

9th International Command and Control Research and Technology Symposium



Counter-trafficking Integrated Display System (CIDS): A GIS-Based Command & Control Environment for Coalition Nations



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DoD Counter-Narcoterrorism Technology Program Office

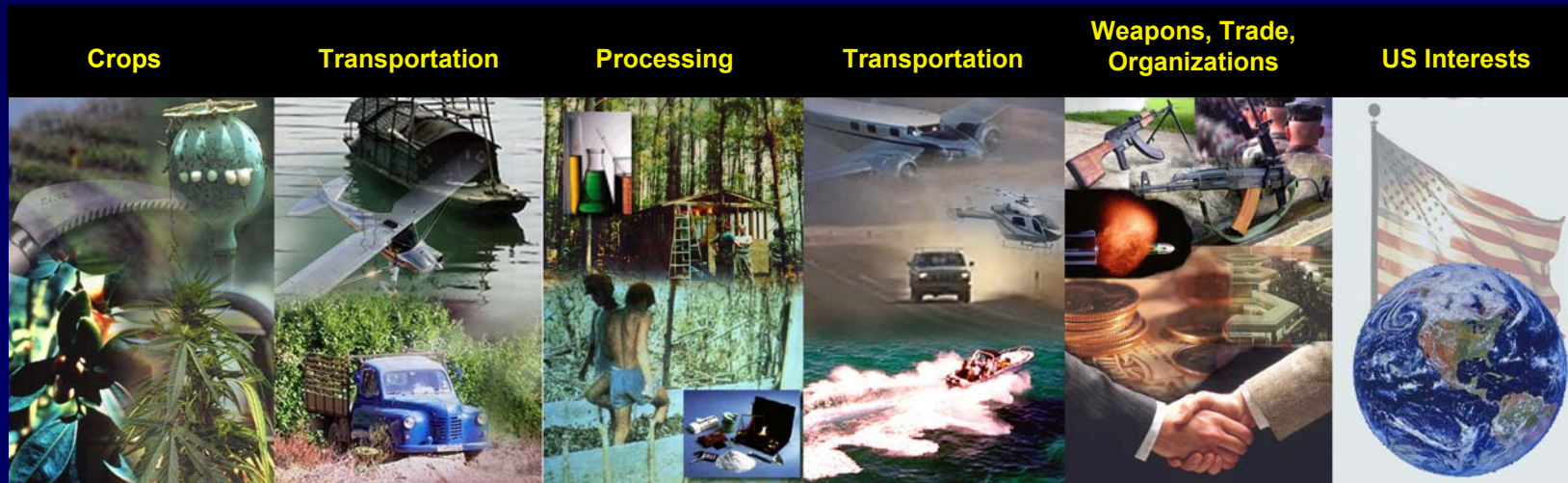
13 September 2004



DoD Counter-Narcoterrorism Technology Program Office



❖ A Systems Engineering Approach



- Understanding operational requirements
- Harvesting technologies to fulfill current and future needs
- Providing the bridge between operational and technical communities
- Design, develop and evaluate



Countertrafficking Integrated Display System (CIDS)



❖ Requirements

- Provide a C² tool which can create, manipulate, integrate and share geo-referenced information
- Enhance situational awareness of operational decision makers
- Provide an environment which supports the use of legacy, public domain, and internal data sources to provide an “*indigenous*” GIS capability
- Develop the capabilities of host nations in the use of spatial data management and analysis
- Incorporate scaleable design strategies that address both immediate and future C² requirements.
- Incorporate a thin client interface to satisfy a wide range of non-expert GIS users and which can be used in low-bandwidth world locations



Countertrafficking Integrated Display System (CIDS)



❖ Summary -

Provide host nations with better tools to improve their ability to analyze data, formulate plans and evaluate activities which support counter-trafficking missions.

- Narcotics**
- Terrorism**



Countertrafficking Integrated Display System (CIDS)



❖ Technical Description

- Indigenous GIS is built using commercial-off-the-shelf hardware and software
 - Provides access to a wide range of data types including those most likely to be shared by the U.S. government.
 - ESRI provides updates, patches, and support
- Web-based application is built upon ESRI ArcIMS and ArcGIS technologies combined with standard dynamic web design techniques
 - Provides a thin-client application that can be accessed using a standard web connection and Internet Explorer
 - Robust international customer support



Countertrafficking Integrated Display System (CIDS)

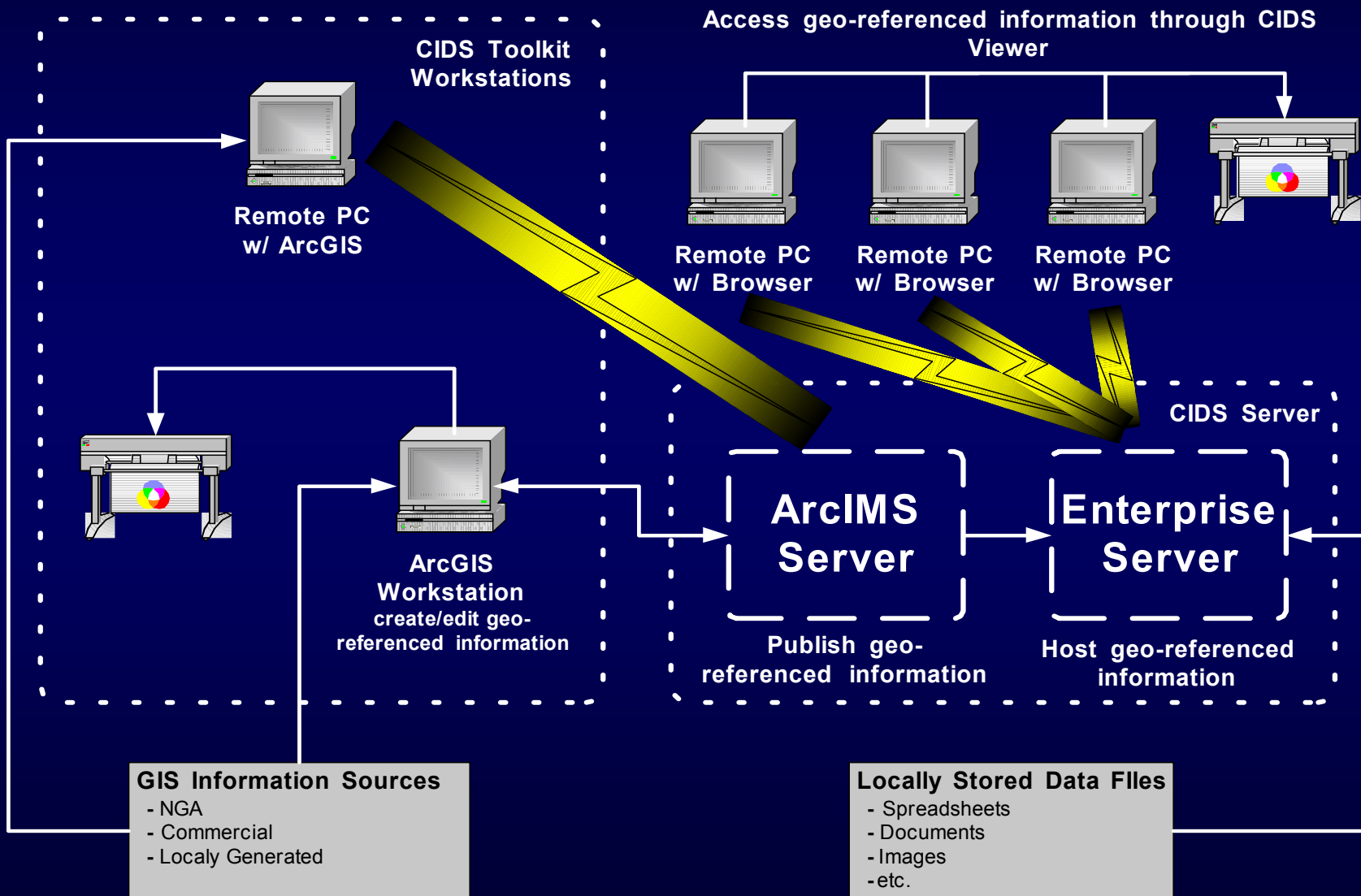


❖ Technical Description

- Multiple layers of geo-referenced data, including tabular data, feature data sets, and imagery can be overlaid and displayed simultaneously:
 - Roads, airfields, military infrastructure, political boundaries
 - Releasable intelligence from coalition partners; local INTEL
- Various non-spatial data types can be geo-referenced and distributed both electronically and via hardcopy
 - Documents, Spreadsheets, Images, Video and Audio files, tabular tracking data
- Data sources that can be used in conjunction with each other include, but are not limited to:
 - Publicly available data
 - Data sources provided by partner nations
 - Data generated by the host nation



Countertrafficking Integrated Display System (CIDS)

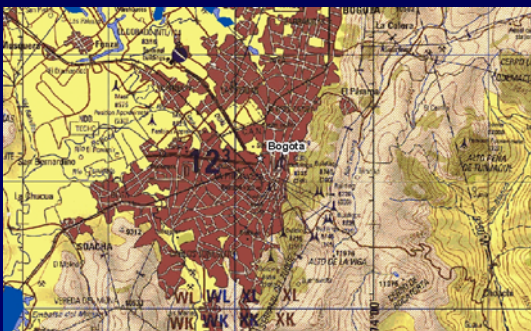




Countertrafficking Integrated Display System (CIDS)



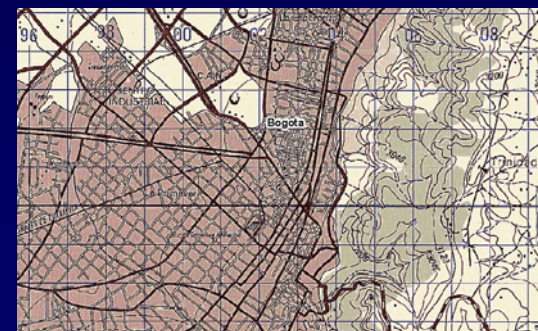
❖ Sample Information Layers



Jet Navigation Chart (JNC)



Joint Operation Graphic (JOG)



Operational Navigation Chart (ONC)



Global Navigation Chart (GNC)



Topographical Pilotage Chart (TPC)



Topographical Line Map (TLM)



Countertrafficking Integrated Display System (CIDS)



❖ Sample Analysis Layers

View Shed and Border Mobility Assessment

Selection

- Industrial
- Water Features
- Transportation
- Colombia Background Features
- NIMA Raster Map Group
- World and Regional Background

Selection Tool Options

Choose from the tools listed above to select features on the map

Drug Route Violence Assessment

Selection

- Exit Points
- Throughout Points
- Start Point
- 3 Routes
- Route 2 Buffers
- Route 3 Buffers

Selection Tool Options

Choose from the tools listed above to select features on the map

20 Miles

10 Miles

5 Miles

20 Miles

10 Miles

5 Miles

Cursor Location
lat: 4.01 --- lon: -81.33

Internet



Countertrafficking Integrated Display System (CIDS)



❖ Role-Based Access

- Arc GIS Developers
 - Acquire and Integrate spatial data
 - Provide access to that data through hardcopy maps and through the CIDS Viewer
- CIDS Viewer Administrators
 - Provide and control access to the CIDS viewer
- CIDS Viewer Users
 - Generate and manage text-based, multi-media and geo-referenced data accessed through the CIDS viewer
- CIDS Viewer Guests
 - View maps, text-based and multi-media data

CIDS - Microsoft Internet Explorer

File Edit View Favorites Tools Help Back Forward Stop Home Favorites Refresh

C.I.D.S.

COUNTERTRAFFICKING INTEGRATED DISPLAY SYSTEM

CIDS INFO FLIGHT PATHS DOCUMENTS MAPPING ADMINISTRATION HELP

- Welcome to CIDS -

Login completed successfully

Welcome to C.I.D.S. -

C.I.D.S., the Countertrafficking Integrated Display System, was designed to provide storage for and access to surveillance flight information. Using this system, information for flight paths and the coordinates that make up those paths can be entered into the database and accessed from the interface. Also, maps of these flight paths can be displayed and files can be associated with coordinates and uploaded onto the server.

Use the menu at the top of this page to access the section of the C.I.D.S. that you are interested in. Menus are displayed based on your security settings, therefore, if a menu item that you should have access to is not displayed, please see your system administrator.

Done Internet

CIDS - Microsoft Internet Explorer

File Edit View Favorites Tools Help

C·I·D·S

CIDS INFO FLIGHT PATHS DOCUMENTS

Flig

To view the coordinates for a specific flight path:
Click the arrow next to the number of coordinates listed for

To add, edit, or delete a flight path or coordinate:
Click the edit icon on the left side of either the flight path or
Click the add item icon at the bottom of either the flight pat

Map	Edit	Flight Date	Flight Number	Tail Number
		4/22/1998	456	762
		5/29/2003	869	222

Edit	Coord Date	Coord Status	Departme
	5/29/2003 11:50	Take Off	QUIBDO
	5/29/2003 12:00	Path Marker	QUIBDO
	5/29/2003 12:10	Path Marker	QUIBDO
	5/29/2003 12:20	Path Marker	QUIBDO
	5/29/2003 12:30	Path Marker	QUIBDO
	5/29/2003 12:40	Path Marker	QUIBDO
	5/29/2003 12:50	Path Marker	QUIBDO
	5/29/2003 13:00	Path Marker	QUIBDO
	5/29/2003 13:10	Path Marker	QUIBDO
	5/29/2003 13:20	Path Marker	QUIBDO
	5/29/2003 13:30	Area of Interest	QUIBDO
	5/29/2003 13:40	Area of Interest	QUIBDO
	5/29/2003 13:50	Path Marker	QUIBDO
	5/29/2003 14:00	Path Marker	QUIBDO
	5/29/2003 14:10	Path Marker	QUIBDO
	5/29/2003 14:20	Path Marker	QUIBDO
	5/29/2003 14:30	Landing	QUIBDO

	VALLE DEL CAUCA	E	3.53	-76.72	2			
	VALLE DEL CAUCA	E	3.6	-76.63	2			
	VALLE DEL CAUCA	E	3.7	-76.54	0			
	VALLE DEL CAUCA	E	3.78	-76.47	0			
	VALLE DEL CAUCA	E	3.89	-76.37	0			
	VALLE DEL CAUCA	E	3.98	-76.3	0			
	VALLE DEL CAUCA	E	4.11	-76.24	0			

Done Internet

CIDS Data Entry Window

Use this form to enter or change Flight Path attributes.

Flight Path Information Attributes

Flight Number:

Tail Number:

Aircraft Type:

Date: : :

Map Color:

Flight Path Comments

Save Remove Coordinate Cancel

Select Color - Microsoft Int...

Use this form to enter or change Flight Path Coordinate attributes.

Coordinate Information Attributes

Status: Date: , , Time: : : (HH:MM:SS)Operation type: Operation code: Department: Base / City: Types: HF SAT COM UHF VHF/AM 1 VHF/AM 2 VHF/FM Radar contact:

Location Attributes

Latitude

Longitude

Degrees: Degrees: Minutes: Minutes: Seconds: Seconds: Hemisphere: Hemisphere: Decimal degrees: Decimal degrees:

Associated Files

Browse for a documents, images, and videos to upload for this coordinate.

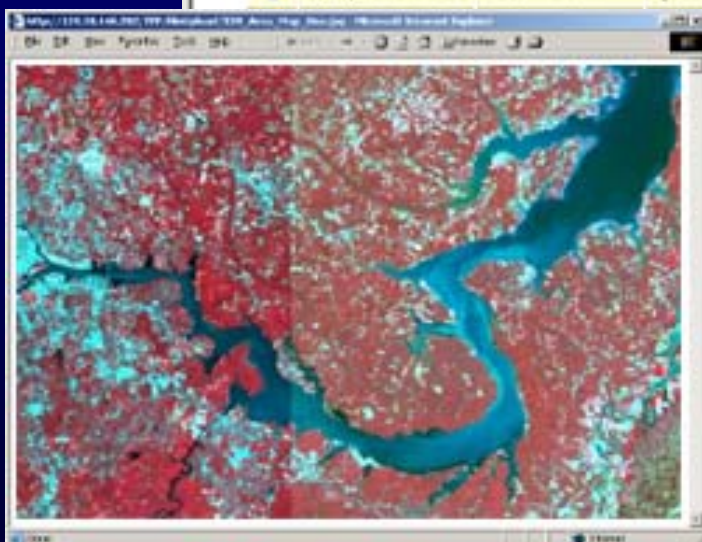
 [539 Area Map One.jpg](#) [539 Area Map Two.jpg](#)

CIDS - Microsoft Internet Explorer

File Edit View Favorites Tools Help

http://128.98.146.202/189/Welbyland/540_Vaduzero_Defaults - Microsoft Internet Explorer

ID	Date	Text (en)	Text (es)	City	Latitude	Longitude	Province	Mod
1	129	05 03 2003	ELN terrorists are suspected of detonat	Cucuta	0 2630556	-73 356306	Caquetá	Bom
2	130	14 11 2002	Terrorists detonated a car bomb in down	Cucuta	0 2630556	-73 356306	Caquetá	Car B
3	862	12 03 2002	Eight drug users were killed in a hotel in	Cucuta	0 2630556	-73 356306	Caquetá	Eroc
4	940	12 01 2002	One person was injured when 25 kilos of	Cucuta	0 2630556	-73 356306	Caquetá	Orhe
5	975	25 01 2002	ELN exploded 30 kilograms of dynamite	Cucuta	0 2630556	-73 356306	Caquetá	Bom
6	981	01 02 2002	The ELN detonated a car bomb in Cucut	Cucuta	0 2630556	-73 356306	Caquetá	Car B
7	508	03 03 2003	Terrorists detonated an explosive device	Puerto As	0 5158333	-76 495	Putumayo	Ush
8	510	04 05 2003	Terrorists carried out a terrorist attack a	Puerto As	0 5158333	-76 495	Putumayo	Ush
9	02	26 02 2004	FARC terrorists killed one soldier and w	Ipiales	0 5833333	-77 416666	Nariño	Hanc
10	585	23 01 2003	FARC narco-terrorists detonated an exp	Ipiales	0 5833333	-77 416666	Nariño	Ush
11	642	31 07 2002	FARC terrorist killed two people in an at	Carlosana	0 8666667	-77 733333	Nariño	Eroc
12	627	13 12 2002	FARC narco-terrorists killed one and inj	Cumbal	0 9100000	-77 910000	Nariño	Ush
13	779	22 04 2003	Terrorists kidnapped six people in the Li	La Cocha	1 1166667	-77 288888	Nariño	Higr
14	575	27 01 2004	FARC terrorists blew up a bridge in the l	Mococa	1 15	-76 616666	Putumayo	Bom
15	145	20 03 2003	FARC terrorists attacked the town of Ric	Ricaute	1 1666667	-76 166666	Nariño	Ush
16	520	16 07 2002	FARC terrorists kidnapped the three-yea	Pasto	1 1666667	-77 166666	Nariño	Kidn
17	848	21 03 2002	FARC guerrillas took over an aqueduct in	Pasto	1 1666667	-77 166666	Nariño	Orhe
18	877	05 03 2002	Summen assassinated Cesar Villegas, c	Santa Fe	1 3666667	-77 033333	Nariño	Eroc
19	143	27 10 2002	FARC narco-terrorists murdered five civil	Alban	1 45	-76 966666	Nariño	Eroc
20	529	04 12 2001	14-year old was killed in attack by FAR	San Loren	1 5	-77 166666	Nariño	Eroc



CIDS Data Entry Window

ement

ow.

Location Desc	Upload Date
istan	7/30/2004 8:33:21 AM
try of Colombia	8/23/2004 7:40:59 AM
land	8/24/2004 8:47:23 AM
mbia	8/24/2004 8:57:46 AM

Use this form to enter or change Document Attributes.

Document Information Attributes

Description: Violence Database

Location Desc: Colombia

Category: General

Data Type: Spreadsheet

Document Name: 354_Violence_Data.xls

Document Browser: Browse...

Document Location

Latitude Longitude

Top: 5.426773000 -78.3541405

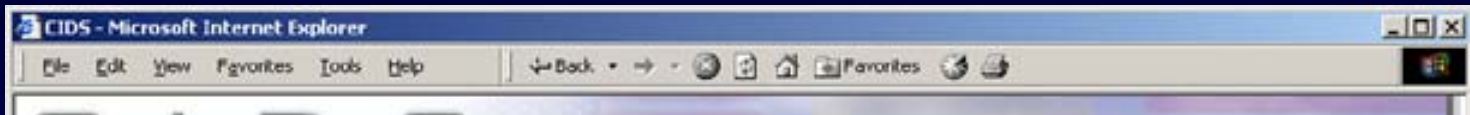
Bottom: 2.666119 -75.6288795

Map Location



Map Tools

Save Remove Document Cancel



CIDS - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Home Favorites Stop

Map Layers

- > Violence
- > Drug Movement
- > Border Movement
- > Utility
- > Industrial
- > Water Features
- > Transportation
- > Colombia Background
- > NIMA Raster Map Gri
- > World and Regional E

Map Exploration Tools

Map Reporting Tools

Cursor Location
lat: 2.43 --- lon: -77.84

0 37 Miles

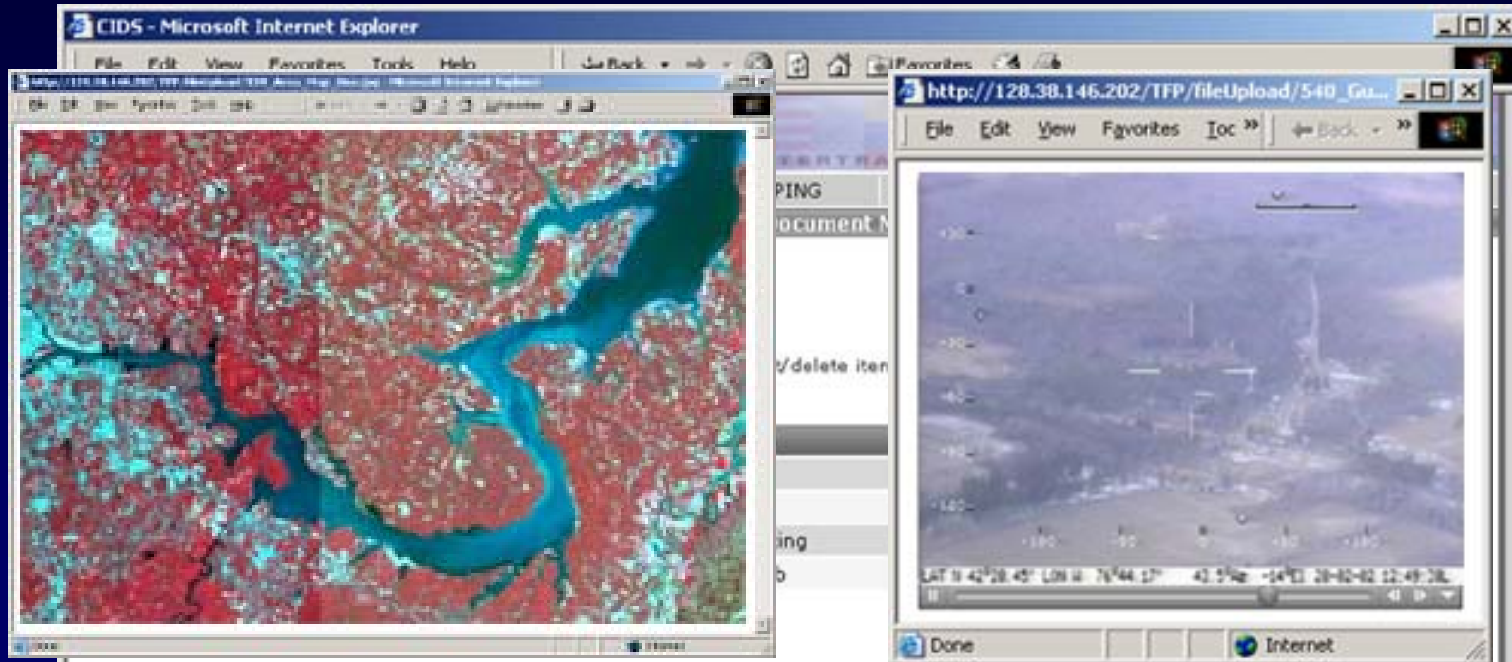
Selection

Selection Tool Options

Choose from the tools listed above to select features on the map

Done Internet





http://128.38.146.202/TFP/fileUpload/540_Vulnarea_Estado - Microsoft Internet Explorer

ID	Date	Text (en)	Text (es)	City	Latitude	Longitude	Province	Map
129	05 03 2003	ELN terrorists are suspected of detonat		Cucuta	0 2630556	-73 392300	Caqueta	Dona
130	14 11 2002	Terrorists detonated a car bomb in down		Cucuta	0 2630556	-73 392300	Caqueta	Car B
862	12 03 2002	Eight drug users were killed in a hotel in		Cucuta	0 2630556	-73 392300	Caqueta	Eroc
940	12 01 2002	One person was injured when 25 kilos (Cucuta	0 2630556	-73 392300	Caqueta	Orhe
975	25 01 2002	ELN exploded 30 kilograms of dynamite		Cucuta	0 2630556	-73 392300	Caqueta	Bom
981	01 02 2002	The ELN detonated a car bomb in Cucut		Cucuta	0 2630556	-73 392300	Caqueta	Car B
509	03 03 2003	Terrorists detonated an explosive device		Puerto As	0 5158333	-76 495	Putumayo	Unk
510	04 05 2003	Terrorists carried out a terrorist attack si		Puerto As	0 5158333	-76 495	Putumayo	Unk
02	26 02 2004	FARC terrorists killed one soldier and w		Ipiales	0 5833333	-77 416666	Nariño	Hanc
586	23 01 2003	FARC narco-terrorists detonated an exp.		Ipiales	0 5833333	-77 416666	Nariño	Unk
642	31 07 2002	FARC terrorist killed two people in an at		Carlosama	0 8666667	-77 733333	Nariño	Eroc
627	13 12 2002	FARC narco-terrorists killed one and inj		Cursibal	0 9100000	-77 910000	Nariño	Unk
779	22 04 2003	terrorists kidnapped six people in the Li		La Cocha	1 1166667	-77 288888	Nariño	Kidr
575	27 01 2004	FARC terrorists blew up a bridge in the l		Mococa	1 15	-76 616666	Putumayo	Bom
145	20 03 2003	FARC terrorists attacked the town of Ric		Ricarte	1 1666667	-76 166666	Nariño	Unk
520	16 07 2002	FARC terrorists kidnapped the three-yea		Pasto	1 1666667	-77 166666	Nariño	Kidr
848	21 03 2002	FARC guerrillas took over an aqueduct in		Pasto	1 1666667	-77 166666	Nariño	Orhe
877	05 03 2002	Sonnen assassinated Cesar Villegas, c		Santa Fe	1 3666667	-77 033333	Nariño	Eroc
143	27 10 2002	FARC narco-terrorists murdered five civil		Alban	1 45	-76 966666	Nariño	Eroc
529	04 12 2001	14-year old was killed in attack by FAR		San Loren	1 5	-77 166666	Nariño	Eroc

Locations of Interest Criminal Events

C · I · D · S

COUNTRY TRAFFICKING INTEGRATED DISPLAY SYSTEM

- CIDS INFO
- FLIGHT PATHS
- DOCUMENTS
- MAPPING
- ADMINISTRATION
- HELP

- Mapping Tools: Map Viewer -

- Layer Options
- Reporting Layers
 - Flight Paths
 - Coordinates
 - Documents
 - Violence
 - Drug Movement
 - Exit Points
 - Throughput Poir
 - Start Point
 - 3 Routes
 - Route 2 Buffers
 - Route 3 Buffers
 - Route 1 Buffers

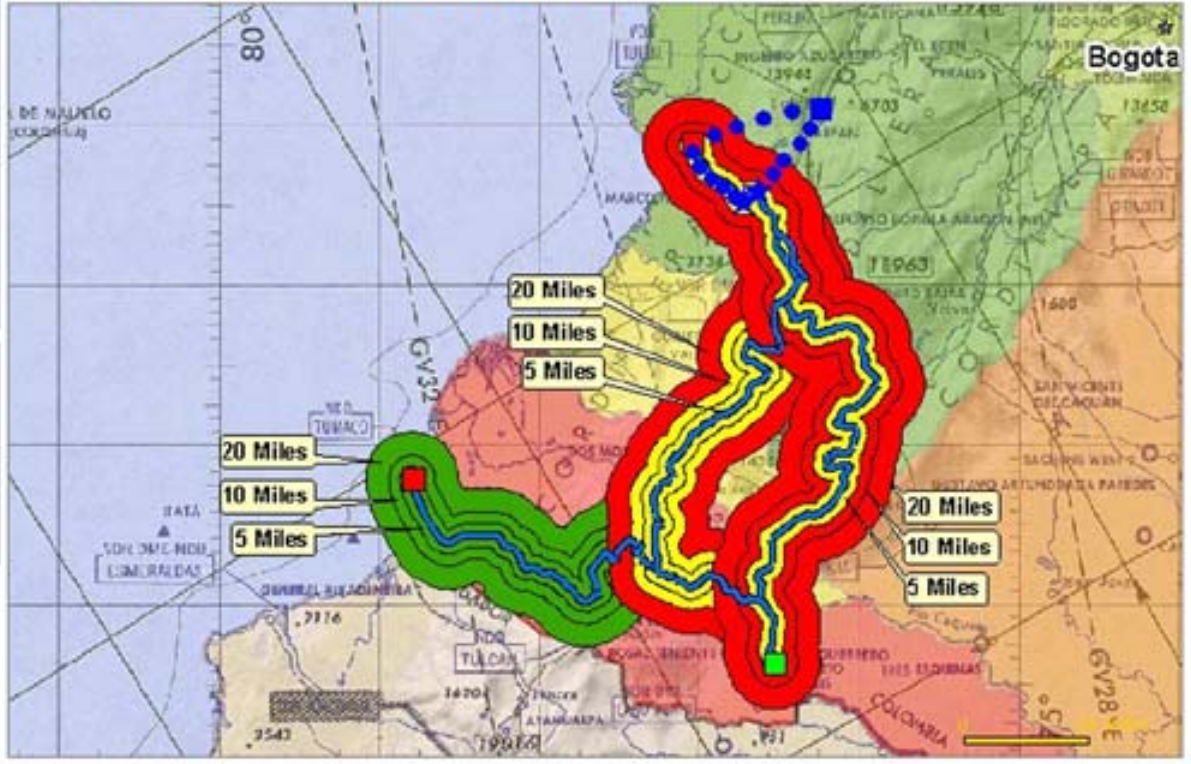
Selection

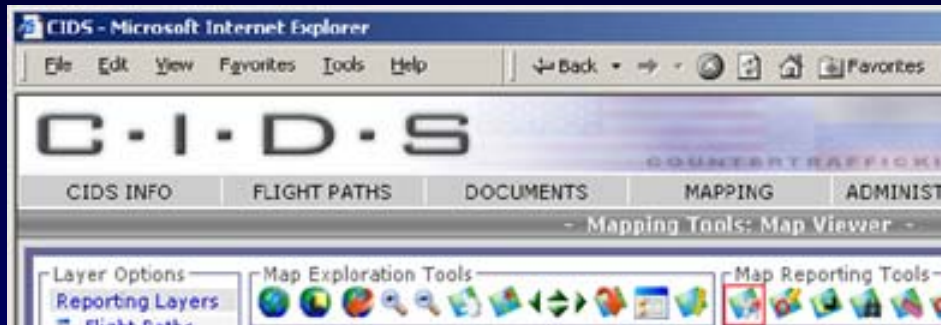
Selection Tool Options
Choose from the tools listed above to select features on the map

Map Exploration Tools



Map Reporting Tools





Use this form to access Flight Path Coordinate attributes.

Coordinate Information Attributes

Status: Area of Interest

Date: 05 : 29 : 2003

Time: 13 : 40 : 00 (HH:MM:SS)

Operation type: Surveillance Flight Investigating Drug related activity

Operation code: E

Department: QUIBDO

Base / City: VALLE DEL CAUCA

Aircraft Communication Attributes

Types: SAT COM, UHF, VHF/FM

Radar contact: No

Coordinate Location Attributes

Latitude	Longitude
Degrees: 3	Degree
Minutes: 36	Minute
Seconds: 0	Second
Hemisphere: 1	Hemisphere
Decimal degrees: 3.6	Decimal degree

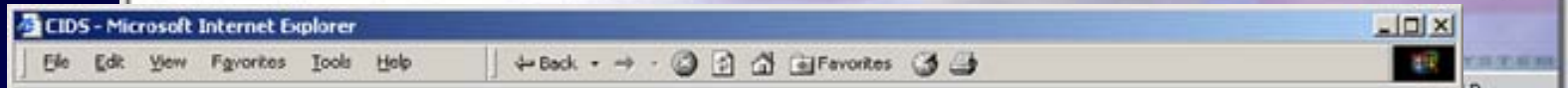
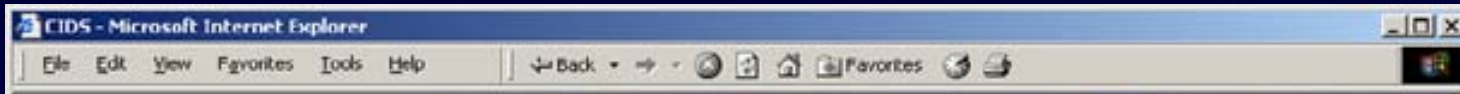
Associated Files

File Name

[540_Violence_Data.xls](#)

[540_Gunfire.mp4](#)

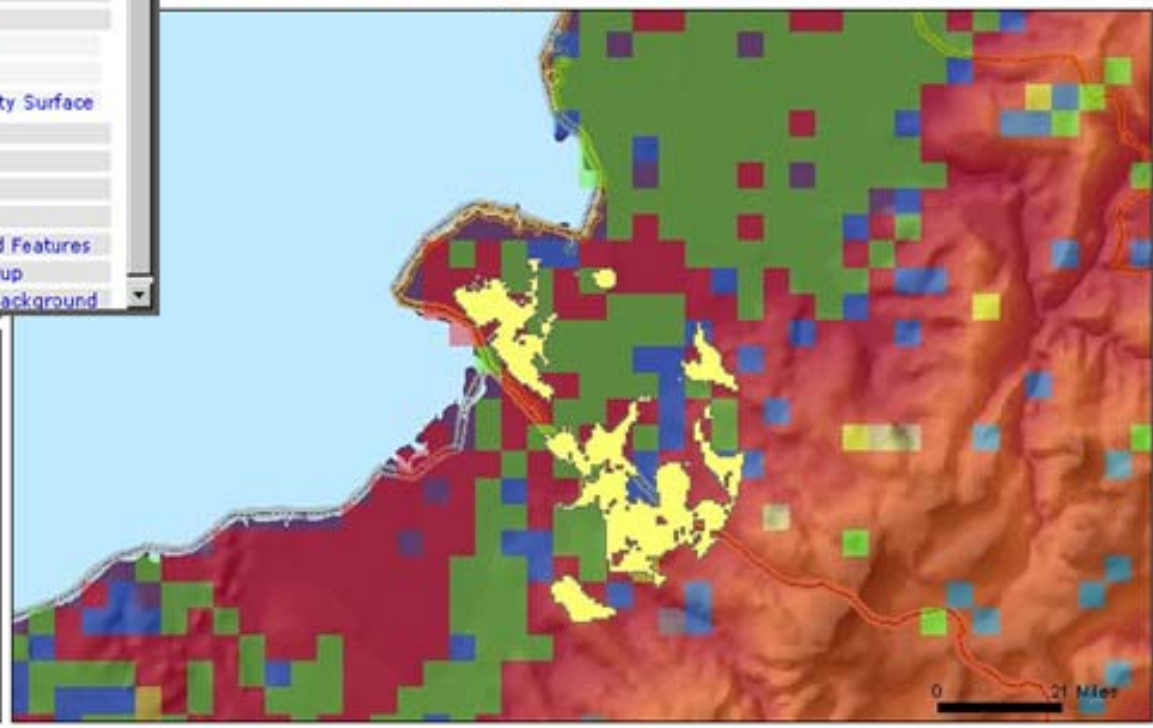
ID	Date	Text (en)	Text (es)	City	Latitude	Longitude	Province	Mod
1	05/03/2003	ELN terrorists are suspected of detonating		Cucuta	0.2630556	-73.3563000	Caqueta	Dom
2	12/11/2002	Terrorists detonated a car bomb in down		Cucuta	0.2630556	-73.3563000	Caqueta	Car E
3	12/09/2002	Eight drug users were killed in a hotel in		Cucuta	0.2630556	-73.3563000	Caqueta	Ejec
4	12/01/2002	One person was injured when 25 kilos of		Cucuta	0.2630556	-73.3563000	Caqueta	Otra
5	25/01/2002	ELN exploded 30 kilograms of dynamite		Cucuta	0.2630556	-73.3563000	Caqueta	Bom
6	01/02/2002	The ELN detonated a car bomb in Cucut		Cucuta	0.2630556	-73.3563000	Caqueta	Car E
7	03/03/2003	Terrorists detonated an explosive device		Puerto As	0.5158333	-76.495	Putumayo	Unk
8	04/05/2003	Terrorists carried out a terrorist attack si		Puerto As	0.5158333	-76.495	Putumayo	Unk
9	26/02/2004	FARC terrorists killed one soldier and w		Ipiques	0.5833333	-77.4166667	Nariño	Hanc
10	23/01/2003	FARC narco-terrorists detonated an exp.		Ipiques	0.5833333	-77.4166667	Nariño	Unk
11	31/07/2002	FARC terrorist killed two people in an at		Carlosama	0.8666667	-77.7333333	Nariño	Ejec
12	13/12/2002	FARC narco-terrorists killed one and inj		Cumbal	0.9166667	-77.9166667	Nariño	Unk
13	22/04/2003	Terrorists kidnapped six people in the Li		La Cocha	1.1166667	-77.2888889	Nariño	Kidr
14	27/01/2004	FARC terrorists blew up a bridge in the l		Mocoa	1.15	-76.6166667	Putumayo	Bom
15	20/03/2003	FARC terrorists attacked the town of Rio		Ricaurte	1.1666667	-76.1666667	Nariño	Unk
16	16/07/2002	FARC terrorists kidnapped the three-yea		Pasto	1.1666667	-77.1666667	Nariño	Kidr
17	21/03/2002	FARC guerrillas took over an aqueduct in		Pasto	1.1666667	-77.1666667	Nariño	Otra
18	05/03/2002	Guerrillas assassinated Cesar Villegas, c		Santa Fe	1.3666667	-77.0333333	Nariño	Ejec
19	27/10/2002	FARC narco-terrorists murdered five civil		Achan	1.45	-76.9666667	Nariño	Ejec
20	04/12/2001	14-year old was killed in attack by FAR		San Loren	1.5	-77.1666667	Nariño	Ejec



- Map Layers
- > Violence
 - > Drug Movement
 - > Border Movement
 - View Shed Analysis
 - Landcover
 - Cross Country Mobility Surface
 - > Utility
 - > Industrial
 - > Water Features
 - > Transportation
 - > Colombia Background Features
 - > NIMA Raster Map Group
 - > World and Regional Background



Cursor Location
lat: 1.99 --- lon: -79.97



Selection

Selection Tool Options

Choose from the tools listed above to select features on the map





Countertrafficking Integrated Display System (CIDS)



❖ Planned Enhancements

- Integrate live feeds from sensors and beacons
- Airborne Video Synchronization with GIS
- Real time feeds
 - Blue Force Tracking
 - Various other radar tracks
 - ArcIMS data sources including
 - Weather, Traffic, Updated Base Mapping