TerraFly: Geospatial Analytics

- Web geo-visualization
- Data integration, amelioration, geo-referencing
- Advanced geo-spatial computing engine
- Tools: geospatial querying, data drill-down, demographic analysis, annotation, route dissemination via autopilots, production of aerial atlases, API/application generator
- 40 TB database of aerial imagery and spatial data
- Rich datasets, user-friendly geo-queries
- Customizable to domain requirements
- NASA, NSF, IBM and USGS funded technology at $40M

TerraFly's API allows rapid deployment of spatio-temporal Web applications. Example: querying water level using historical and real time feeds from stream gauges.
TerraFly's many datasets include White Pages (contact phones and demographics of each household). Query-by-example GUI allows users to easily explore data.

TerraFly has data on every house and parcel in the USA.
Citizens’ incident reports via voice, SMS, and MMS, are transcribed, geolocated, mapped, fused with validated data streams, and presented on a decision-support console. Clicking on a neighborhood animates a graph of relevant calls. Shown: a prototype module within the 311/SMART-C System.

Emergency call records are mashed up with relevant data (e.g. water gauges) at the time of the call (right frame) and at viewing time (left). All blue words hyperlink to queries-by-example.
TerraFly: a Spatial and Temporal Engine

Travel through space and time allows change analysis

TerraFly: Route Dissemination & Analysis (AutoPilot)

Collaborative planning, dissemination, and visualization of routes
CARMEL: Geo-monitoring of stationary, mobile, and airborne video streams

Solid trapezoids are current projections of cameras' view. The dotted trapezoid is synchronized with the playback of the selected camera.

ALTA: Smart Balloons

- Flies without fuel or pilot, captures and transmits images
- Smallest earth imaging system
- Lowest vantage point
- Lowest cost
- No airport required to launch or land
- 0.5 inch/pixel resolution
- Spatio-temporal mosaicing and querying via TerraFly
Emergency Detection and Localization Using Spatial-Similarity Joins

- **Input:** social media, text messages, transcripts of emergency calls
- **Data extraction:** words that may describe location
- **Spatial Similarity Fuzzy Join** with geolocated datasets: Nationwide cadastre, Geonames, Yellow pages, White pages → possible/probable locations
- **Clustering of results:** if many communications probably refer to the same location, there may be a situation developing there