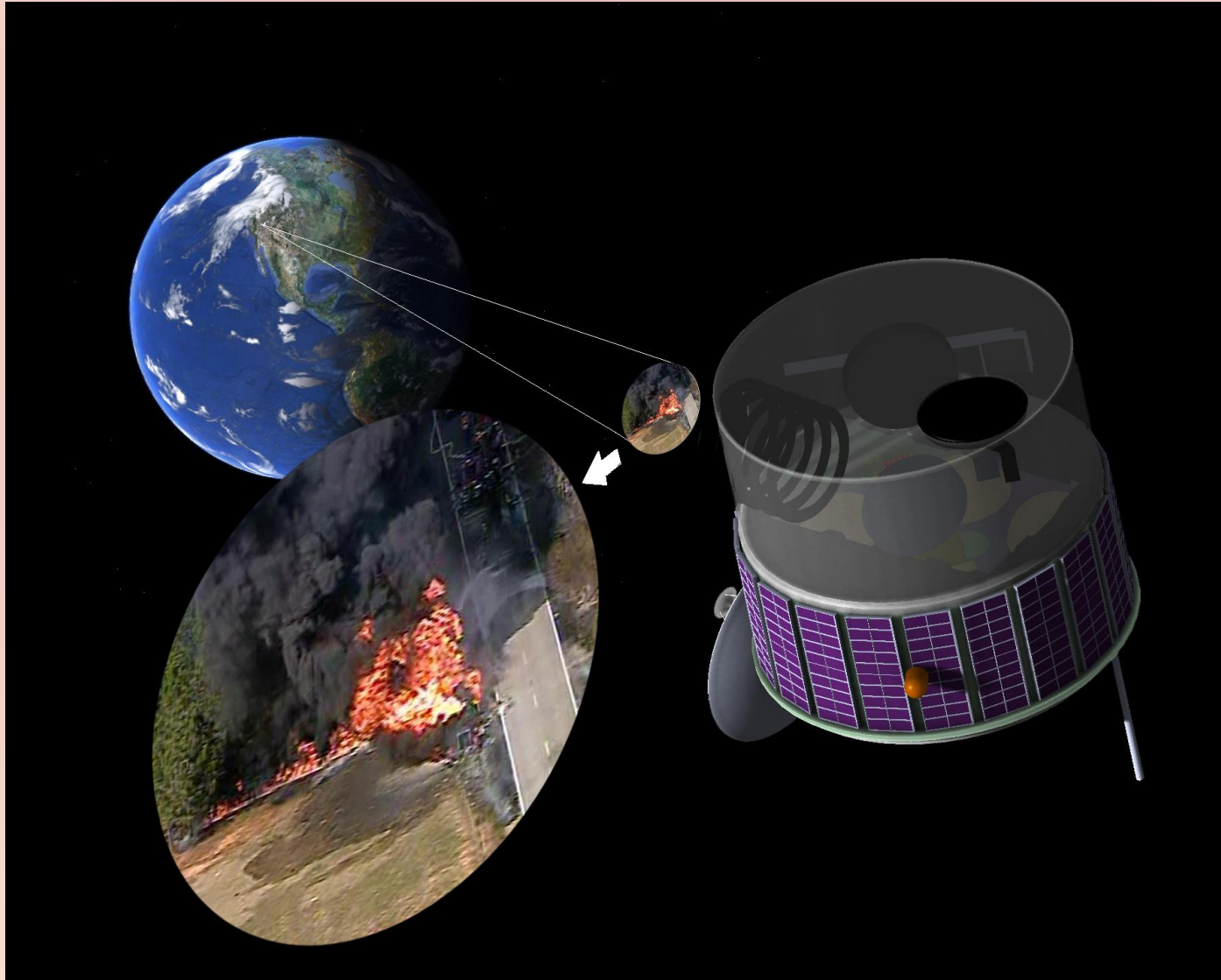


FUEGO:

Fire Urgency Estimator on Geosynchronous Orbit
(starting point of our journey...)



FUEGO:

Fire Urgency Estimator on Geosynchronous Orbit

Satellite Characteristics:

- 24/7 (except clouds – but clouds not a problem in California, for example)
- Fast – exposures are a few seconds
- Sensitive – 10 ft. x 10 ft.
- CHIRP Inspired Version could help pay for itself in one mega-fires, if suppression is quick

FUEGO:

Enhanced FUEGO now: Sensors at many altitudes
(including towers now)



FUEGO:

History:

- Light particles from galaxies a billion years away



Enabling Technologies: Sensors, automation, computers, processing amazing amounts of data to look for a small bright spot.

- Oakland fire (1989): design study indicated satellite would have > \$1B worth of detectors alone ...
- Detectors becomes 10,000X less expensive
- Remote Sensing Paper (google pennypacker, remote sensing and fuego)
- Vince and Everett and TFRSAC !!

Who? Principal Fuegians

- UC Berkeley: Carl Pennypacker
Organizer, system architecture, sensors & algorithms
- Terra-Vista: Donn Walklet, Bill Kruse
Business & GIS
- Anne Holler
Distributed Computing
- Drone America: Mike Richards, Kyle Pruett
UAVs
- UCSD / WIFIRE: Ilkay Altintas
Models and Workflows
- Fireball: Tim Ball, Ryan Dotson
Navigation, Databases, Sensors, Fusion, Acquisition, Execution

FUEGO Goals:

- ***Long Term:*** Build a system with successively large area coverage and increasing resolution to find small fires (10ft x 10ft) from geosynchronous orbit, and feed it into a powerful intelligence/simulation/action cycle
- ***Now:*** Contribute to high-frequency, high resolution infrared data acquisition, in the spirit of NIROPS. Exercise and help inform simulation programs

Some of the FUEGO Team Activities

- Work on WIFIRE-FUEGO Workflows/GIS/simulations by Bill and Anne
- 2 Proposals submitted (NASA) and 1 Crowd funding campaign
- Greater understanding of how to be able to deliver some near- term solutions
- Understanding of existing satellite resources that can help now! (NOMS)
- Manned UAV flights over Berkeley bbq's for signal studies
- Forging ahead with UAV Raspberry Pi system for prototype studies, software tests, etc.
- Studies of San Diego Fire Tower camera data
- Development of plans and tests (pending funding) of long-duration UAV systems for fire detection and management
- Solidifying and growing our team reasonably

WIFIRE/FARSITE/KEPLER WORKFLOW

file:/Users/anne/kepler.modules/farsite-v3.kar

Tag workflow: View: Workflow

Components | Data | Outline

Workflow | Execution

Search Components

Advanced ... Sources Cancel

All Ontologies and Folders

- Components
- Projects
- Statistics
- Demos
- Actors
- DDP
- DDP-common
- DataTurbine
- Dataone
- Directors
- GIS
- Hadoop
- Job
- Opendap
- Outreach
- Provenance
- R
- Spark
- Stratosphere

PN Director

- hours: 2.00
- windDirection: 180.00
- windSpeed: 12.00
- temperature: 90.00
- humidity: 8.00

Initialize

Create Inputs

Run FARSITE

Process Outputs

- runName: test2
- ignitionSquareSide: 0.001
- ignitionLat: 33.002
- ignitionLon: -117.117
- datum: EPSG:26911
- kmlDatum: EPSG:4326
- top: /Users/anne/wifire
- outdir: \$top/wfout
- landscape: /Users/anne/wifire/SDCounty-LCP/Landscape_1.lcp
- farsite: \$top/farsite/TestFARSITE
- writeOutputsEachTimestep: 0
- outputRasterType: 2
- configFileName: config
- runFileName: run
- ignitionFileName: ignition
- perimetersXSLFileName: \$top/scripts/xform

0 results found.

Immediate Goals

Working with Fireball, WiFIRE, Kruse/Holler:

- 1) Collect great GIS for our test-bed (probably San Diego)
- 2) Acquire with Fireball Manned UAV System very high frequency time and high spatial resolution data
- 3) Put GIS and fresh data into FarSite and undertake data experiment. See how it goes...
- 4) Continue process of GIS/Data acquisition/simulation validation.
Compare to what happens with fires