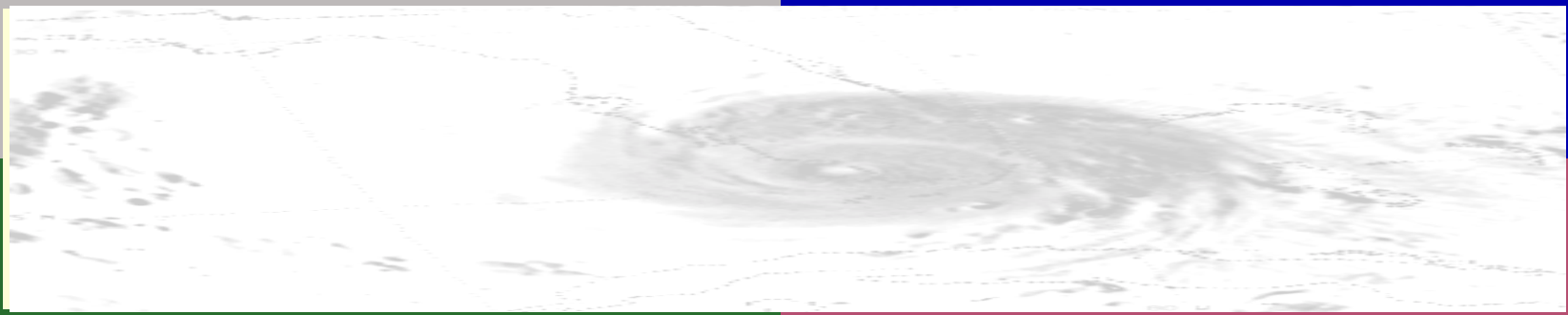
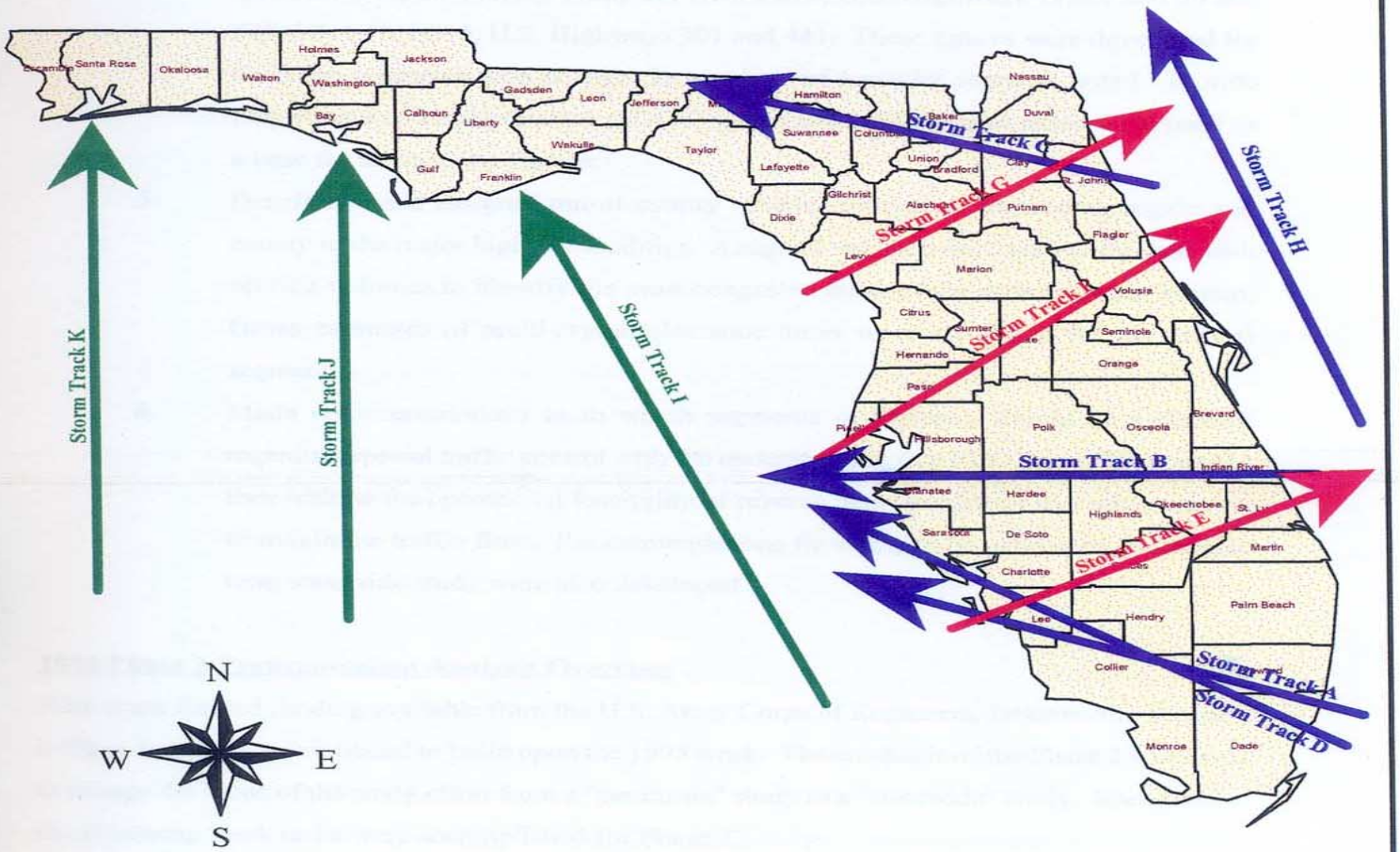
How Florida Met Emergency Management's Traffic Data Challenge



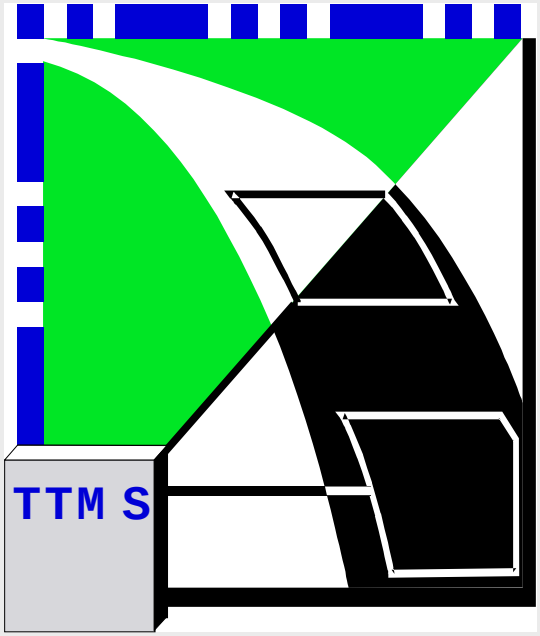
NATMEC 2000

Presented by: Harshad Desai, P.E.
Florida Department of Transportation
harshad.desai@dot.state.fl.us

Major Hurricane Storm Tracks



Before Andrew



TTMS

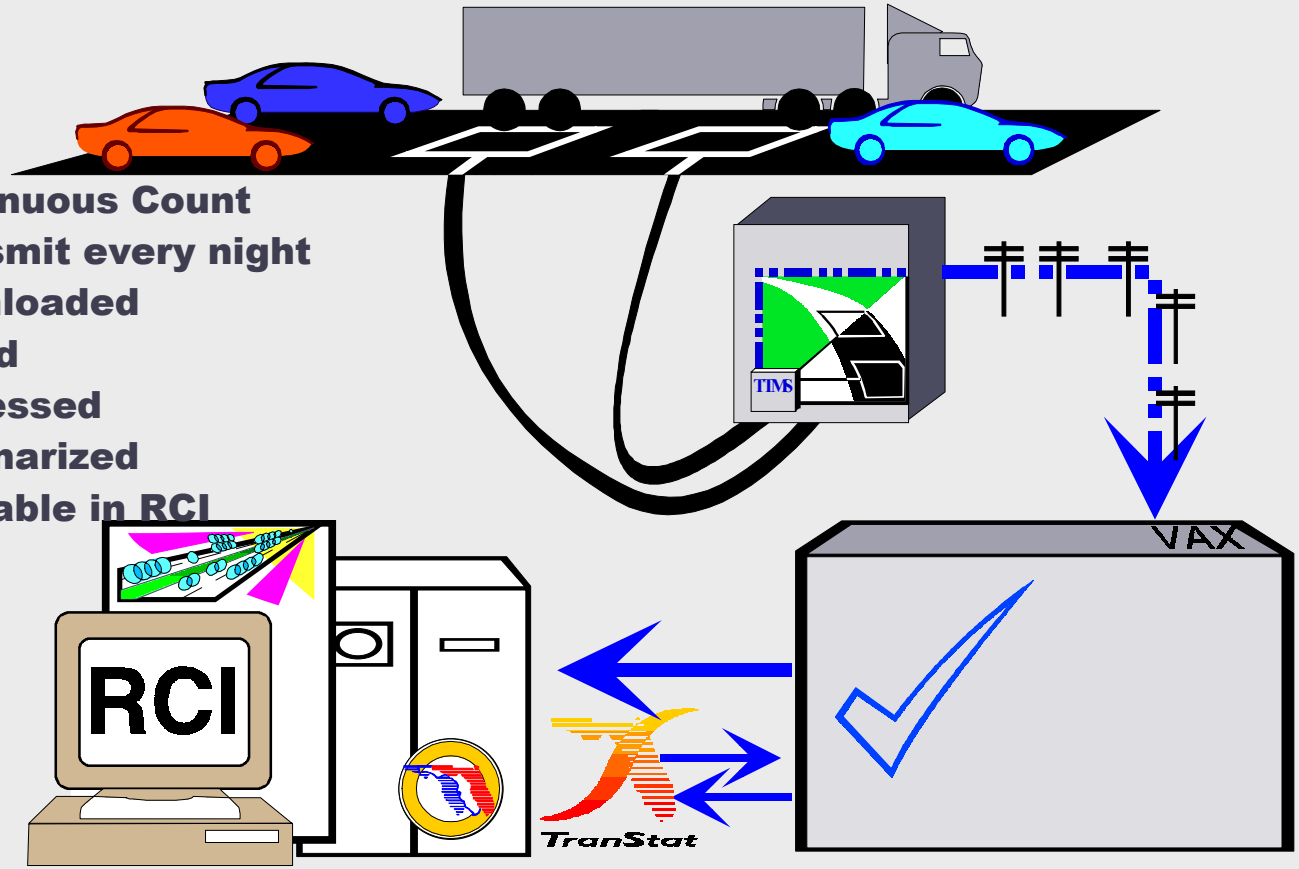
Telemetry Traffic Monitoring Site

- Continuously record
- Transmit via telephone lines
- Counts,Classification, Speed, Weight

Telemetry Traffic Monitoring Process

Accessed once a day and stored for later.

- Continuous Count
- Transmit every night
- Downloaded
- Edited
- Processed
- Summarized
- Available in RCI



Before Andrew

- 100 traffic monitoring sites
- Data capable of being accessed only once
- Information provided manually for requested locations
- 24-hour summaries provided via nightly polling

Lessons Learned After Andrew

- Problem:
  - Little Statewide coordination
- Solutions:
  - New Comprehensive Emergency Management Plan
    - Federal ESF Structure
    - FDOT: 1 and 3 (Transportation & Public Works)
  - Provide support to locals

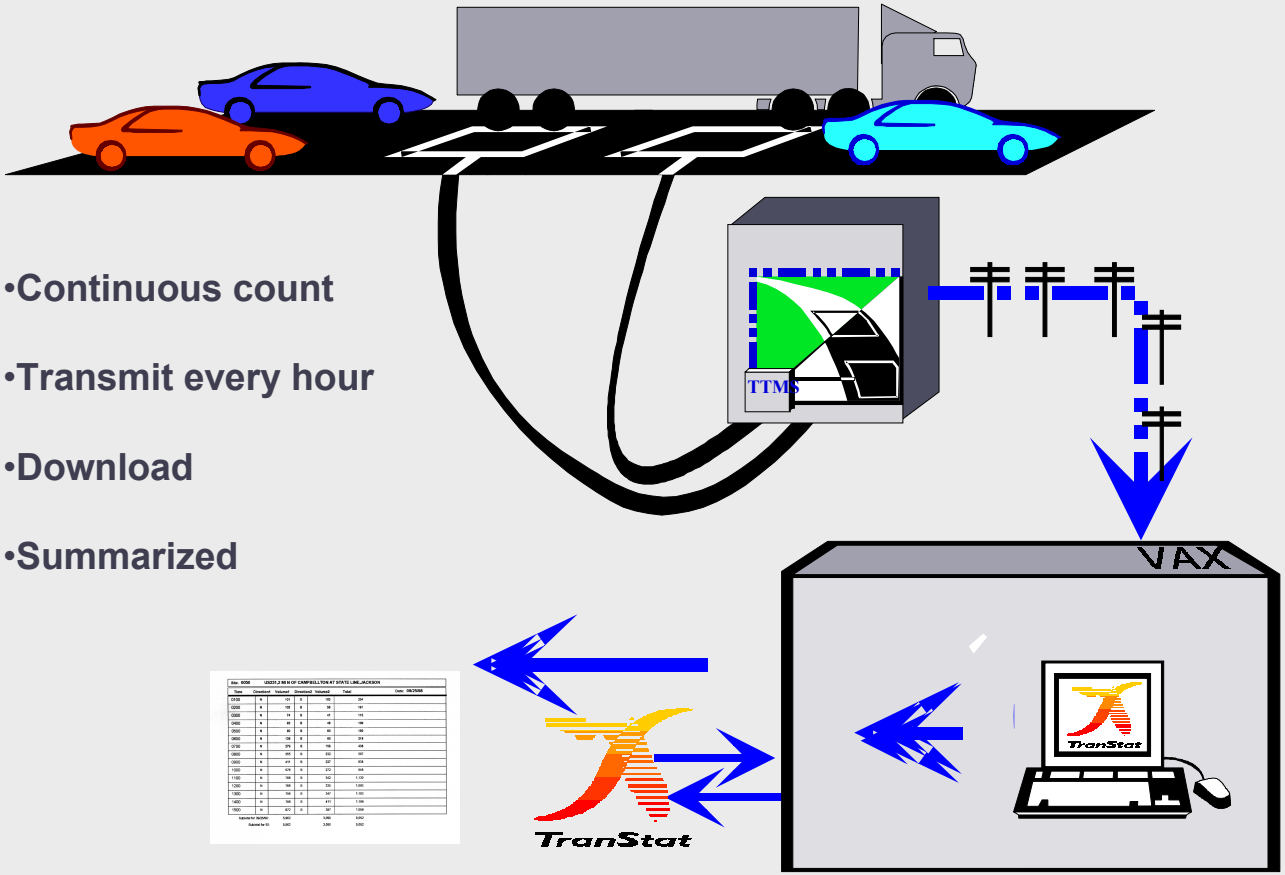
FDOT’s Challenge

- Provide real time hourly traffic count information access (special specifications)
- Developed software for automation of faxing requested real time information

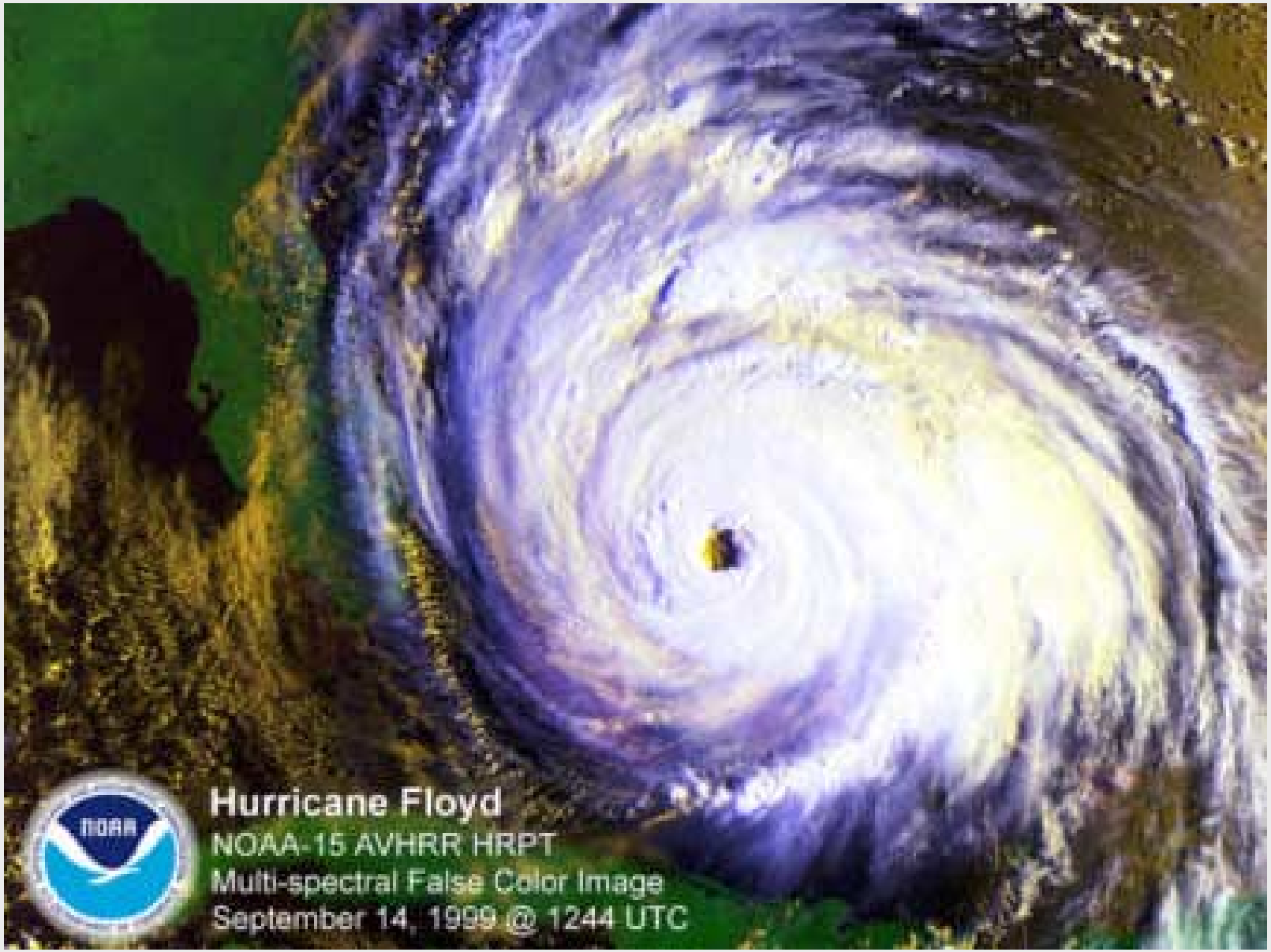
Equipment

Telemetry Traffic Monitoring Site

- Continuous count
- Transmit every hour
- Download
- Summarized



September 14, 1999



Site: 0050 US231,2 MI N OF CAMPBELLTON AT STATE LINE,JACKSON

Date: 09/25/98

Time	Direction1	Volume1	Direction2	Volume2	Total
0100	N	101	S	103	204
0200	N	103	S	58	161
0300	N	74	S	41	115
0400	N	63	S	46	109
0500	N	90	S	60	150
0600	N	138	S	80	218
0700	N	279	S	159	438
0800	N	355	S	232	587
0900	N	411	S	227	638
1000	N	576	S	272	848
1100	N	788	S	342	1,130
1200	N	768	S	325	1,093
1300	N	756	S	347	1,103
1400	N	788	S	411	1,199
1500	N	672	S	387	1,059
Subtotal for 09/25/98:		5,962		3,090	9,052
Subtotal for 50:		5,962		3,090	9,052

Traffic Counter Data from ESF 1

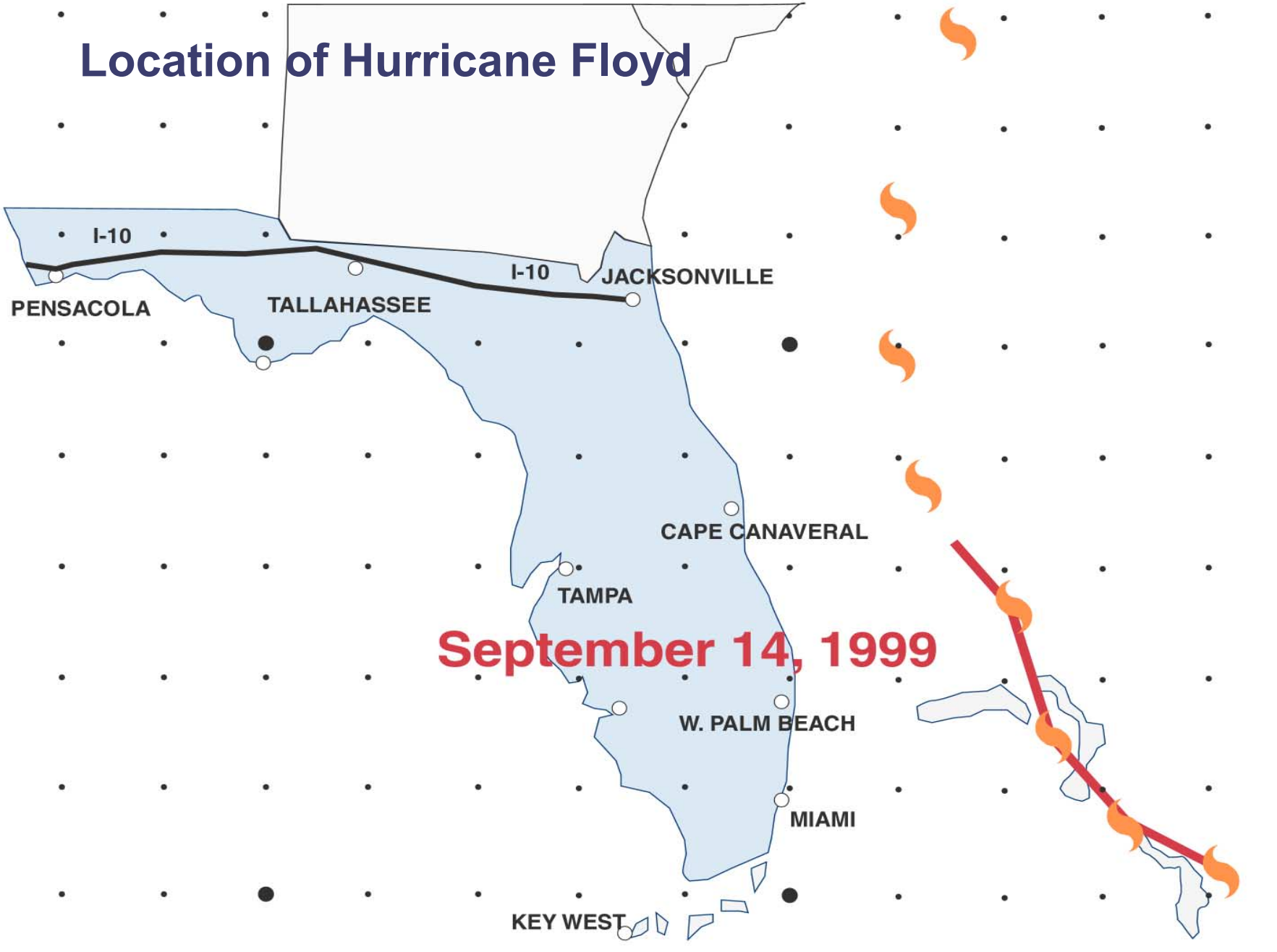
Date: 25-Sep-98
Time: 01:21:23 PM
Sender: Gary Sokolow 488-9747

Counter Number	Road Name	Location County	Time of Analysis	NB Count	Approx Capacity**	Polling Results	Notes
44	US 19	Citrus	1200 Hours	505	800	Normal	
143	SR 29	Collier	1200 Hours	106	800	very light	
145	US 17	DeSoto	1200 Hours	277	800	2 X normal but light traffic	
180	US - 301	Manatee	1200 Hours	701	800		Not I-95 location
184	I 75	Lee	1200 Hours		4,000	**Bad Counter - Bad Counter**	Major Problem with count station
190	I 75	Pasco	1200 Hours	2,390	4,000	60% higher than normal	
191	I 75	Collier	1200 Hours	123	4,000	NB and SB Very light	High winds in area
199	US 19	Pasco	1200 Hours	2,137	2,000	Normal	
224	I 75	Hillsborough	1200 Hours	No Count	4,000	Slightly higher than normal at 10 am	
225	I 75	Sarasota	1200 Hours	1,495	4,000	lighter than normal	
260	I-95	St. Lucie	1200 Hours	680	4,000	Lower than Normal	
270	I 75	Collier	1200 Hours	No Count	4,000	**Bad Counter - Bad Counter**	We haven't gotten reports - possible counter problem
317	I 75	Alachua	1200 Hours	No Count	4,000	**Bad Counter - Bad Counter**	problems with this counter
421	FL Tpk	St Lucie	1200 Hours	420	4,000	very light	
922	I 75	Hillsborough	1200 Hours	No Count	4,000	**Bad Counter - Bad Counter**	Not Working

C:\Data Files\count8.WK4

*** My Guess - Gary Sokolow

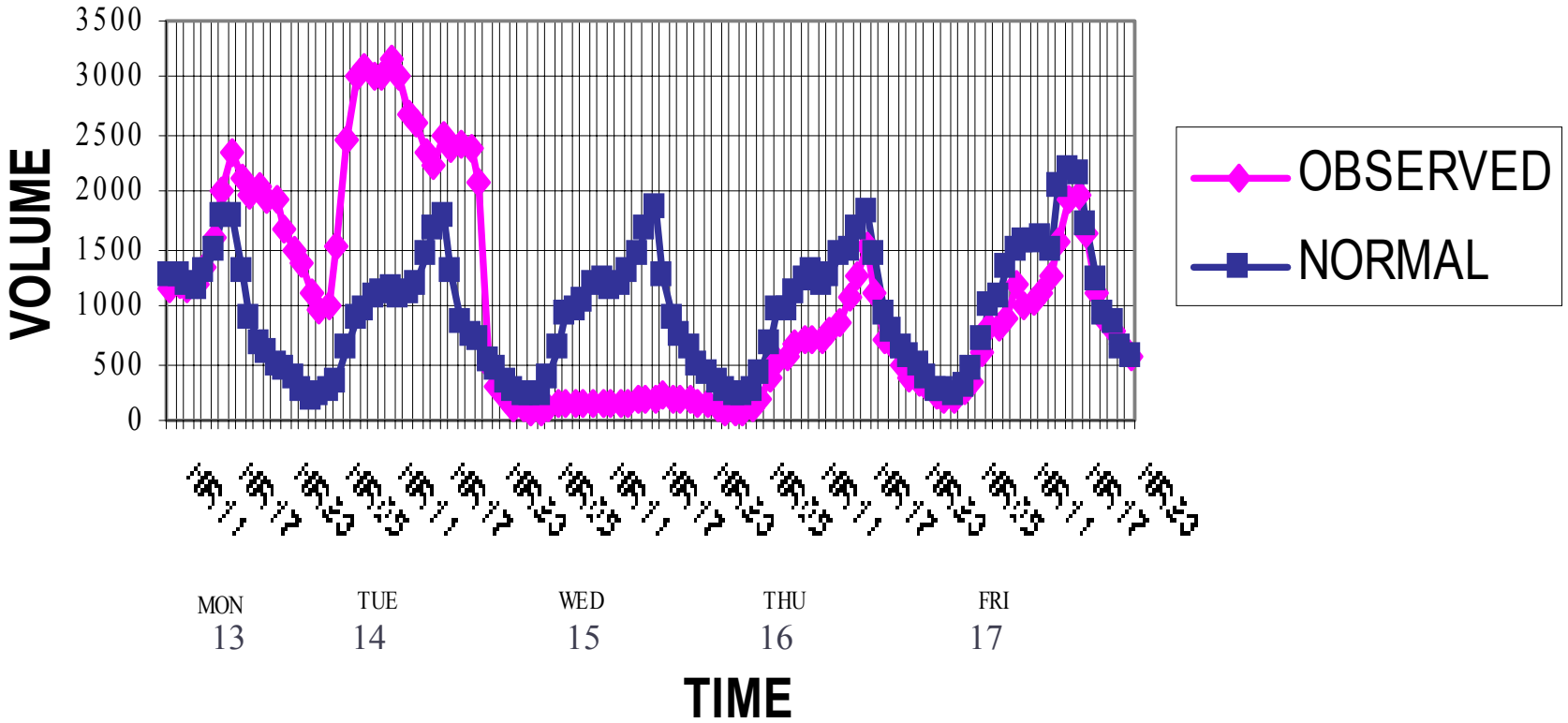
Location of Hurricane Floyd



WEST BOUND TRAFFIC ON I-10

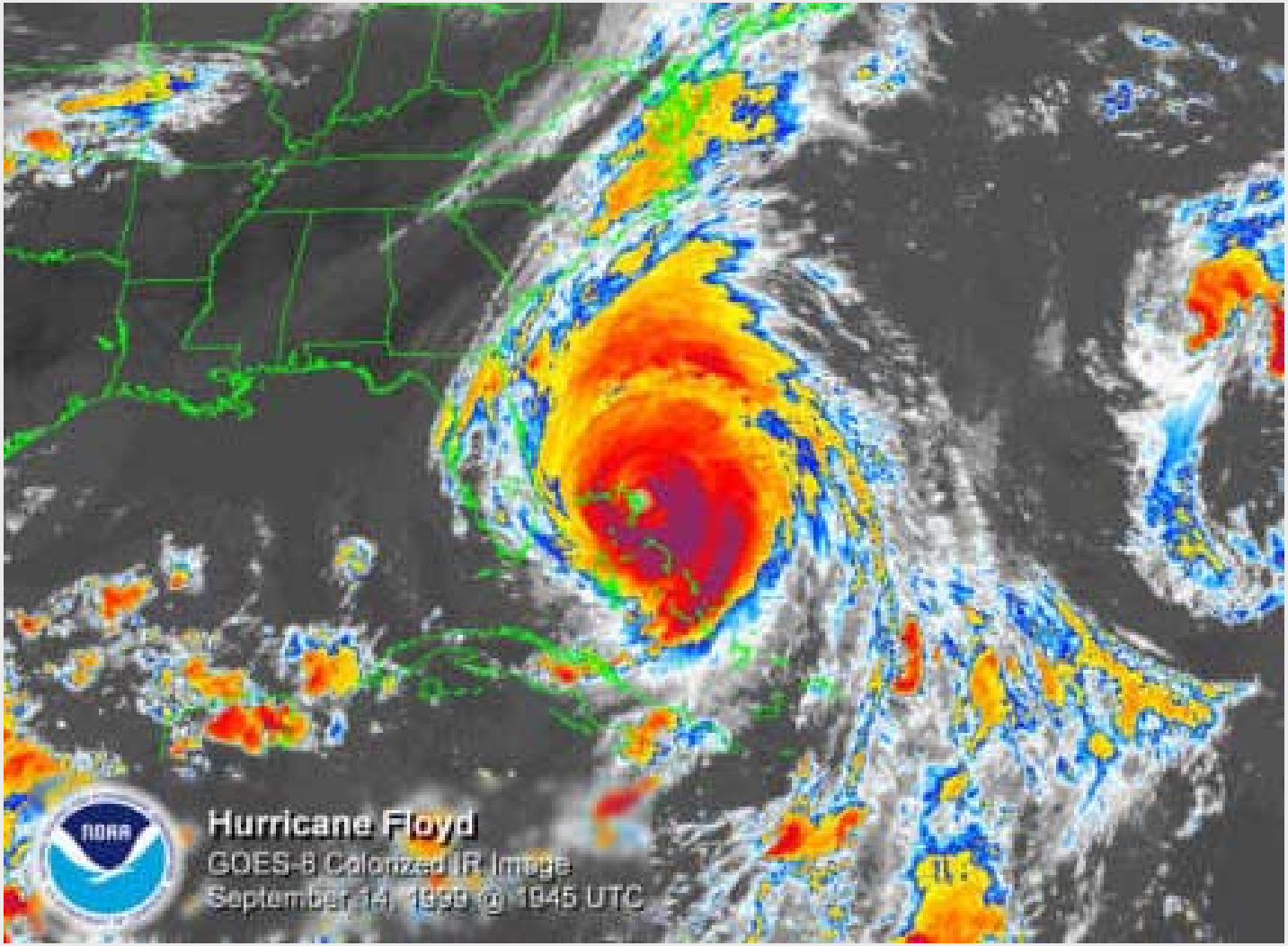
SITE 109 @CR217 OVERPASS S. OF BALDWIN, DUVAL CO.

HURRICANE FLOYD (SEPTEMBER 13-17, 1999)



After Hurricane Floyd

September 1999



EAST BOUND TRAFFIC ON I-10

SITE 109 @CR217 OVERPASS S. OF BALDWIN, DUVAL CO.

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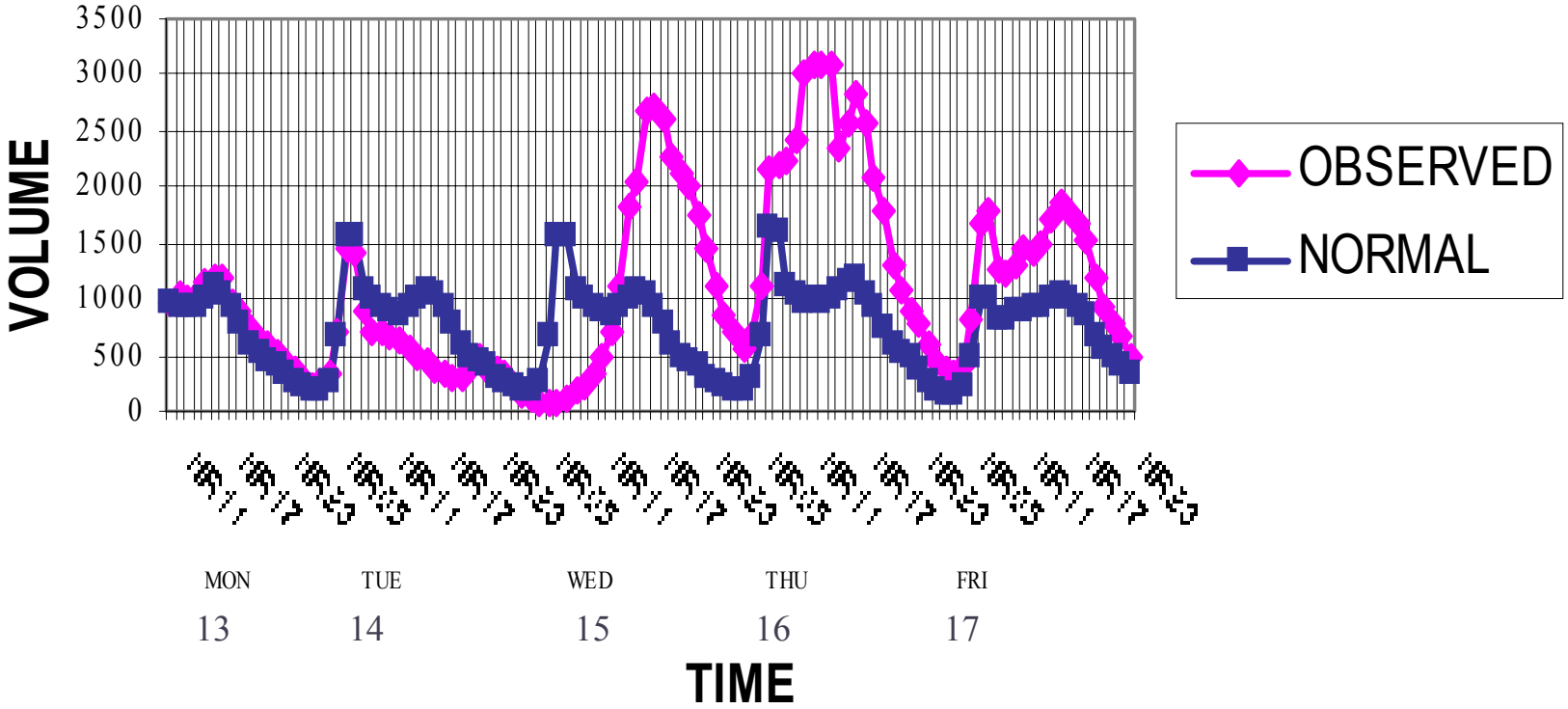


Floyd – Lessons Learned

- Impacted ALL of U.S. East Coast
- Our data showed 2 million evacuated
- Need for coordinated Traffic Control Teams

Floyd – Lessons Learned

- Governor's Hurricane Evacuation Task Force
  - 25 recommendations
  - Need for better/closer shelters
  - Fewer people need to evacuate

Task Force Recommendations

- Coordinate Development of Regional Evacuation Plans (REP)
  - Part of Decision Team – Contra-flow
- Provide support for REP
  - Traffic data

Task Force Recommendations

- Traffic data critical to operations
  - Speed/volumes
  - Real time
  - Historical
- Seven routes can be reversed

Task Force Recommendations

- Speed data is critical
  - determines congestion
  - determines safety
    - contra-flow

Task Force Recommendations

- Real time traffic counts
  - Monitor Regional Evacuation
  - Monitor contra-flow
  - Locals use to open/staff shelters & traffic control
  - Monitor reentry
- Historical data
  - After studies – Lessons Learned

FDOT's Mission

"The department will provide a **safe** transportation system that ensures the movement of people and goods…"

FDOT's Response

- Provide technical assistance
- Provide data
  - For planning
  - Evacuation
  - Reentry
- Develop a Traffic Information web page

Florida's Traffic Information Web Site

This project is a joint effort of the following offices:

- **Information Systems**
- **Safety – Emergency Operations**
- **Transportation Statistics**
- **State Highway Engineer**
- **Traffic Engineering**

Goal

To create a centralized web site that provides access to traffic information on selected sites

- **Web page completed**
- **50 traffic monitoring sites were instrumented**

Traffic Information

Click an icon on the map

Not in operation

Normal Operation

Emergency Operation

www.dot.state.fl.us

SELECTED SITE HAS A BLUE CIRCLE TO INDICATE SELECTION

I-10 in GADSDEN County, near QUINCY

-Emergency Operation

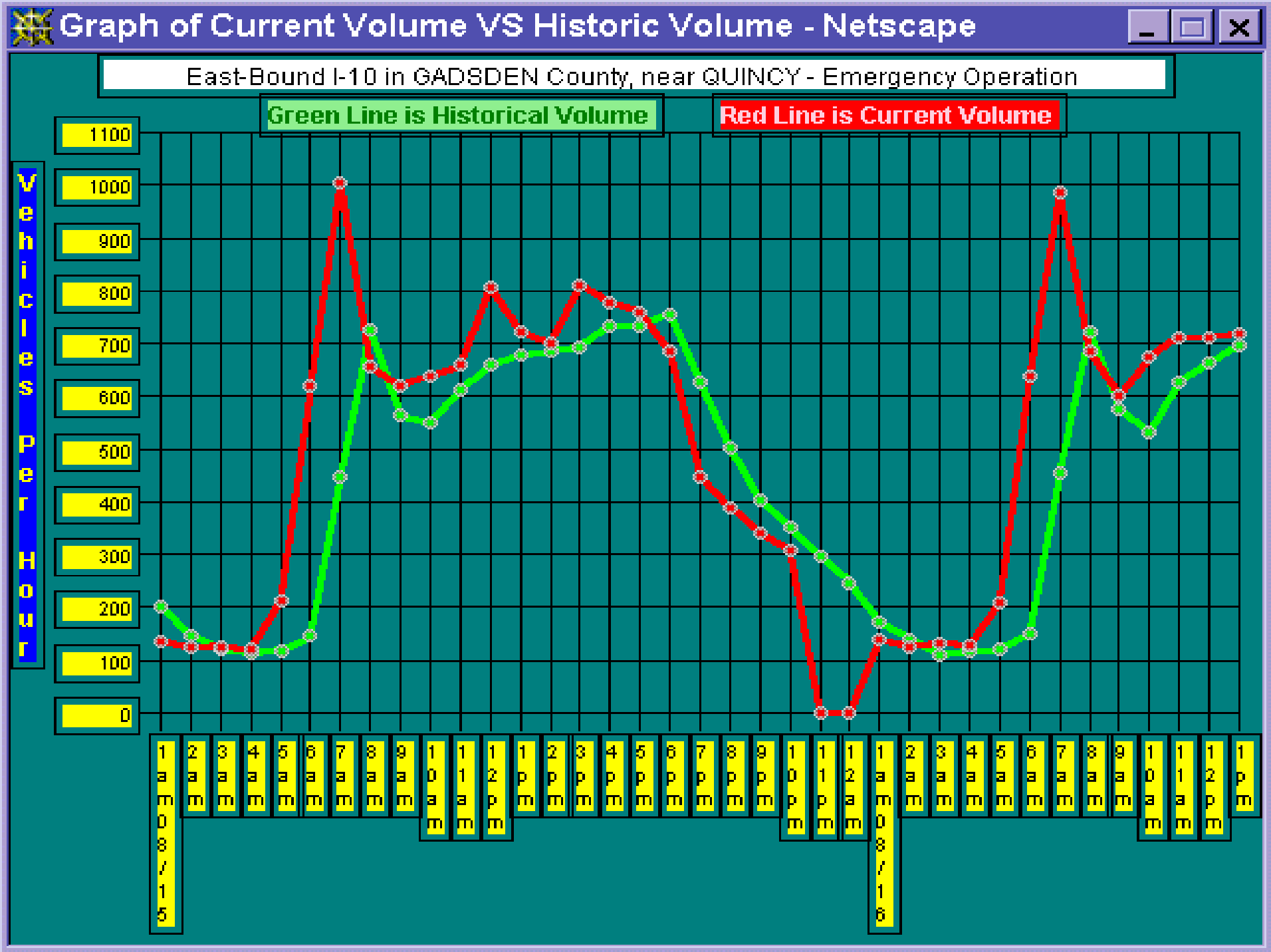
*VPH & Hist VPH - volume of traffic in Vehicles Per Hour

SPEED 70 LIMIT

Date	Time	East-Bound Graphs			West-Bound Graphs		
		Speed	*VPH	*Hist VPH	Speed	*VPH	*Hist VPH
08/15/2000	12am-1am	70	137	202	69	125	188
08/15/2000	1am-2am	68	124	147	69	125	145
08/15/2000	2am-3am	70	126	121	71	94	120
08/15/2000	3am-4am	70	120	113	70	118	103
08/15/2000	4am-5am	71	213	119	70	129	114
08/15/2000	5pm-6pm	73	684	757	73	873	916
08/15/2000	6pm-7pm	73	449	627	71	597	777
08/15/2000	7pm-8pm	71	390	501	70	439	575
08/15/2000	8pm-9pm	70	341	403	70	406	446
08/15/2000	9pm-10pm	71	307	351	70	314	359
08/15/2000	10pm-11pm	n/a	n/a	296	n/a	n/a	313
08/15/2000	11pm-12am	n/a	n/a	247	n/a	n/a	221
08/16/2000	12am-1am	68	140	172	70	140	173
08/16/2000	1am-2am	69	125	141	67	76	151
08/16/2000	2am-3am	69	132	110	69	97	119
08/16/2000	3am-4am	70	129	116	67	95	123
08/16/2000	4am-5am	69	209	121	68	132	103
08/16/2000	5am-6am	72	639	152	71	312	131
08/16/2000	6am-7am	74	986	453	72	538	241
08/16/2000	7am-8am	73	686	721	71	524	460
08/16/2000	8am-9am	72	603	577	70	531	449
08/16/2000	9am-10am	73	674	533	69	526	532
08/16/2000	10am-11am	73	713	627	71	610	565
08/16/2000	11am-12pm	73	712	662	73	667	600
08/16/2000	12pm-1pm	72	720	698	71	707	667
Total	37		18138	16194		16235	15327

Document: Done

Document: Done


Graph of Current Volume VS Historic Volume - Netscape
East-Bound I-10 in GADSDEN County, near QUINCY - Emergency Operation
Green Line is Historical Volume
Red Line is Current Volume
Vehicles per Hour
1100
1000
900
800
700
600
500
400
300
200
100
0
1am 08/15
2am
3am
4am
5am
6am
7am
8am
9am
10am
11am
12pm
1pm
2pm
3pm
4pm
5pm
6pm
7pm
8pm
9pm
10pm
11pm
12am
1am 08/16
2am
3am
4am
5am
6am
7am
8am
9am
10am
11am
12pm
1pm

Normal Operations

(NOT REAL TIME)

- Location of device, posted speed limit, month and day
- Time, direction, historical VPH
- Expected volume based on the historical information can be selected by month and day of the week if desired

(Devices set to "not in operation" are not in service)

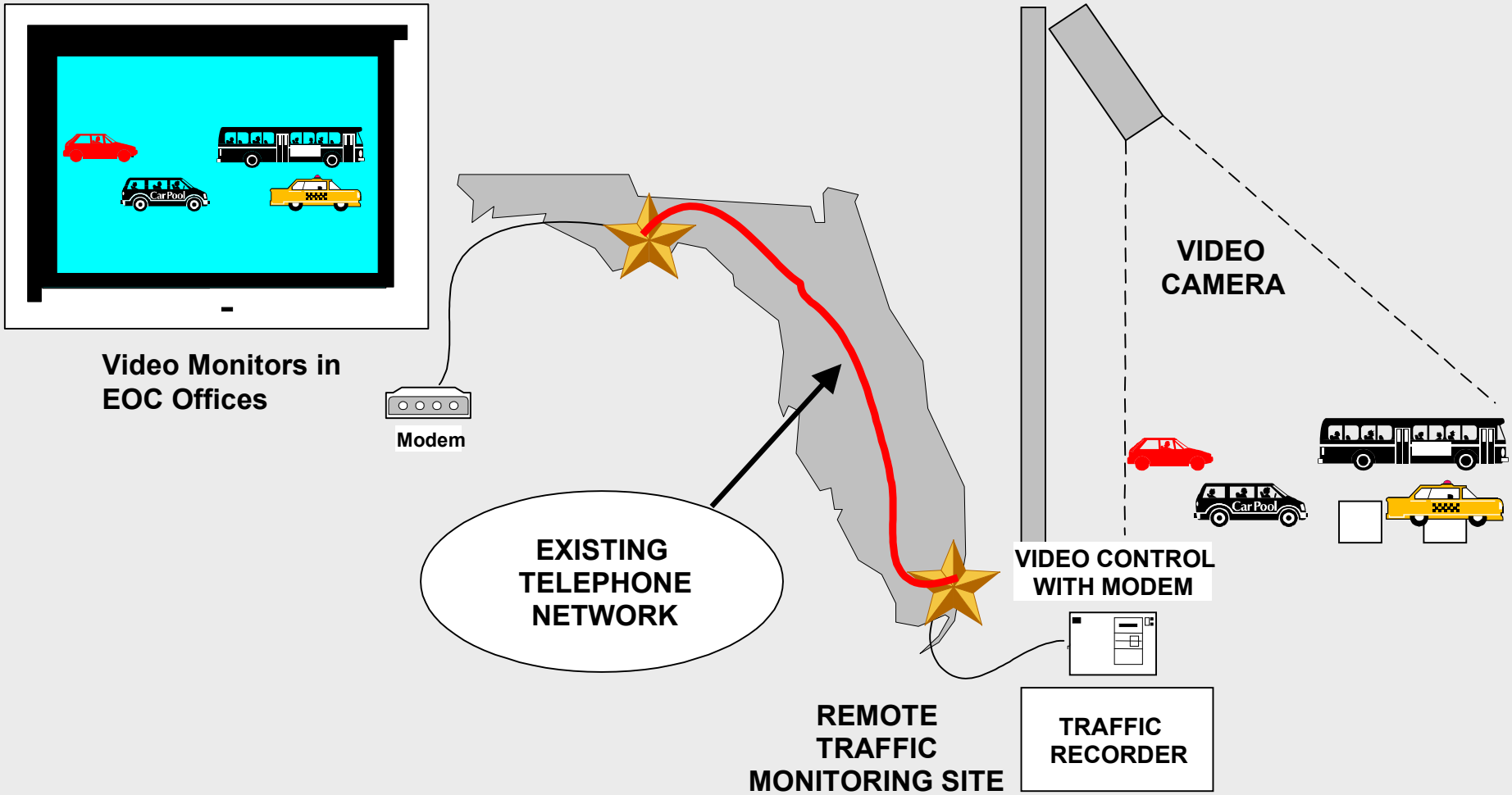
Emergency Operations

- Historical information and real time traffic information collected since the emergency was initiated
- Date and time, direction, current speed and vehicles per hour (VPH), historical VPH
- Graphically displayed

Real Time Capabilities

- Provide camera images from selected Traffic Monitoring Sites
- Provide color-coded speed and volume summary traffic information

Live camera images tell the story best



Future Challenges

- Incorporate the use of the Microwave Network
- Enhanced graphics

Access For Emergency Operations Center

- Connectivity Options
  - Intranet
  - Remote Access
  - Internet (EOC and public)

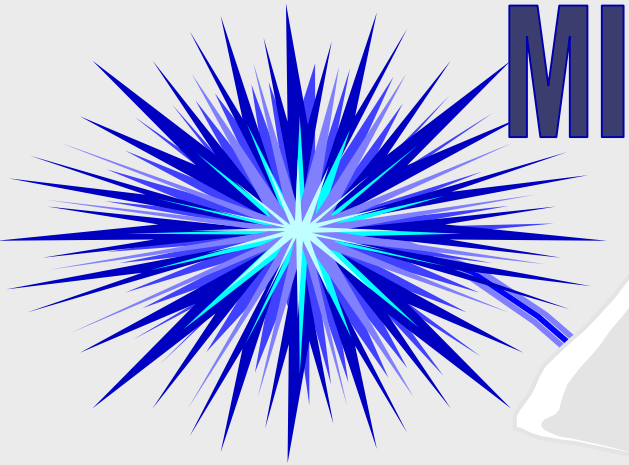
Example #1:

- Orange County – host county
- Monitors approaching traffic
- Use speed data to calculate arrival time
- Staff critical intersections
- Open shelters

Example #2:

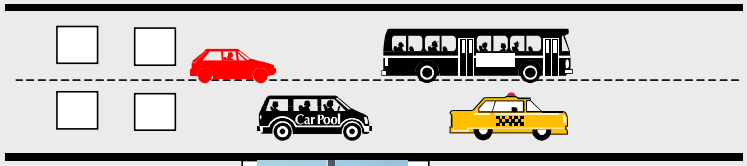
- Monitoring REP
  - Under-used routes
- Monitoring contra-flow route
  - Volumes
  - Speed
  - Terminate?

MISSION ACCOMPLISHED



- Change was needed to serve more customers
- Our vision needed to change
- Institutional and equipment changes were made

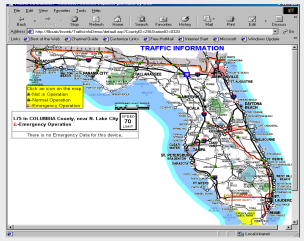
Emergency Evacuation Route



Video Camera

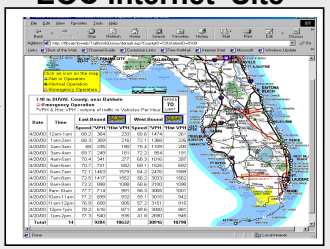
Data Recorder

Office of Transportation Statistics



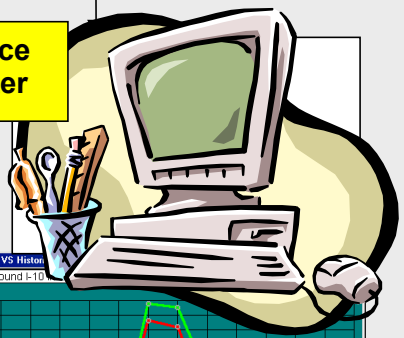
Collects and maintains a history Database

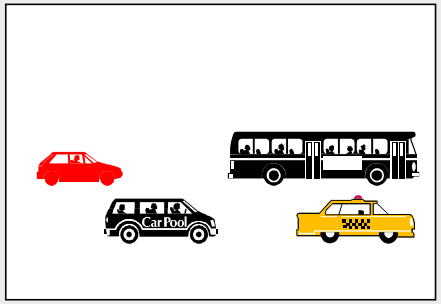
EOC Internet Site



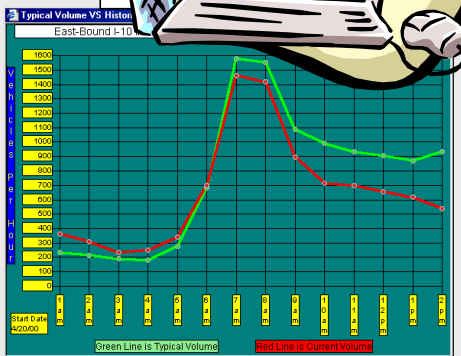
Real Time Data Comparison

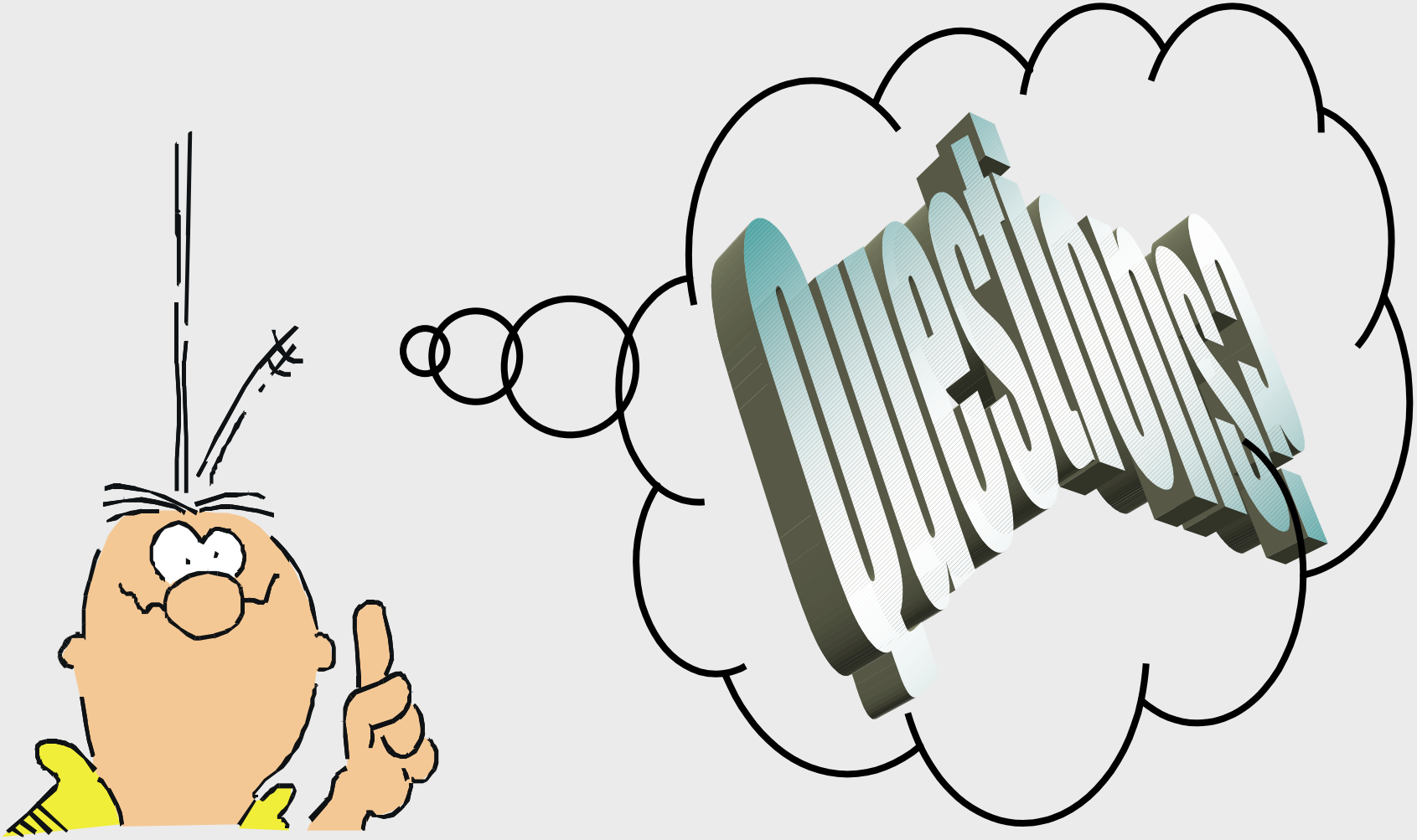
YourOffice Computer





Video from each on-site camera via telephone




QUESTIONS

Invites You To

Orlando, FL
May 12-16, 2002