVER



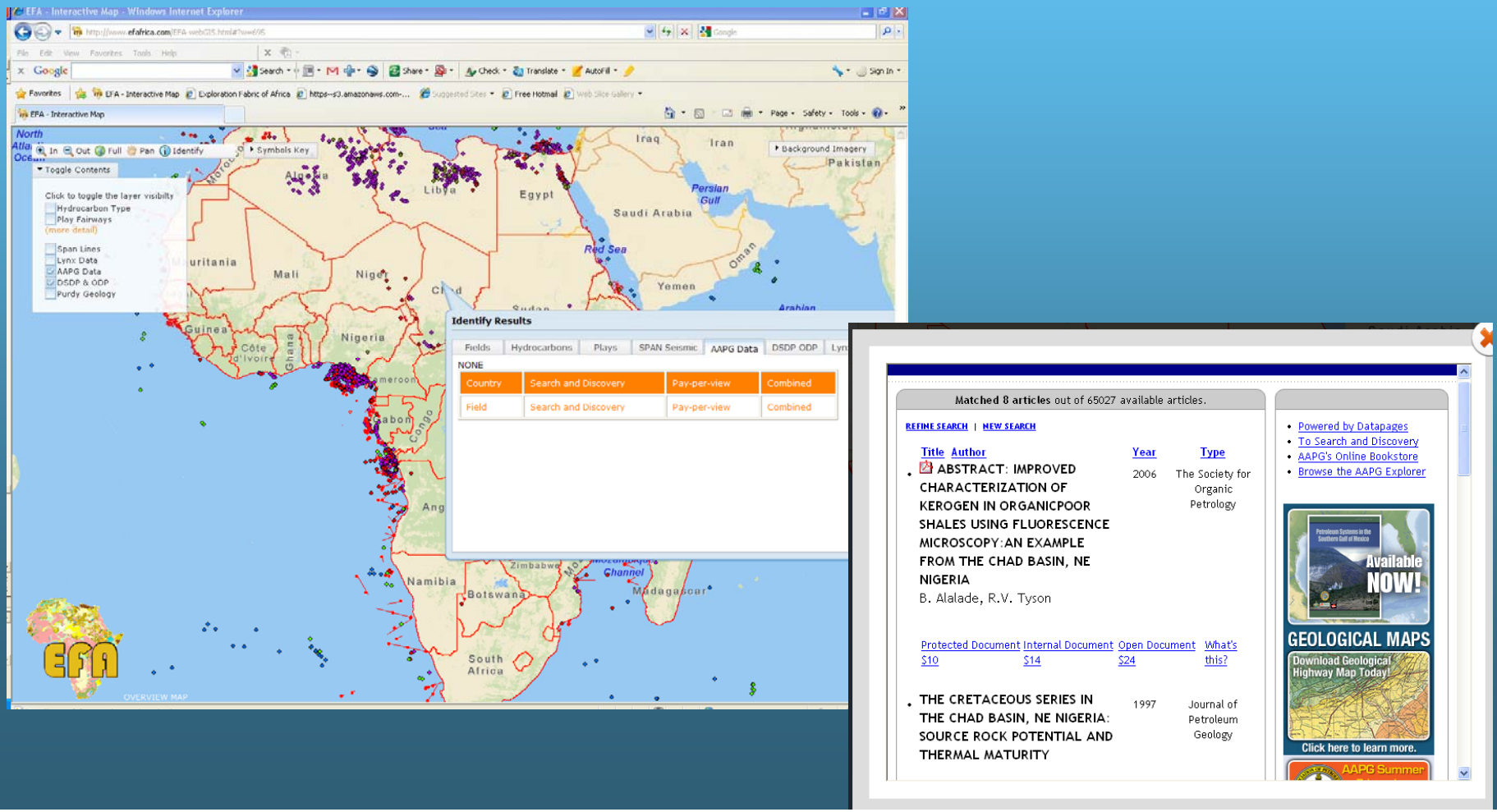
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

ONLINE INTERACTIVE MAP FROM ARCGIS SERVER



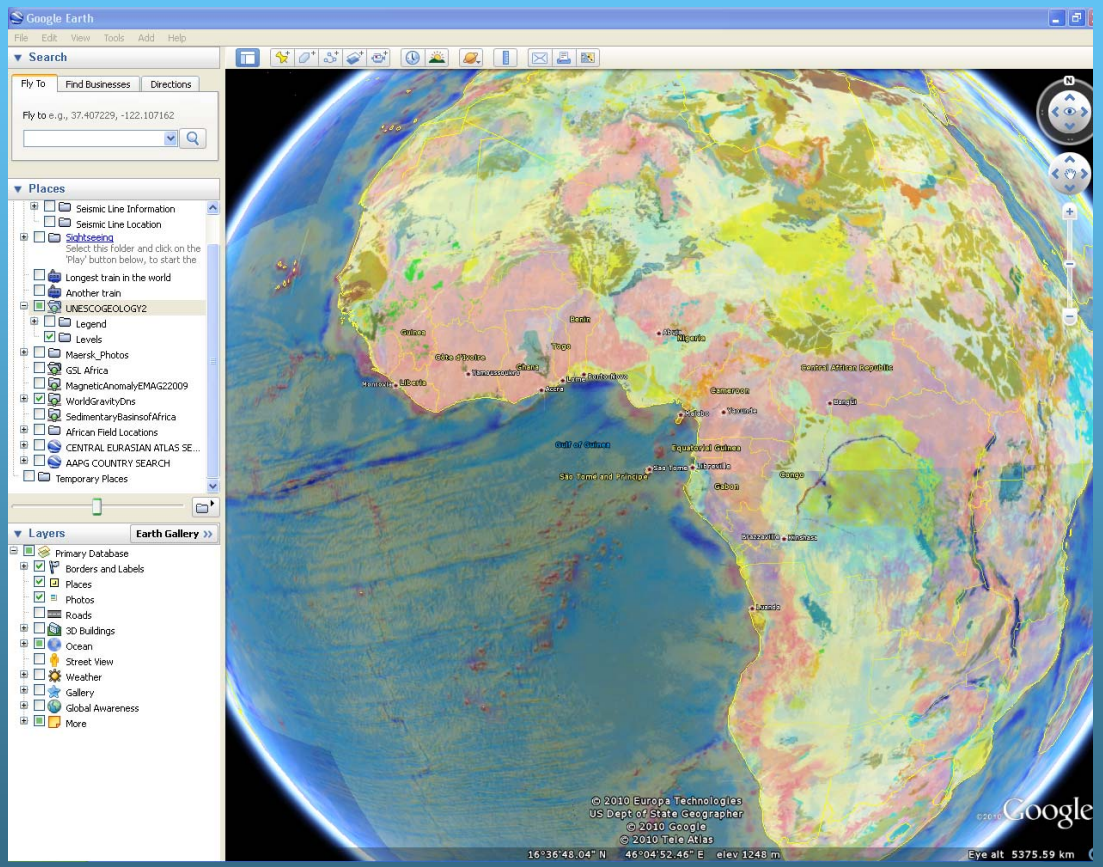
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

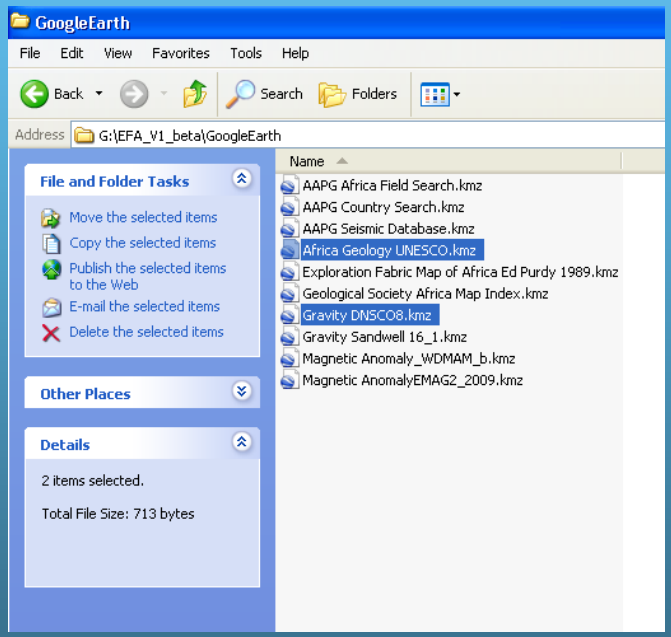
ONLINE INTERACTIVE MAP FROM ARCGIS SERVER



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

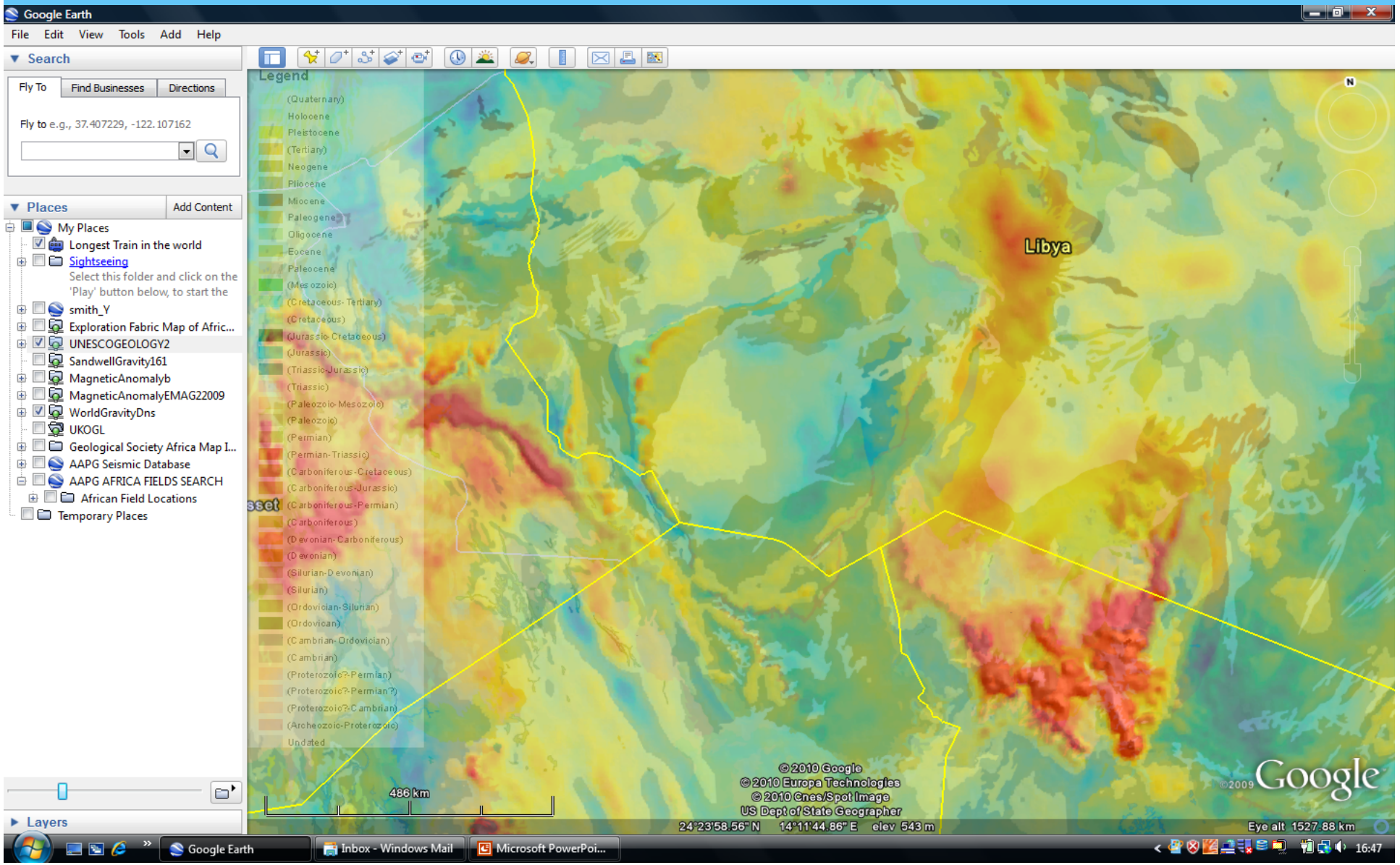
GOOGLE EARTH KMZ FILES



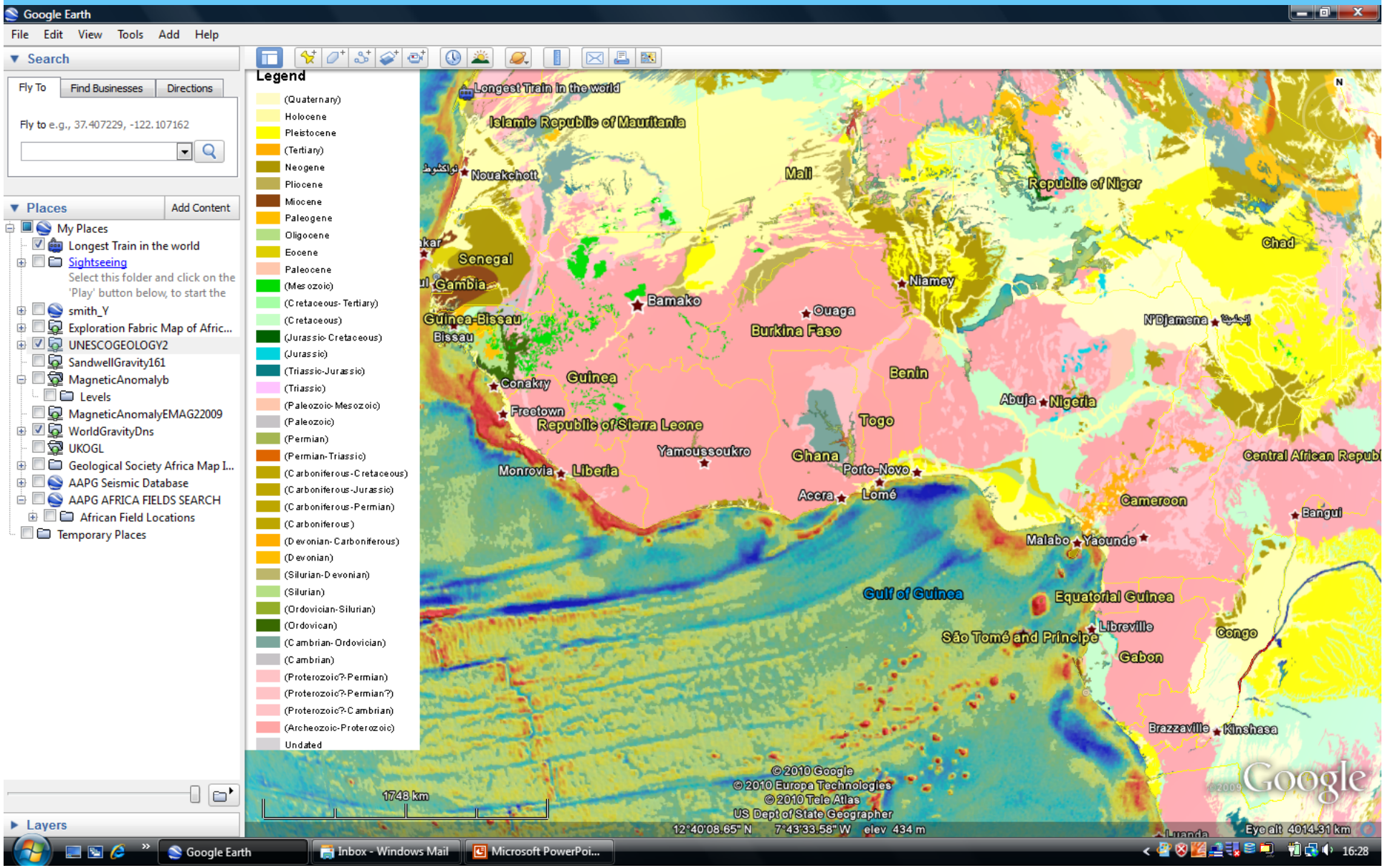


Google Earth kmz files for all GIS layers will be provided. In this beta version a small number of preliminary kmz files are included. These can be dragged on to the Google Earth globe or double-clicked in order to display them in Google Earth. Layers can be displayed individually or overlayed with varying degrees of transparency. Some kmz files have also been designed to allow hyperlinks and searching of AAPG publications

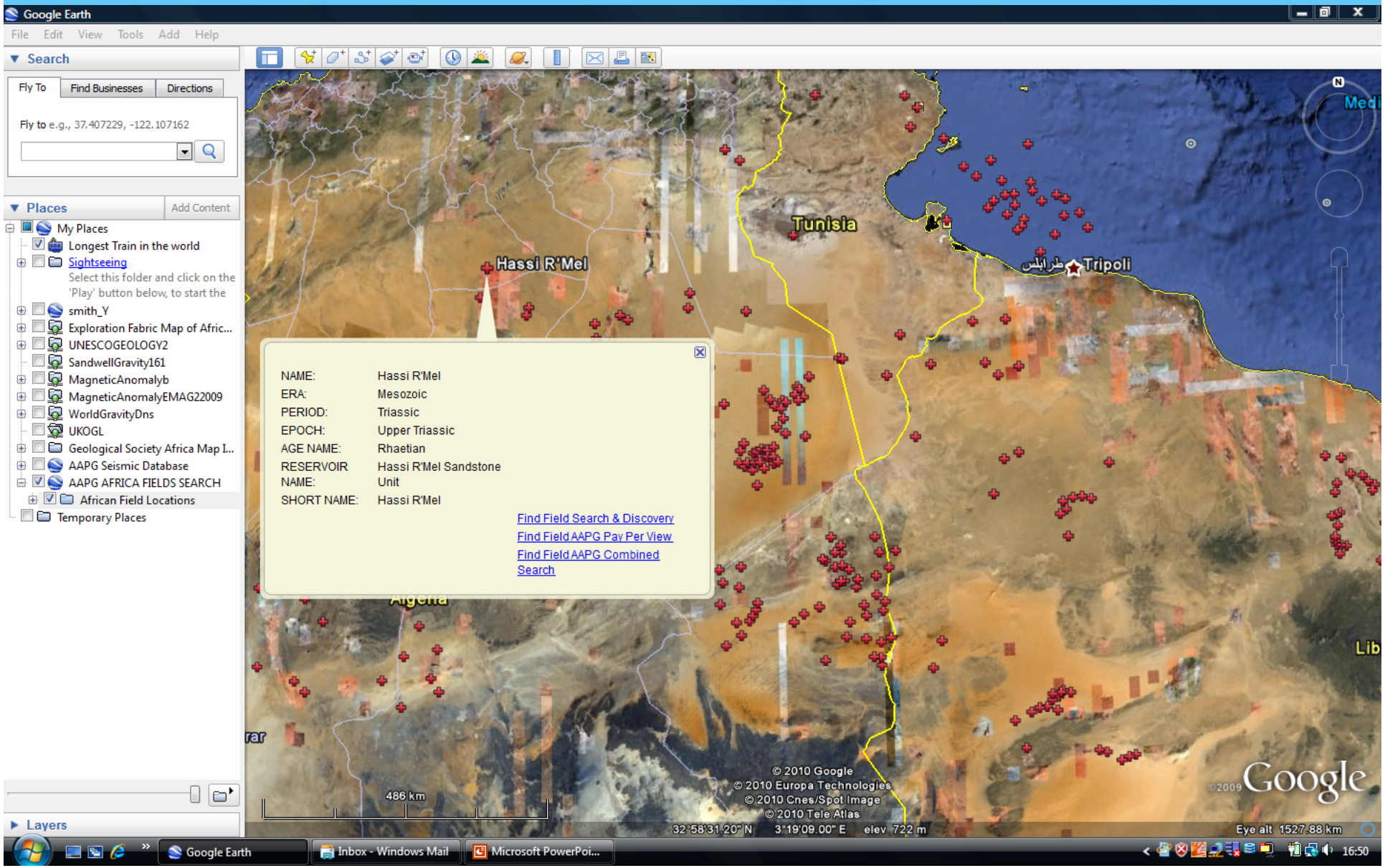
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2



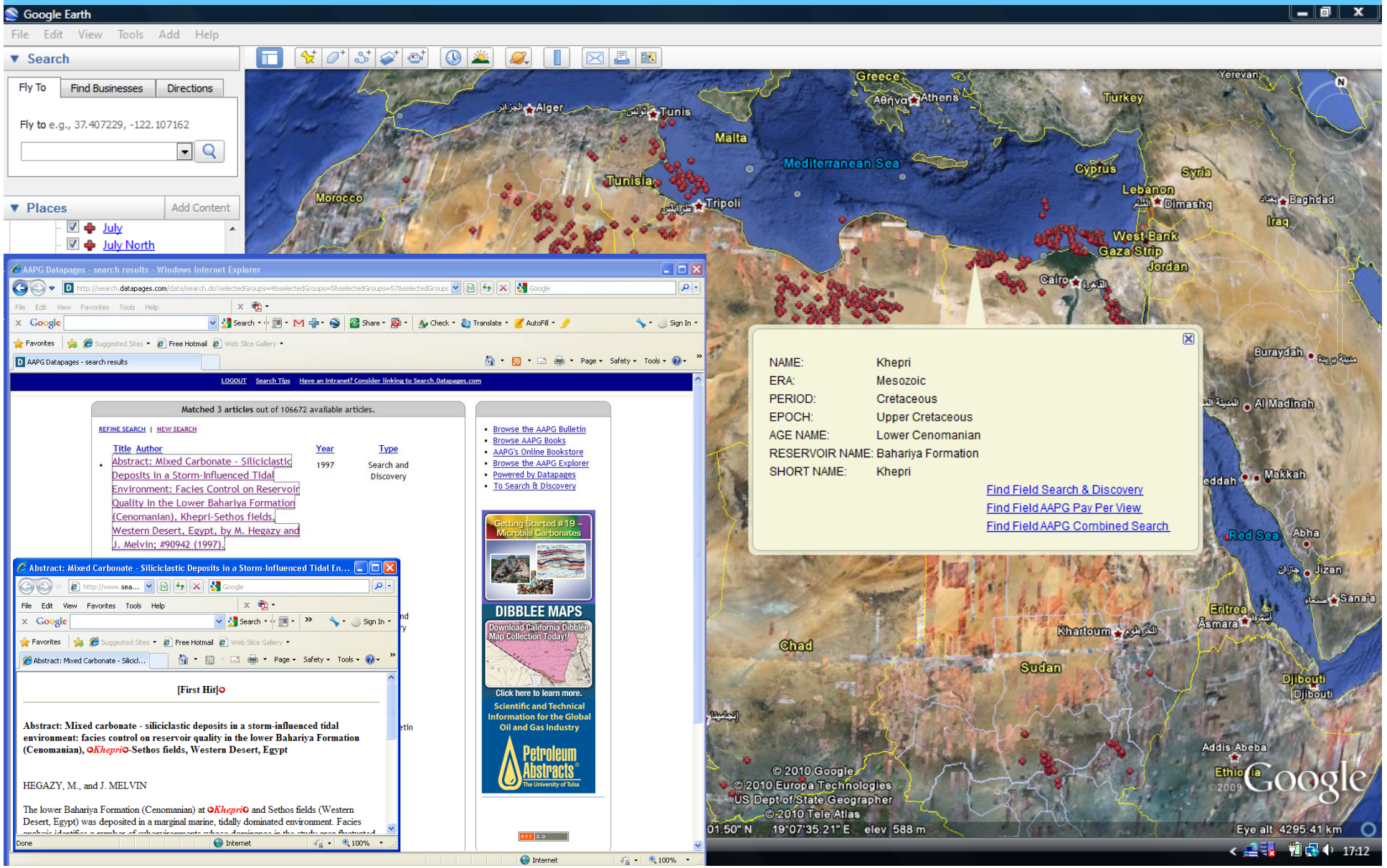
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2



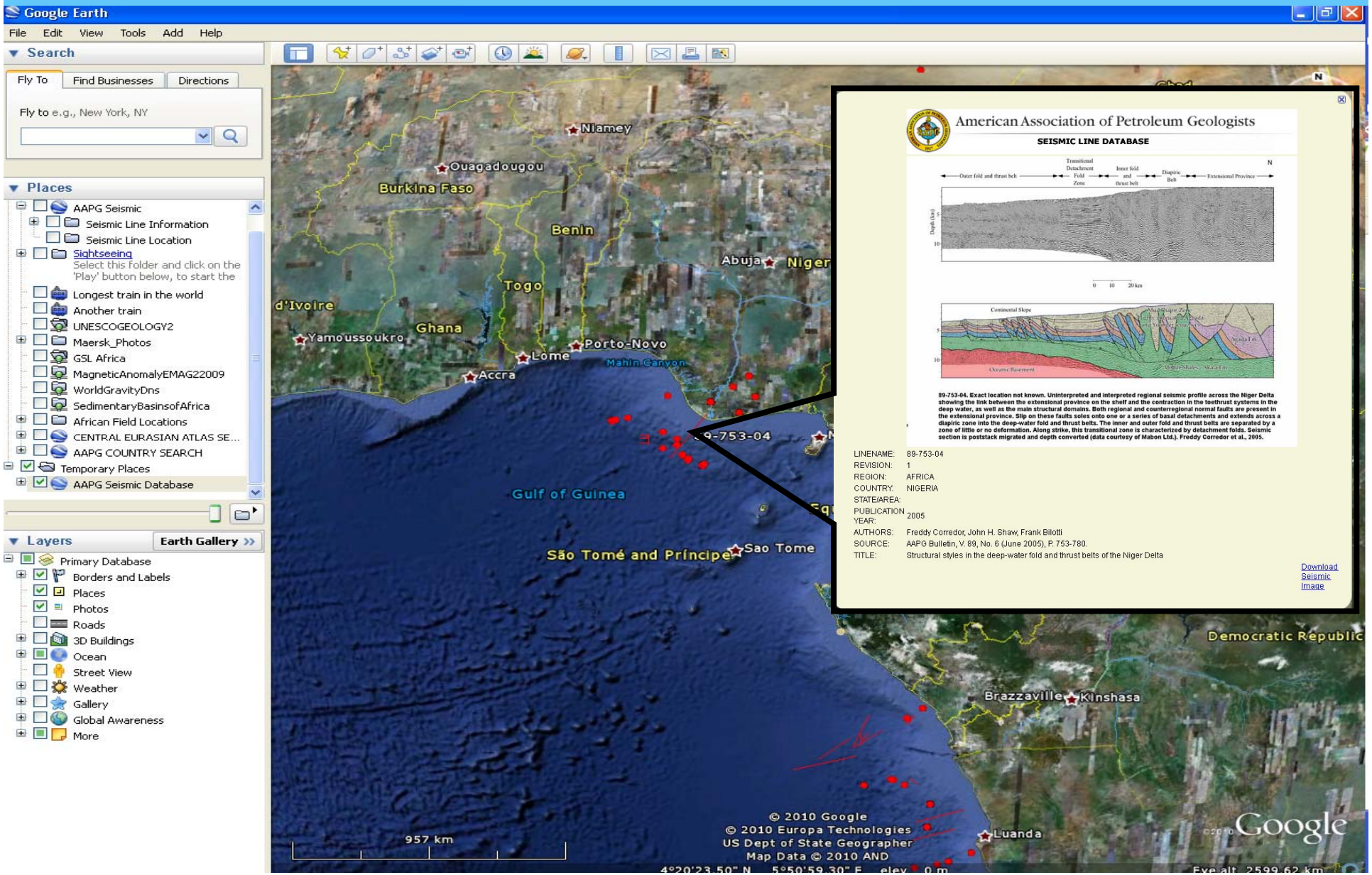
E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2



E G PURDY EXPLORATION FABRIC OF AFRICA
FINAL GIS VERSION EFA V3.2



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2



E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

APPENDIX NOTES ON GRAVITY-MAGNETIC INVERSION

The EFA Depth to Basement Project used spectral estimation to invert the Total Magnetic Intensity (TMI) and Free Air Gravity (FAFA) fields over the Africa area for depth to magnetic basement and depth to high density basement. Separate inversions were done for the magnetic and for the gravity data. These inversions were then combined. The technique used is described in the following papers:

Odegard, Mark E., William G. Dickson, Janice M. Christ, James W. Granath (2007) Lithological Inversion Using Gravity And Magnetic Data Integrated With Geological Information, extended abstract, 10th International Congress of The Brazilian Geophysical Society, Rio de Janeiro, Brazil.

Odegard, Mark E., Allan E. Kean, W. Robert Weber, Kirsten Fletcher and Mohammed Kidwai, (2005) Thickness, basement structure and tectonics from inversion and modeling over South America; extended abstract, 75thSEG meeting, Houston, Texas.

Odegard, M.E., W.R. Weber, D.D. Stavar, and W.G. Dickson (2004) Depth to basement using spectral inversion of magnetic and gravity data: Application to Northwest Africa and Brazil, extended abstract, Society of Exploration Geophysicists Annual Meeting, Denver.

The data used in the project were from all available public domain sources as well as some bathymetry data available only to GrizGeo.

E G PURDY EXPLORATION FABRIC OF AFRICA FINAL GIS VERSION EFA V3.2

APPENDIX NOTES ON GRAVITY-MAGNETIC INVERSION

The inversion was performed over the following area:
30 degrees west to 55 degrees east longitude
45 degrees south to 40 degrees north latitude.

GeoTiff images including associated color bars in a shaded relief with equal-area colors were produced together with the corresponding contours from grids of the inverted data:

- *Basement Elevation relative to mean sea level*
- *Depth to Basement relative to the earth's surface*
- *Sediment Thickness (continental surface/ocean bottom to depth to basement)*

The images are provided as GeoTiffs with a 2 arc-minute (~4 kilometers at the equator) resolution. The actual data resolution is on the order of 30 kilometers. The constraining grid for the inversions came from the sediment thickness grid from public domain sources and from data provided by the Purdy Project. Data resolution is highly variable.
In areas with sediment thickness with bathymetry was less than one kilometer the constraining grid thickness was used since the magnetic and gravity data were not of sufficient resolution for an inversion.
Depth to basement in the Atlas Mountains for Morocco and other over-thrust areas the sediment thickness is incorrect since there are sediments under the thrust. The top of the thrust is basement and constrains this inversion.
In many areas inter-crustal and Moho magnetic and density anomalies were larger than the signals from the basement. The software was re-written to better constrain the inversion of the weaker basement signals.