DataFlow: Representation and Analysis

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Outline

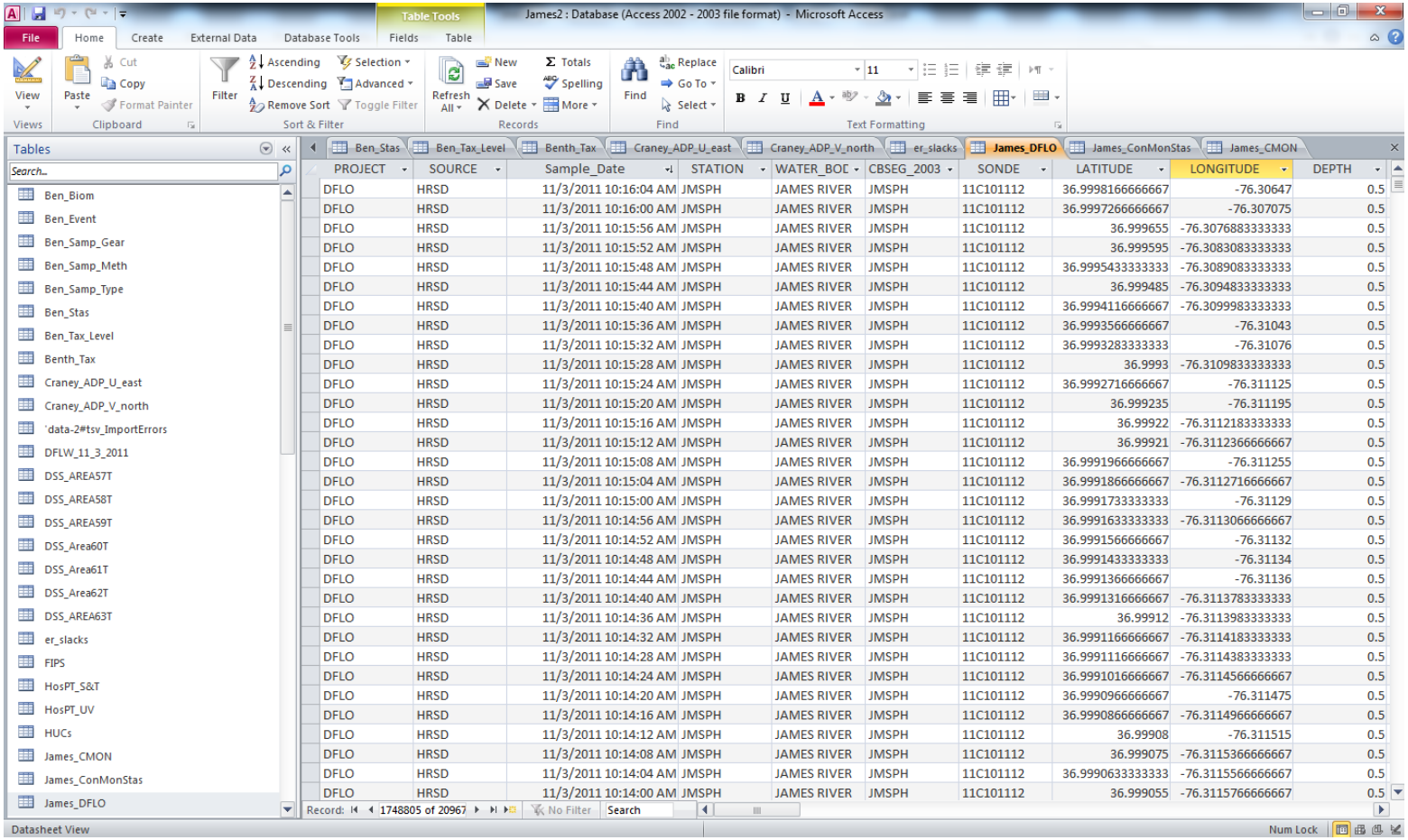
I. Raw Data Representation

II. Mapping Data for Modeling Application

III. Analysis using toolbox linking between GIS and MATLAB

1. Raw Data Representation

DataFlow MS Access Data Base



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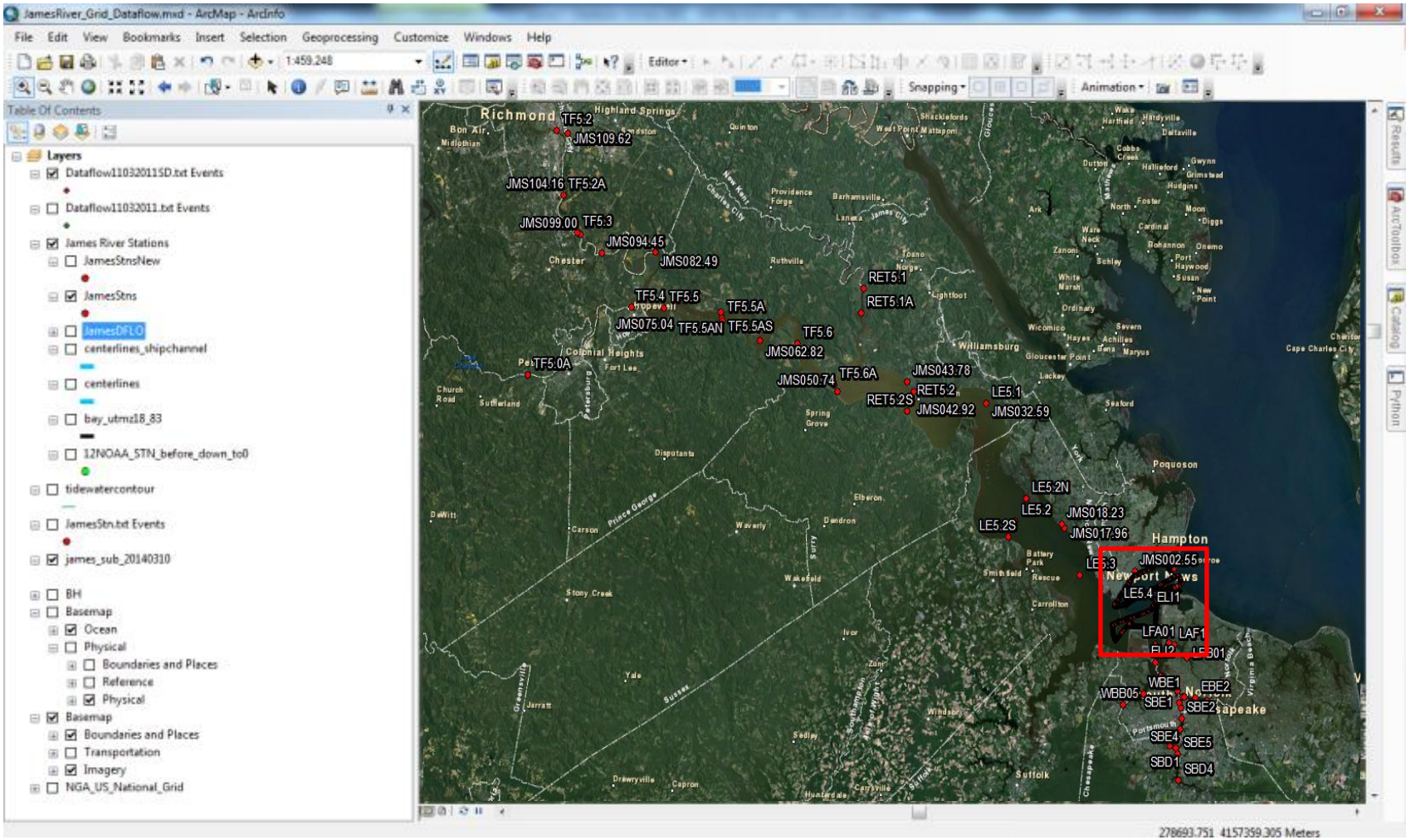
Dataflow Raw Data Access


JamesRiver_Grid_Dataflow.mxd - ArcMap - ArcInfo
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
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Dataflow11032011.txt Events
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Carrsville
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Sutherland
Fort Lee
Bon Air
Midlothian
Highland Springs
Quinton
Providence Forge
Barhamsville
Lanexa
Charles City
New Kent
Shackelfords
West Point
Mattaponi
Gloucester
Wake
Hartfield
Hardyville
Dutton
Cobbs Creek
Hallieford
Gwynn
Grimstead
Hudgins
North
Foster
Moon
Diggs
Cardinal
Bohannon
Onemo
Port Haywood
Susan
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Ark
Zanoni
Schley
Ware Neck
White Marsh
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Bena
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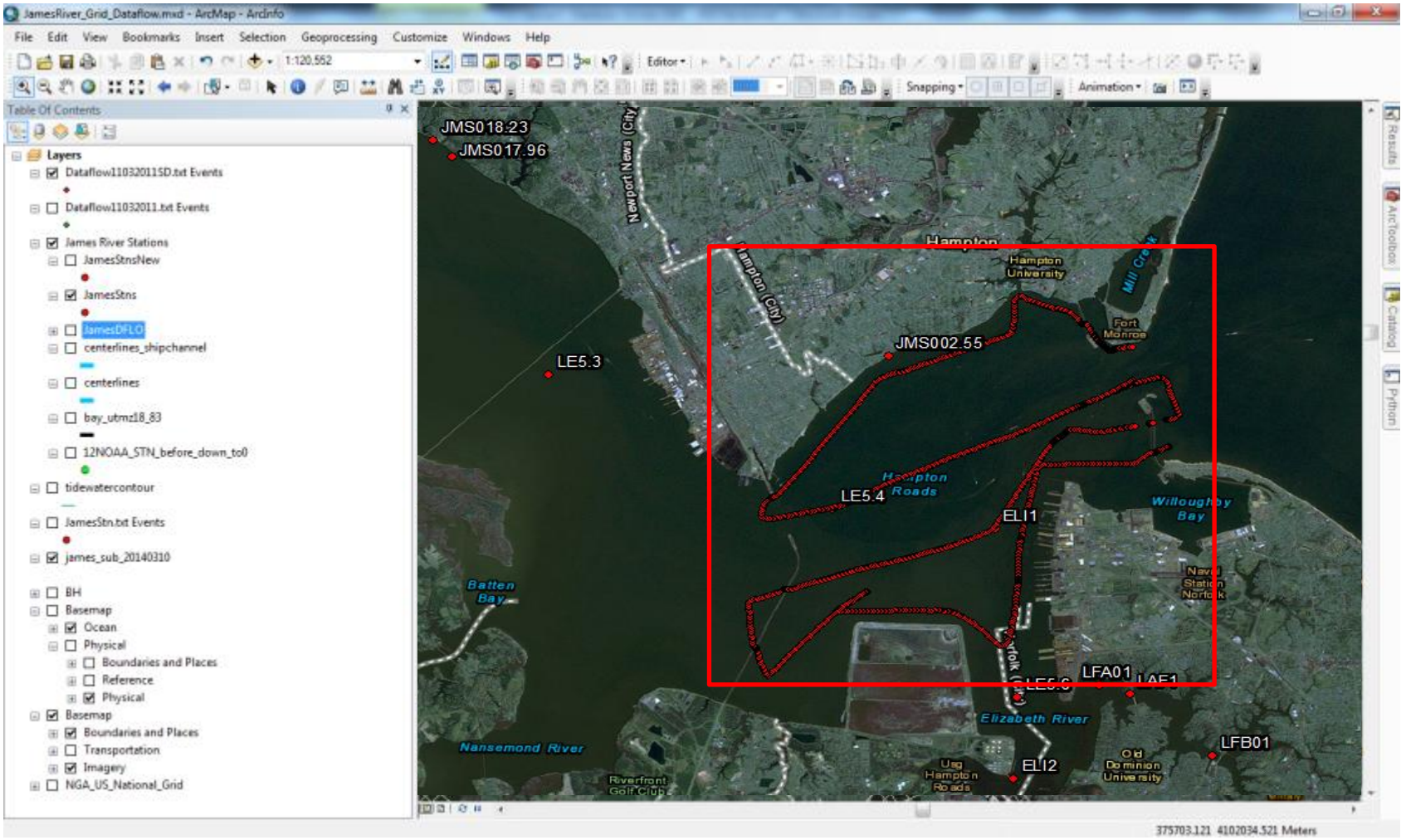
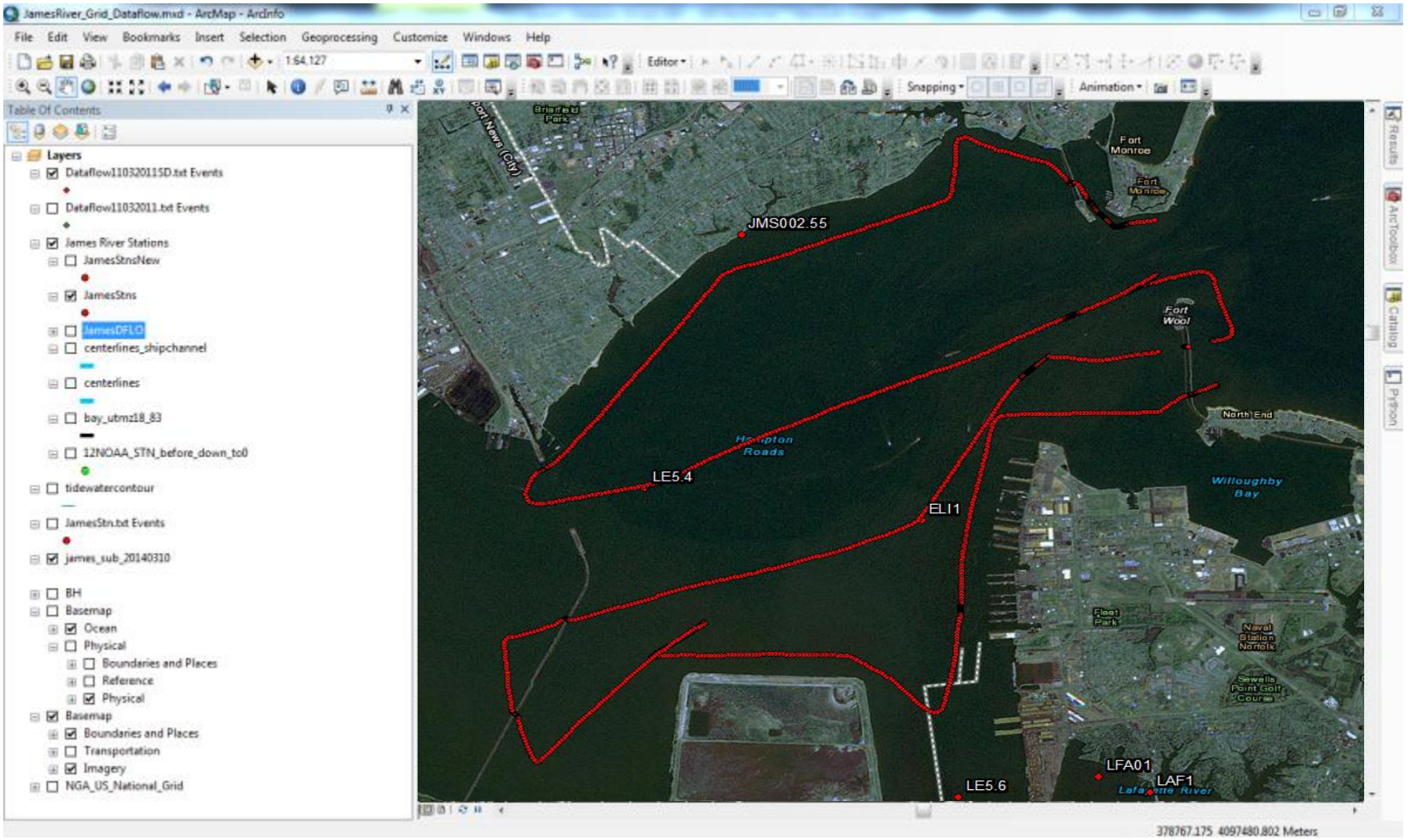
Windsor
Ivor
Zuni

Graphic representation



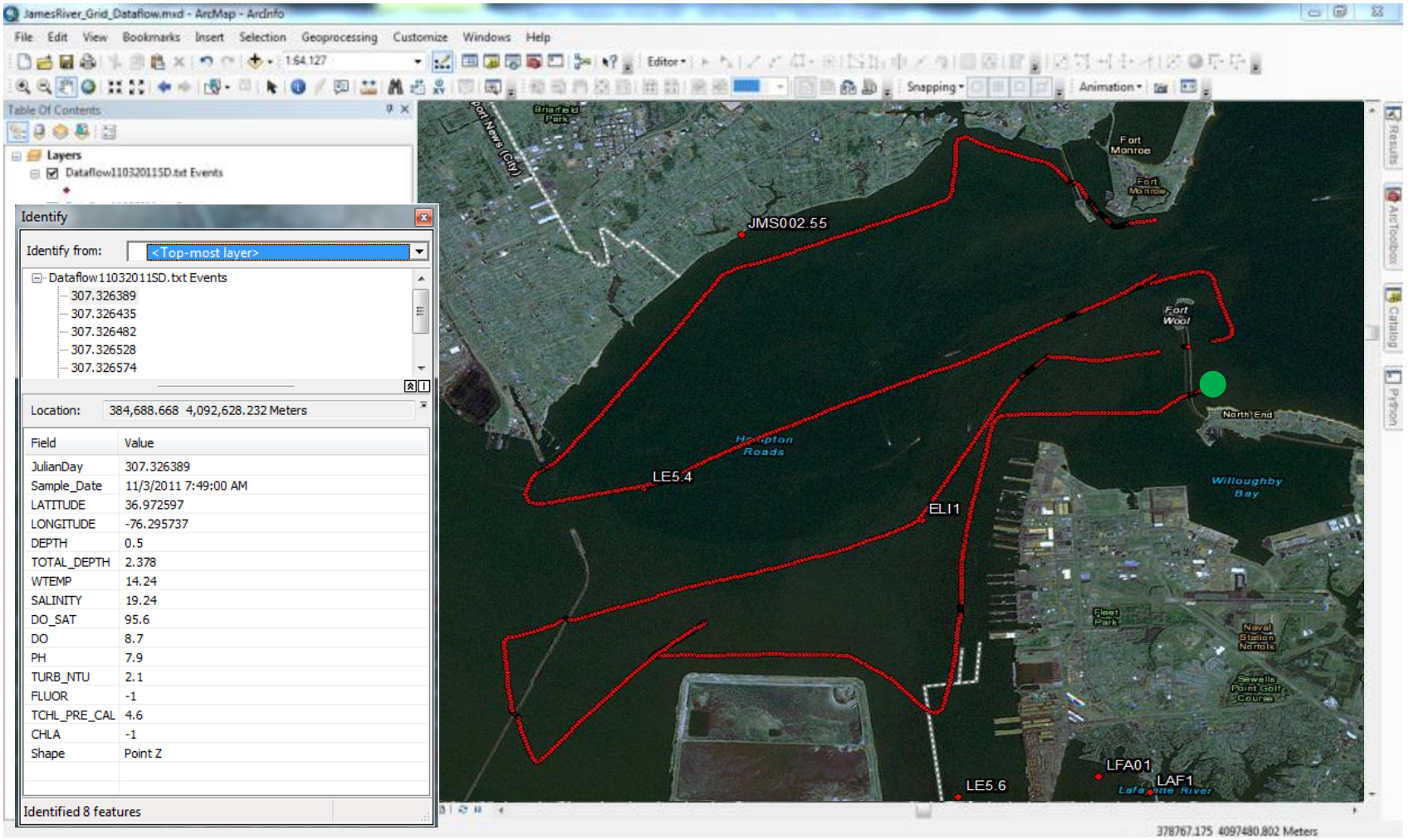
11/03/2011 Survey

Identify individual measurement



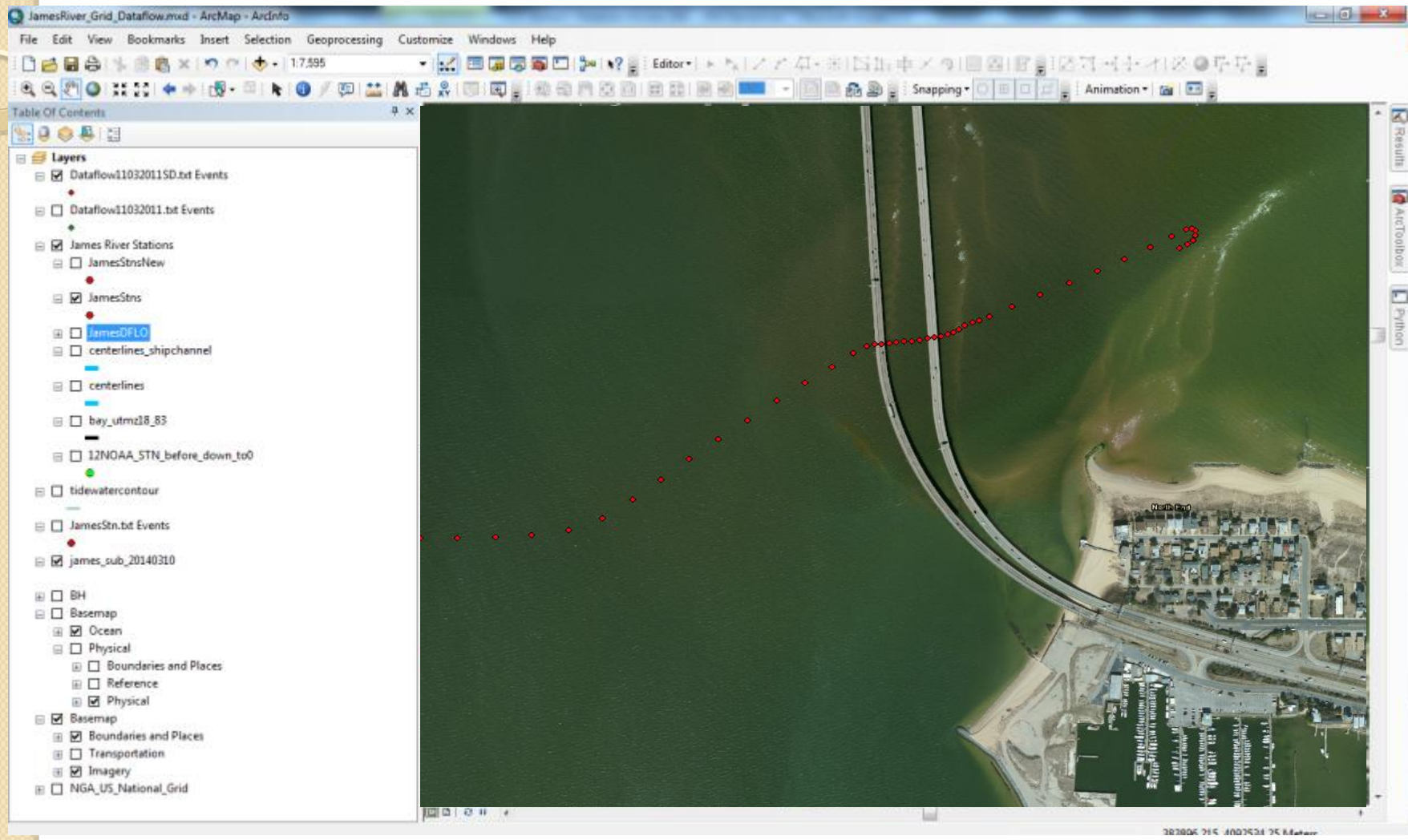
11/03/2011 Survey

Assemble data along the cruise



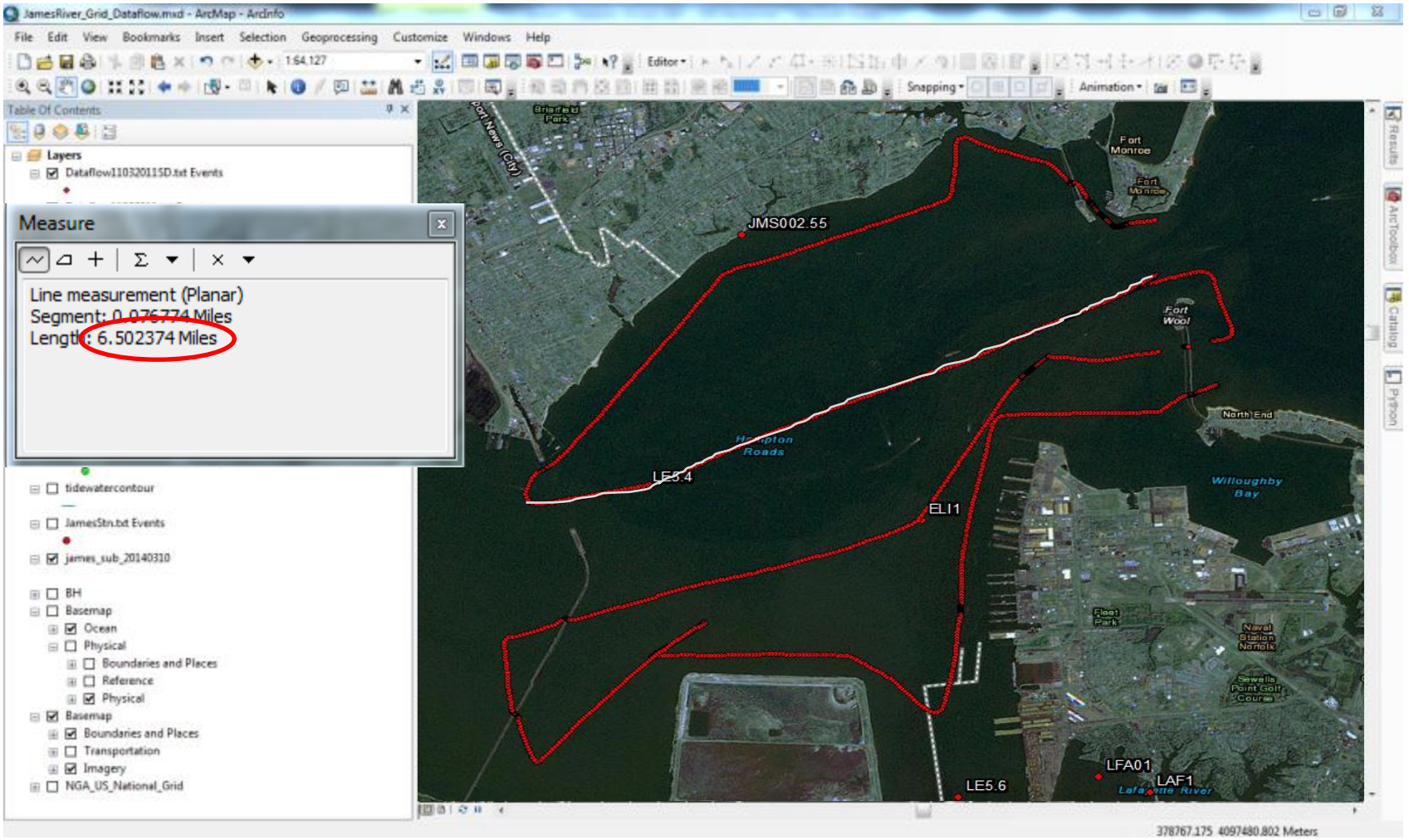
11/03/2011 Survey

Zoom in on details



11/03/2011 Survey

Data integration[1]



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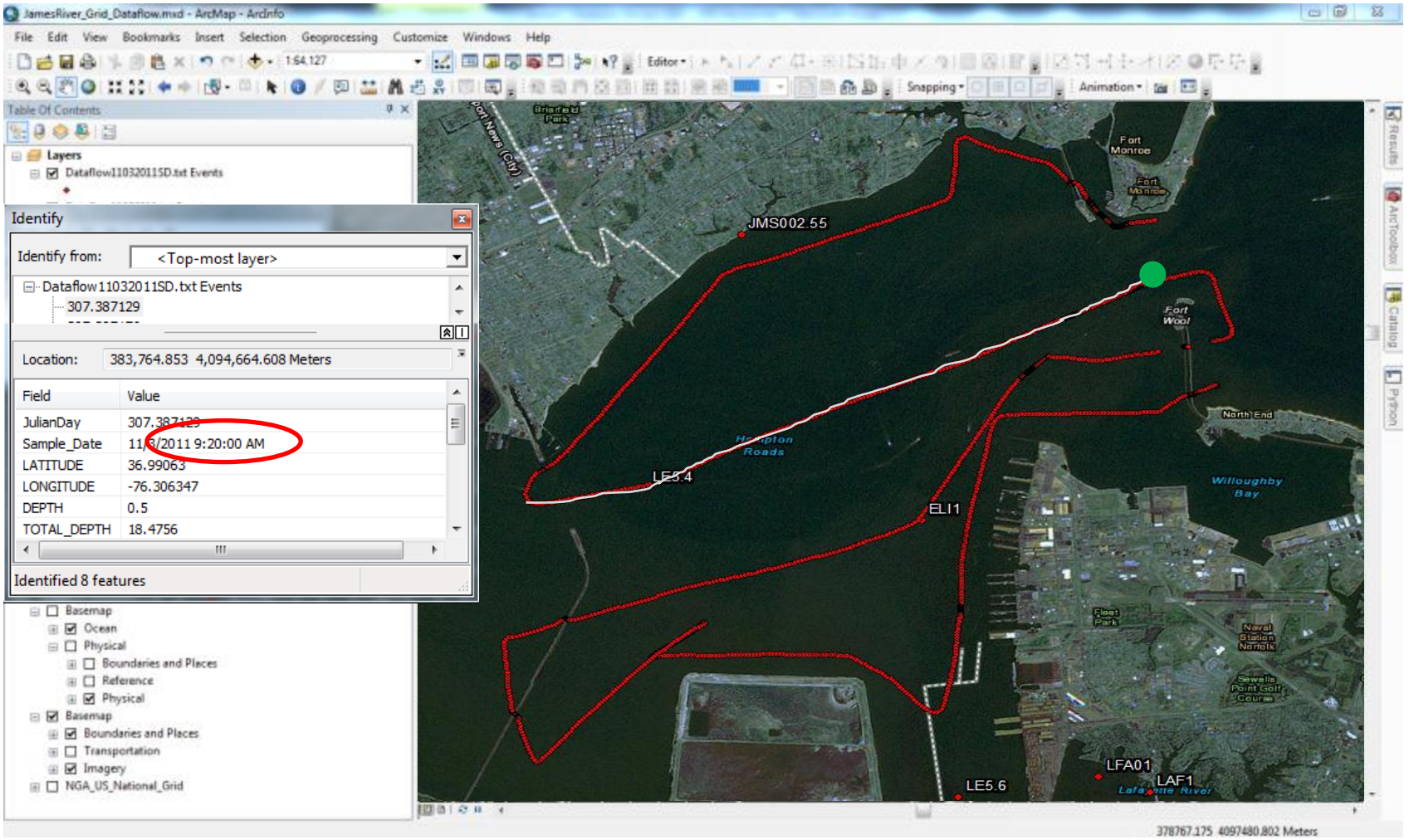

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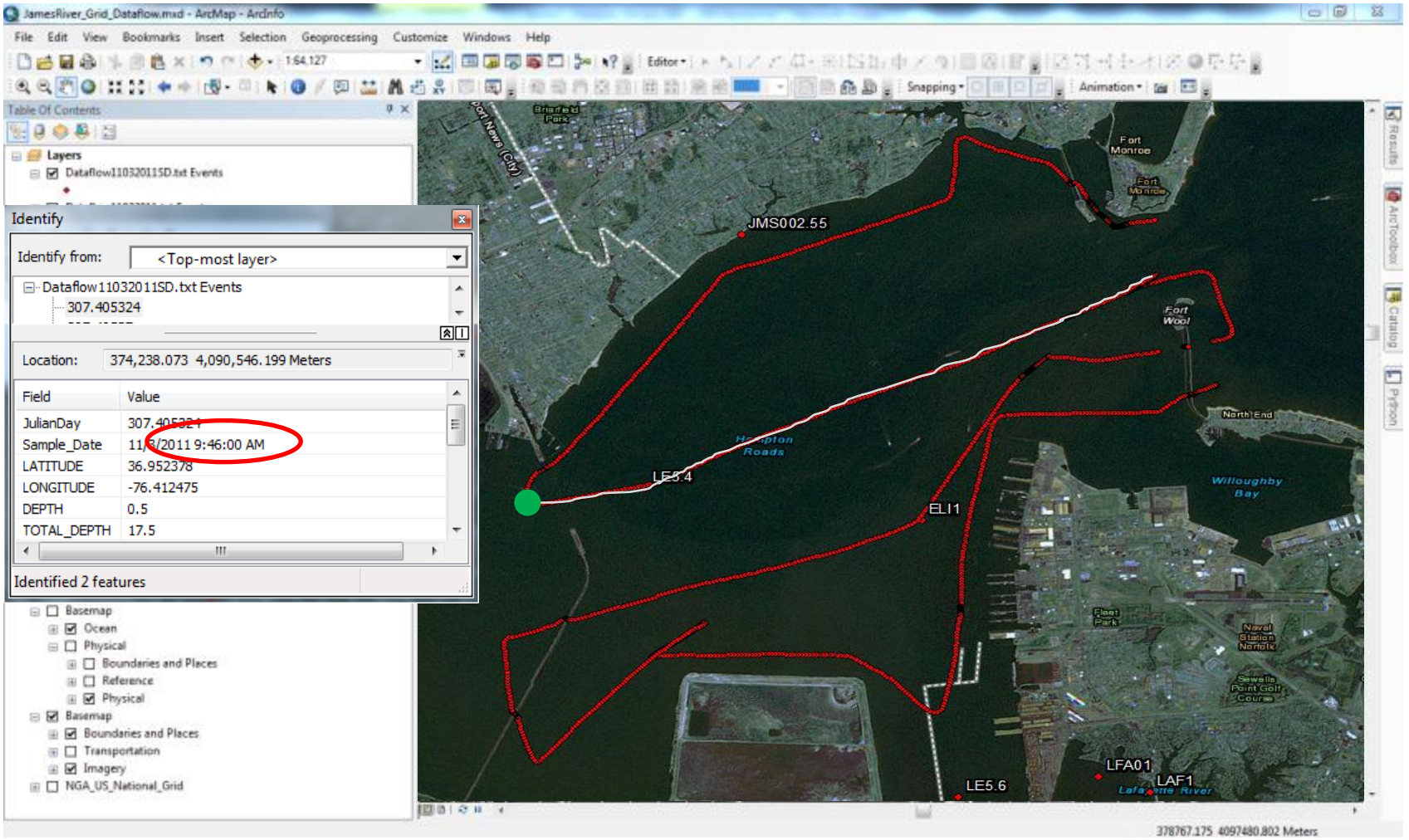

11/03/2011 Survey

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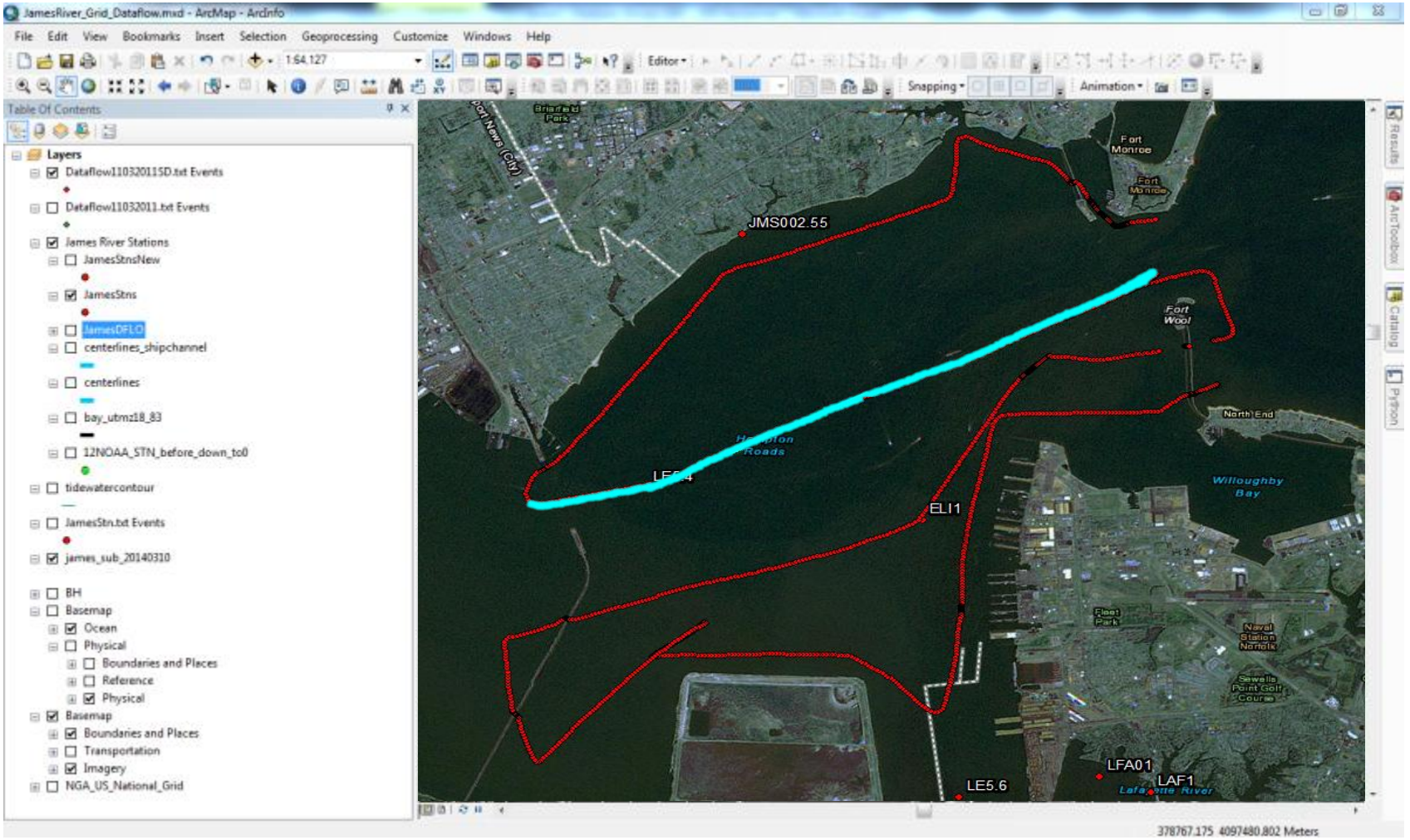
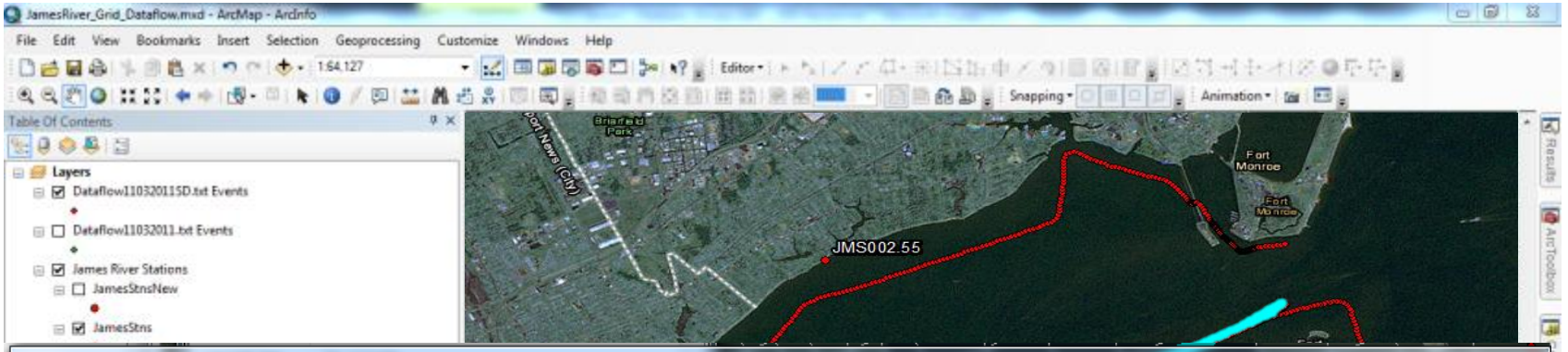


11/03/2011 Survey

Data integration exported on a spread sheet



Table

Dataflow11032011SDa

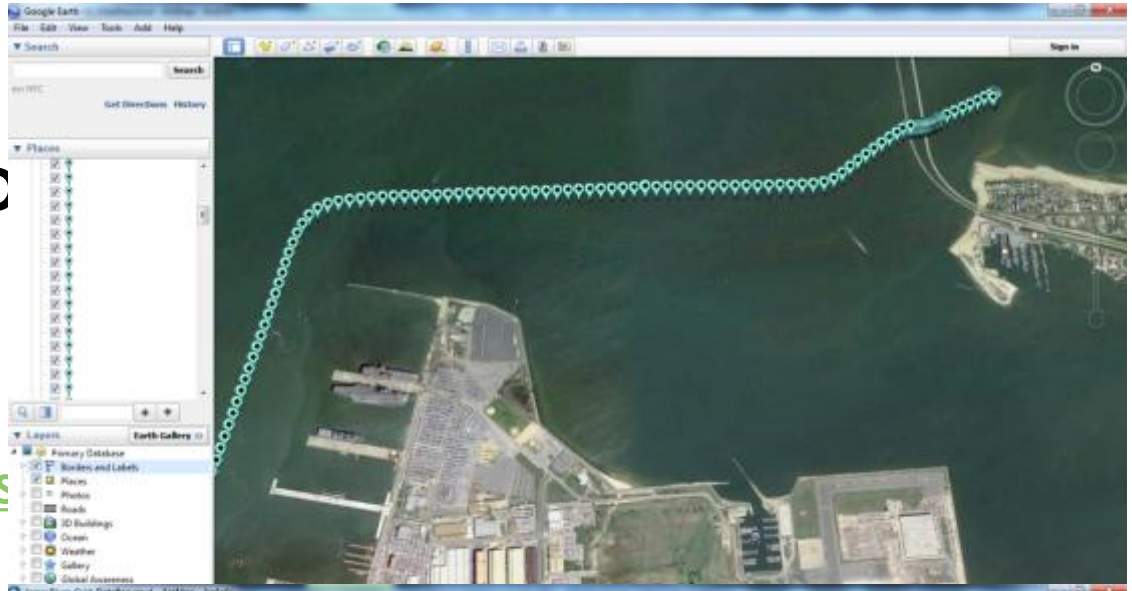
FID	Shape *	JulianDay	Sample_Dat	LATITUDE	LONGITUDE	DEPTH	TOTAL_DEPT	WTEMP	SALINITY	DO_SAT	DO	PH	TURB_NTU	FLUOR	TCHL_PRE_C	CHLA
1185	Point ZM	307.38125	11/3/2011	36.989247	-76.307677	0.5	18.1098	14.05	17.48	98.5	9.1	8	1.6	-1	4.9	-1
1186	Point ZM	307.381296	11/3/2011	36.98908	-76.308187	0.5	17.2866	14.04	17.46	98.4	9.1	8	1.6	-1	5	-1
1187	Point ZM	307.381342	11/3/2011	36.988918	-76.308695	0.5	17.0732	14.04	17.47	98.4	9.1	8	1.6	-1	5	-1
1188	Point ZM	307.381389	11/3/2011	36.988757	-76.3092	0.5	17.0732	14.04	17.46	98.4	9.1	8	1.6	-1	4.7	-1
1189	Point ZM	307.381435	11/3/2011	36.988577	-76.309702	0.5	17.0122	14.04	17.46	98.5	9.1	8	1.6	-1	4.8	-1
1190	Point ZM	307.381481	11/3/2011	36.988377	-76.310187	0.5	17.1341	14.04	17.5	98.5	9.1	8	1.6	-1	4.6	-1
1191	Point ZM	307.381527	11/3/2011	36.988168	-76.310652	0.5	17.0122	14.08	17.6	98.5	9.1	7.9	1.6	-1	4.6	-1
1192	Point ZM	307.381574	11/3/2011	36.987975	-76.311067	0.5	16.8598	14.14	17.86	98.7	9.1	7.9	1.6	-1	4.6	-1
1193	Point ZM	307.38162	11/3/2011	36.98786	-76.311338	0.5	16.5549	14.22	18.16	98.6	9	7.9	1.6	-1	4.6	-1
1194	Point ZM	307.381666	11/3/2011	36.987837	-76.311403	0.5	16.8598	14.3	18.54	98.6	9	7.9	1.7	-1	4.8	-1
1195	Point ZM	307.381713	11/3/2011	36.98782	-76.311425	0.5	16.8598	14.33	18.74	98.6	9	7.9	1.8	-1	4.9	-1
1196	Point ZM	307.381759	11/3/2011	36.98781	-76.311428	0.5	16.7683	14.34	18.81	98.5	9	7.9	1.8	-1	4.6	-1
1197	Point ZM	307.381805	11/3/2011	36.987802	-76.311412	0.5	16.7683	14.33	18.83	98.4	9	7.9	1.9	-1	4.6	-1
1198	Point ZM	307.381852	11/3/2011	36.987798	-76.311387	0.5	16.7683	14.33	18.85	98.4	9	7.9	1.9	-1	4.7	-1
1199	Point ZM	307.381898	11/3/2011	36.987793	-76.311352	0.5	16.7073	14.33	18.86	98.3	8.9	7.9	1.9	-1	4.3	-1
1200	Point ZM	307.381944	11/3/2011	36.9878	-76.311313	0.5	16.7073	14.33	18.88	98.2	8.9	7.9	2	-1	4.7	-1
1201	Point ZM	307.38199	11/3/2011	36.987808	-76.31127	0.5	16.6463	14.33	18.89	98.3	8.9	7.9	2	-1	4.7	-1
1202	Point ZM	307.382037	11/3/2011	36.987818	-76.311228	0.5	16.7073	14.33	18.93	98.3	8.9	8	2	-1	4.7	-1
1203	Point ZM	307.382083	11/3/2011	36.987835	-76.311182	0.5	16.6463	14.34	18.97	98.3	8.9	8	1.9	-1	4.8	-1
1204	Point ZM	307.382129	11/3/2011	36.987852	-76.311135	0.5	16.7073	14.34	18.98	98.3	8.9	8	1.9	-1	4.7	-1
1205	Point ZM	307.382176	11/3/2011	36.98787	-76.31109	0.5	16.6463	14.34	19	98.1	8.9	8	1.9	-1	4.5	-1

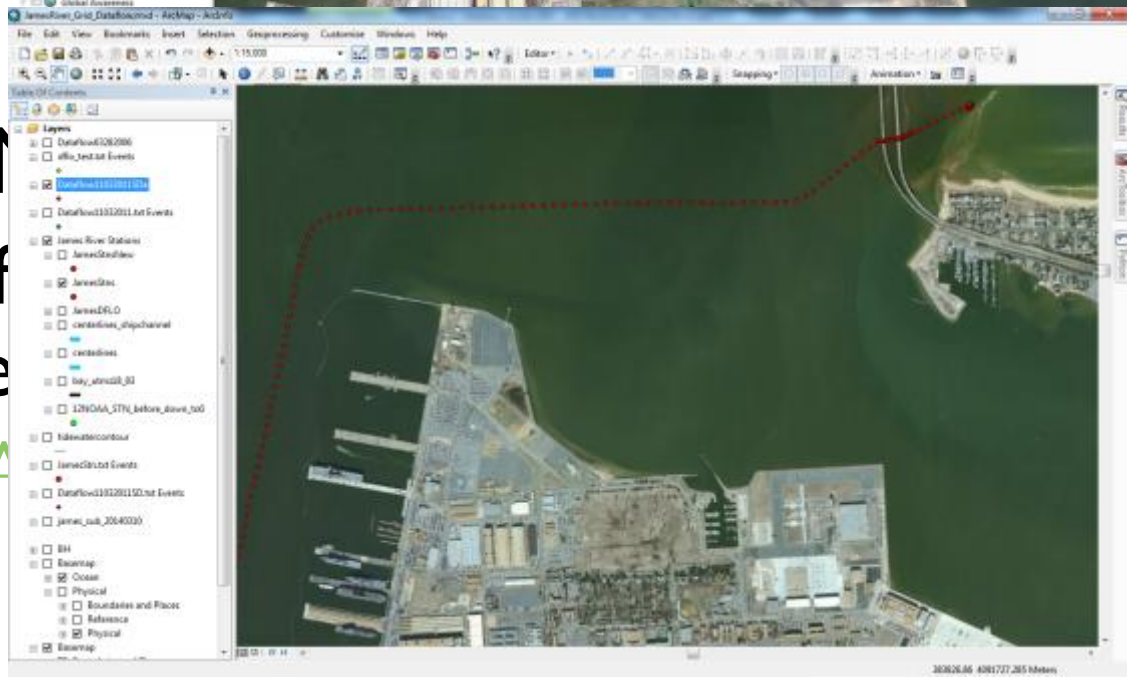
1 (521 out of 2143 Selected)

Dataflow11032011SDa

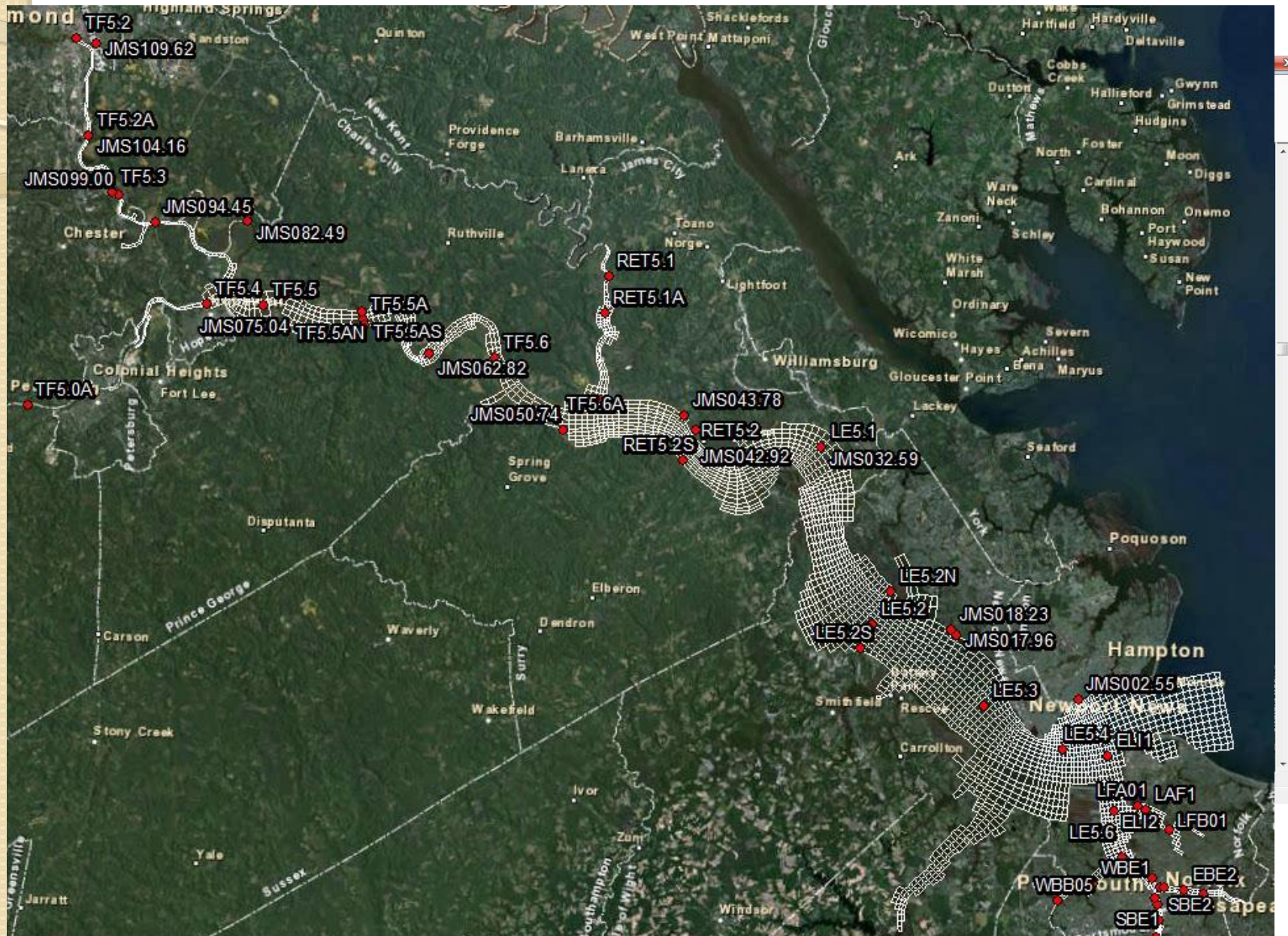
Example of the products -

- GIS Shap
  - ArcGIS
  - GRASS
    http://grass
    windows/
- Google M
  - Free sof
    available
    http://www

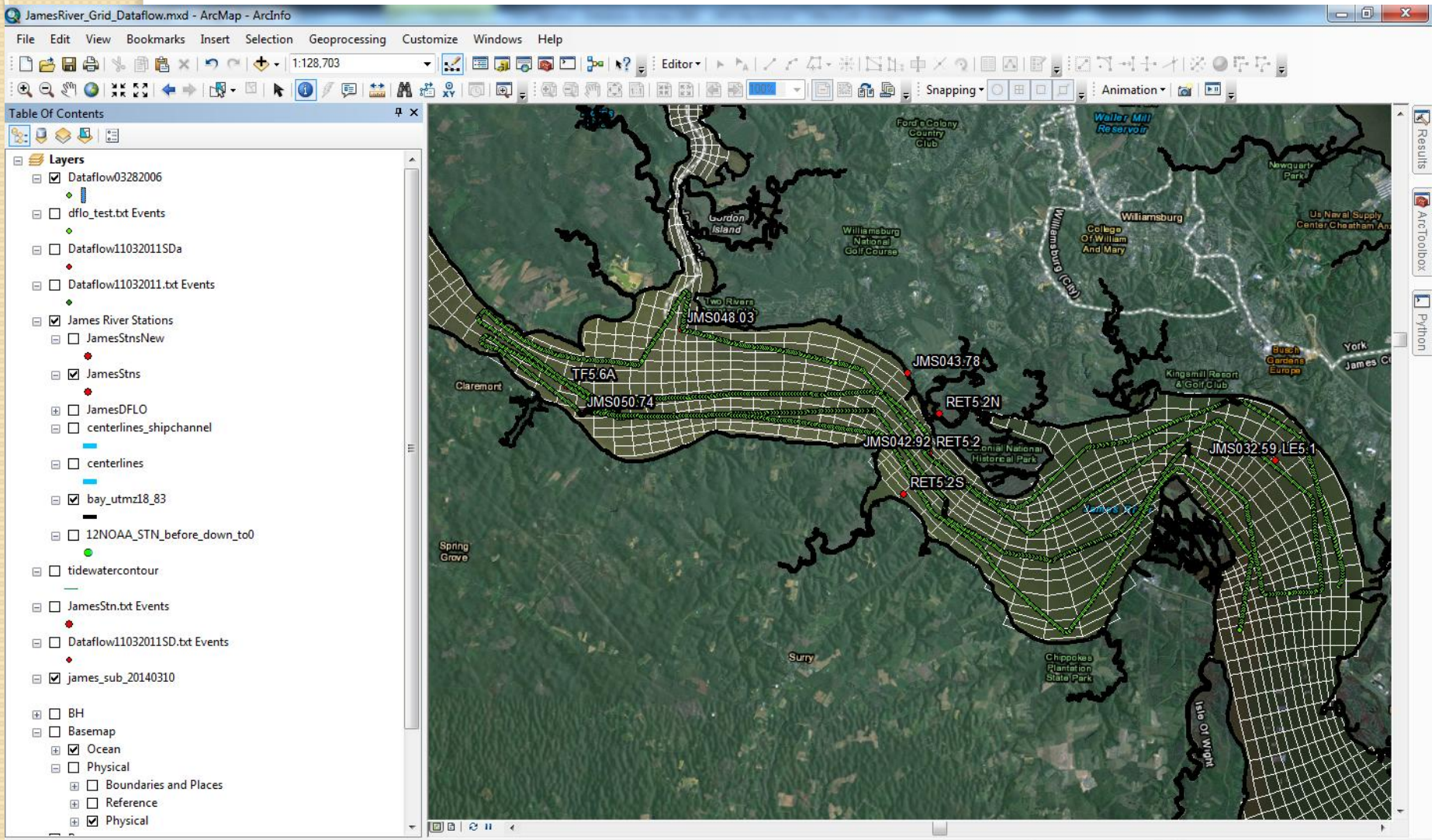




II. Mapping Data for Modeling Applications



03/28/2006 Survey



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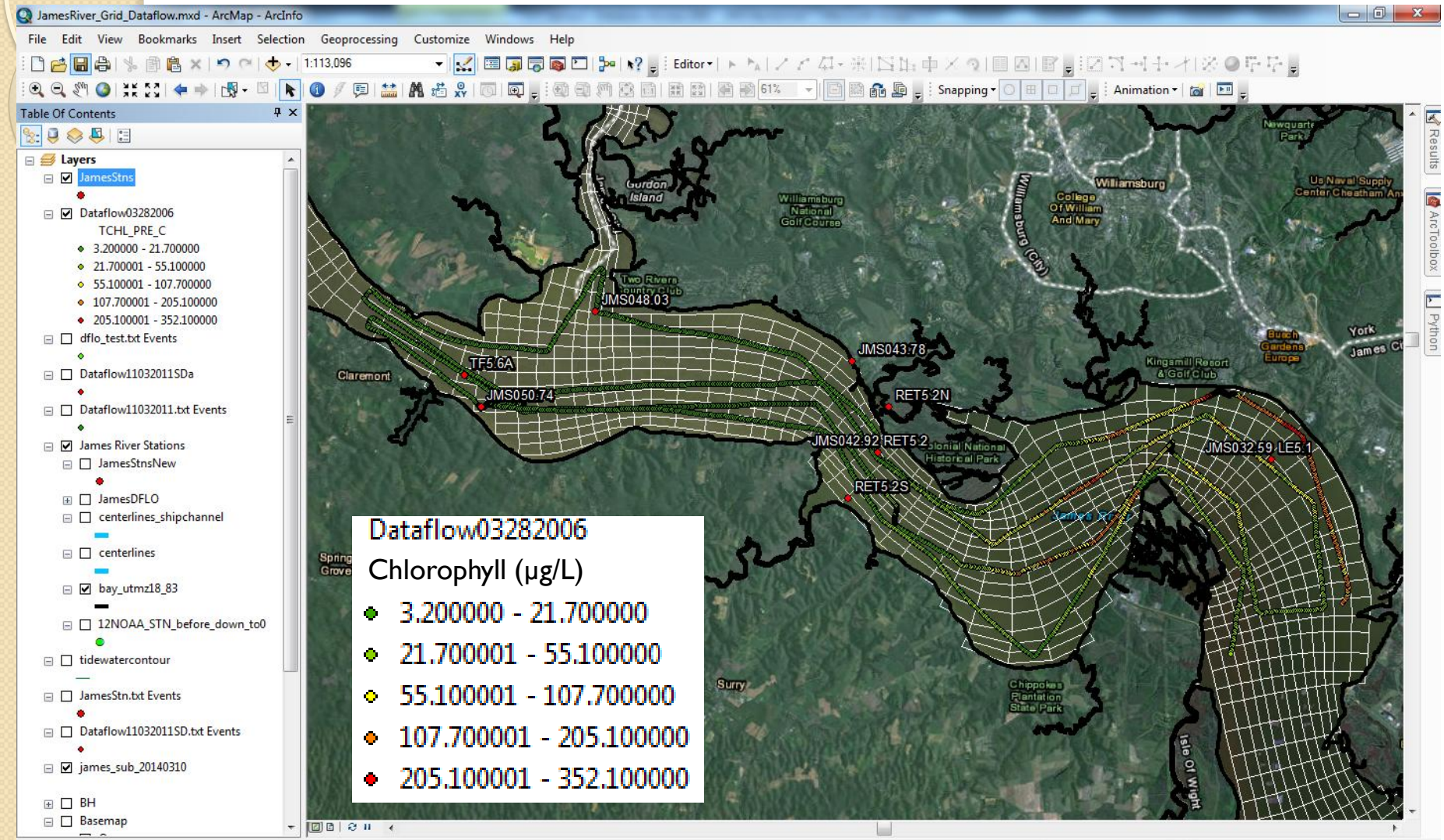

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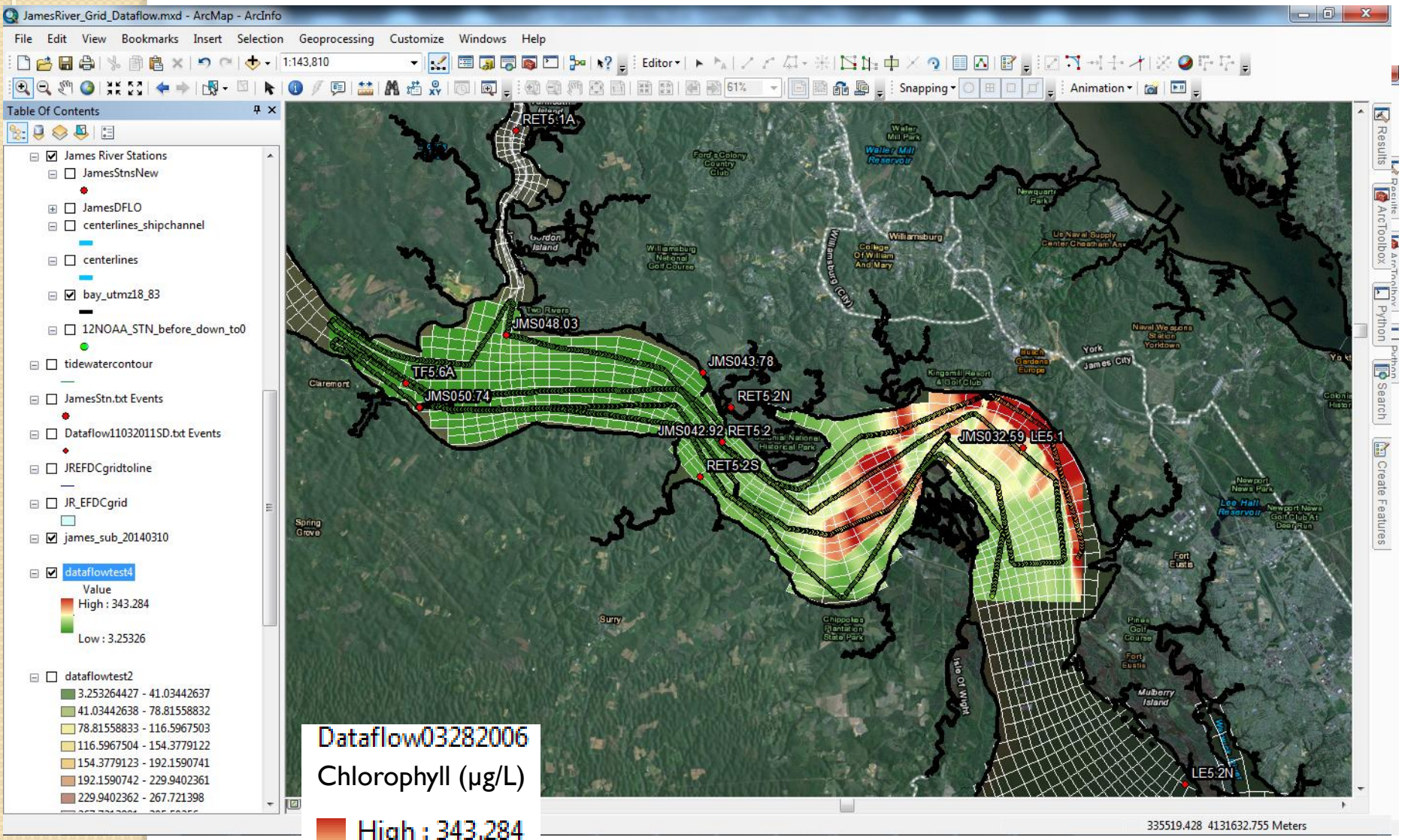

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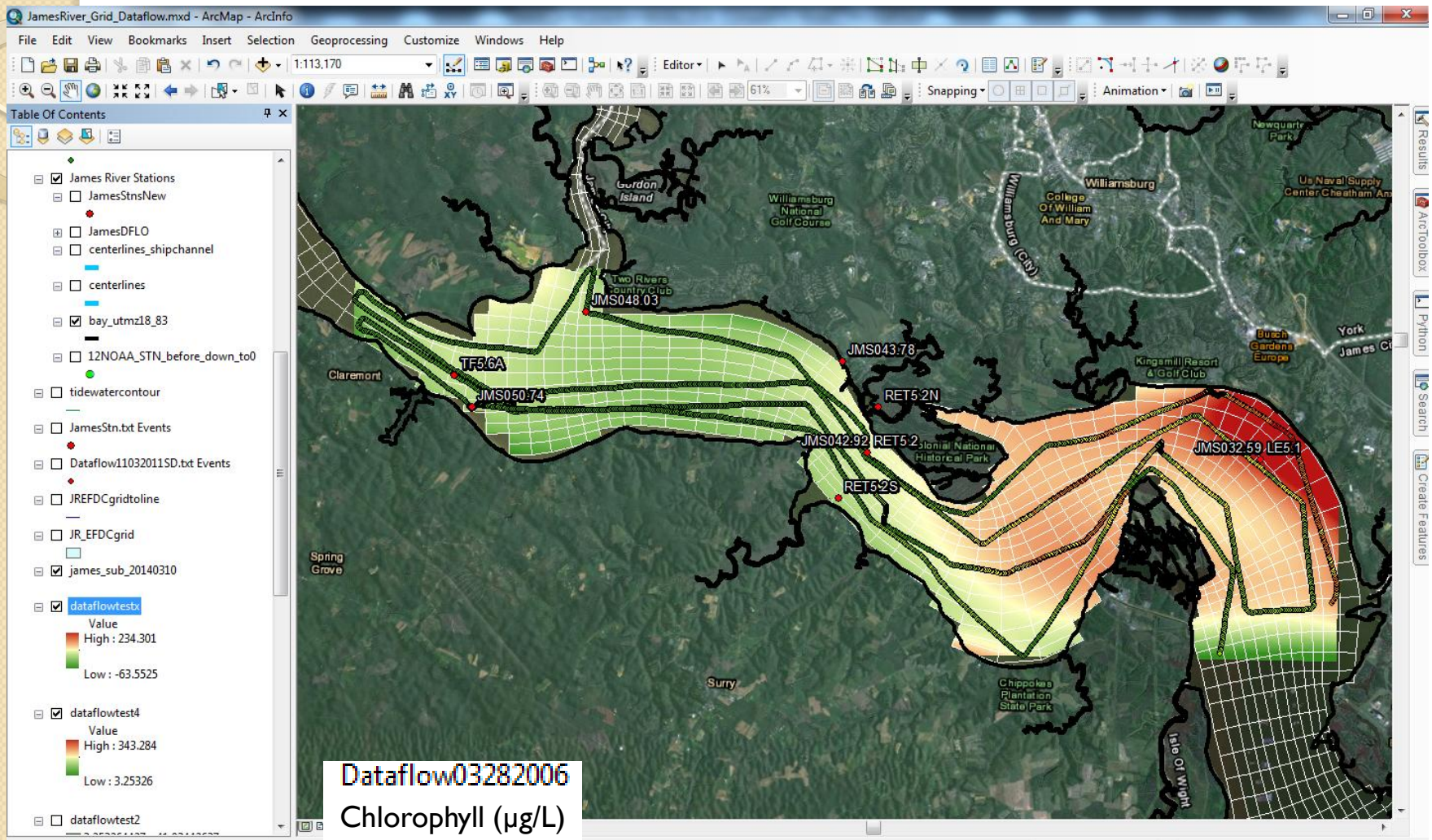
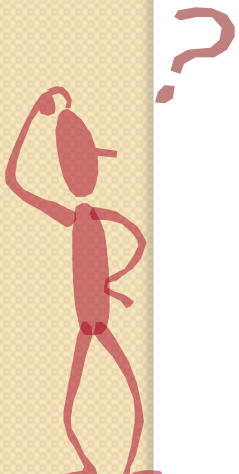


A list of Spatial Interpolation Methods

- Geometric Mean by Grid Cell
- Inverse Distance Weighted (IDW)
- Natural Neighbor
- Kriging with barrier
- Spline with barriers

  Interpolation without crossing barriers such as:

  - Grid Edge
  - Shoreline



Which method is the most suitable for Data Flow survey?

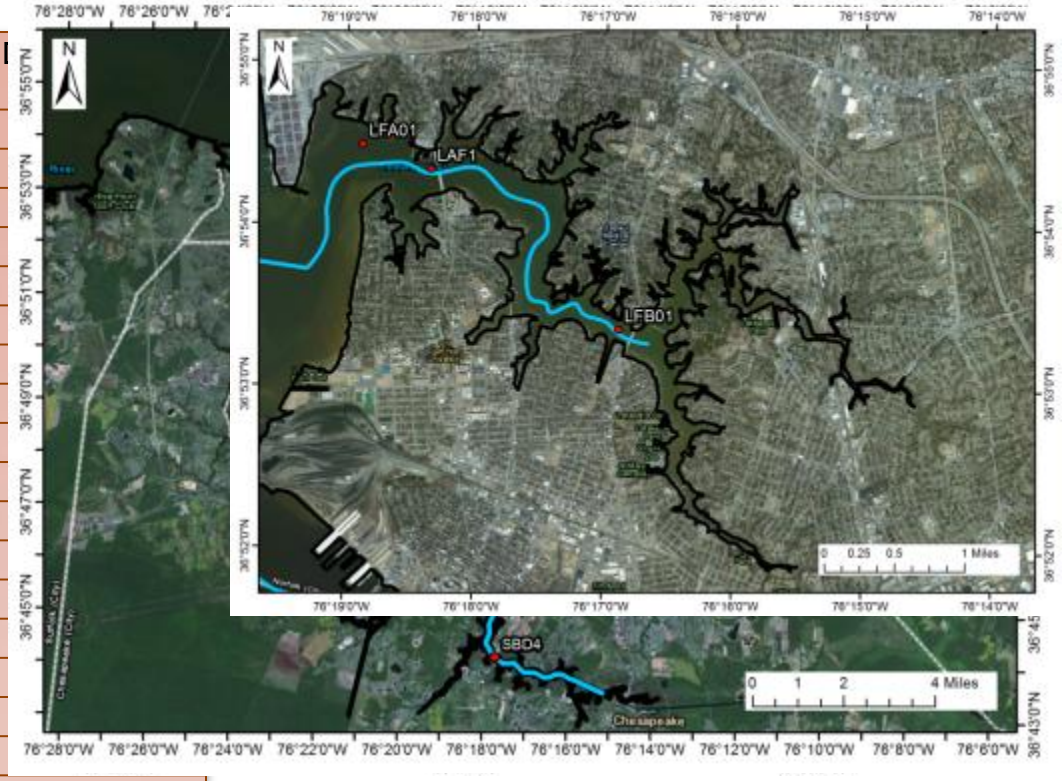
III. Data Analysis using toolbox linking between GIS and MATLAB

- Mapping Toolbox imports a wide range of GIS and geospatial file formats, enabling one to read both vector and raster data into the MATLAB environment.

- Mapping Toolbox also exports data to a number of file formats, enabling one to share data with applications such as Google Earth™ and ArcGIS®

Example: Identification of River Miles

STATION	DIST_MOUTH_JAMES	DIST_MOUTH_ELIZABETH	
JMS002.55	3.67		
ELI1	4.46	0.29	
LE5.4	5.51		
LE5.6	7.13	2.96	
ELI2	9.11	4.94	
LFA01	9.23	5.07	
LAF1	9.64	5.47	
ELD01	10.41	6.25	
ELI3	11.01	6.84	
LFB01	11.93	7.76	
LE5.3	12.58		
ELE01	12.61	8.44	
WBE1	12.61	8.45	
EBE1	13.35	9.18	
EBE1-E	13.54	9.37	
SBE1	13.73	9.56	
SBA1	14.15	9.98	
EBE2	14.67	10.51	
WBB05	15.02	10.85	
SBE2	15.12	10.95	
EBB01	15.88	11.71	
SBC1	16.09	11.92	
SBE3	17.04	12.88	
JMS017.96	17.85		
SBD1	17.91	13.74	
JMS018.23	18.20		
SBE4	18.49	14.33	



And more tool to come !!!!!

Thank You!