

NATIONAL RESEARCH COUNCIL  
OF THE NATIONAL ACADEMIES

## Session 7: Socioeconomic Relevance

Daniel N. Baker  
U of Colorado - LASP

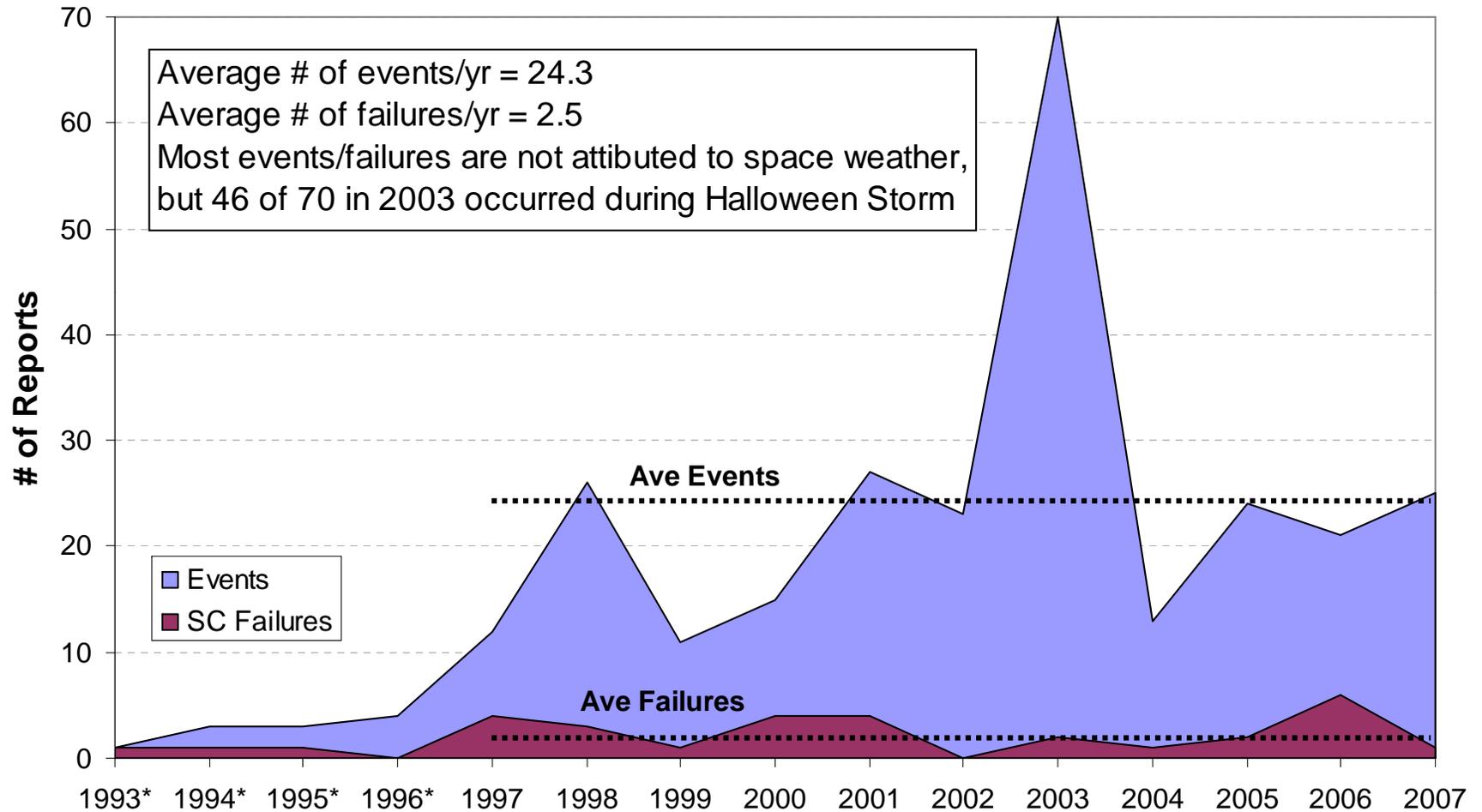
# The Societal and Economic Impacts of Severe Space Weather Events: A Workshop

- Workshop details
  - May 22-23, 2008 in DC
  - Approximately 80 attendees from academia, industry, government, and industry associations
    - Association reps aggregated data and helped avoid concerns about proprietary or competition-sensitive data
  - Analyses in specific areas; e.g., GPS, power industry, aviation, military systems, human and robotic exploration beyond low-Earth orbit
  - Econometric analysis of value of improved SpaceWx forecasts

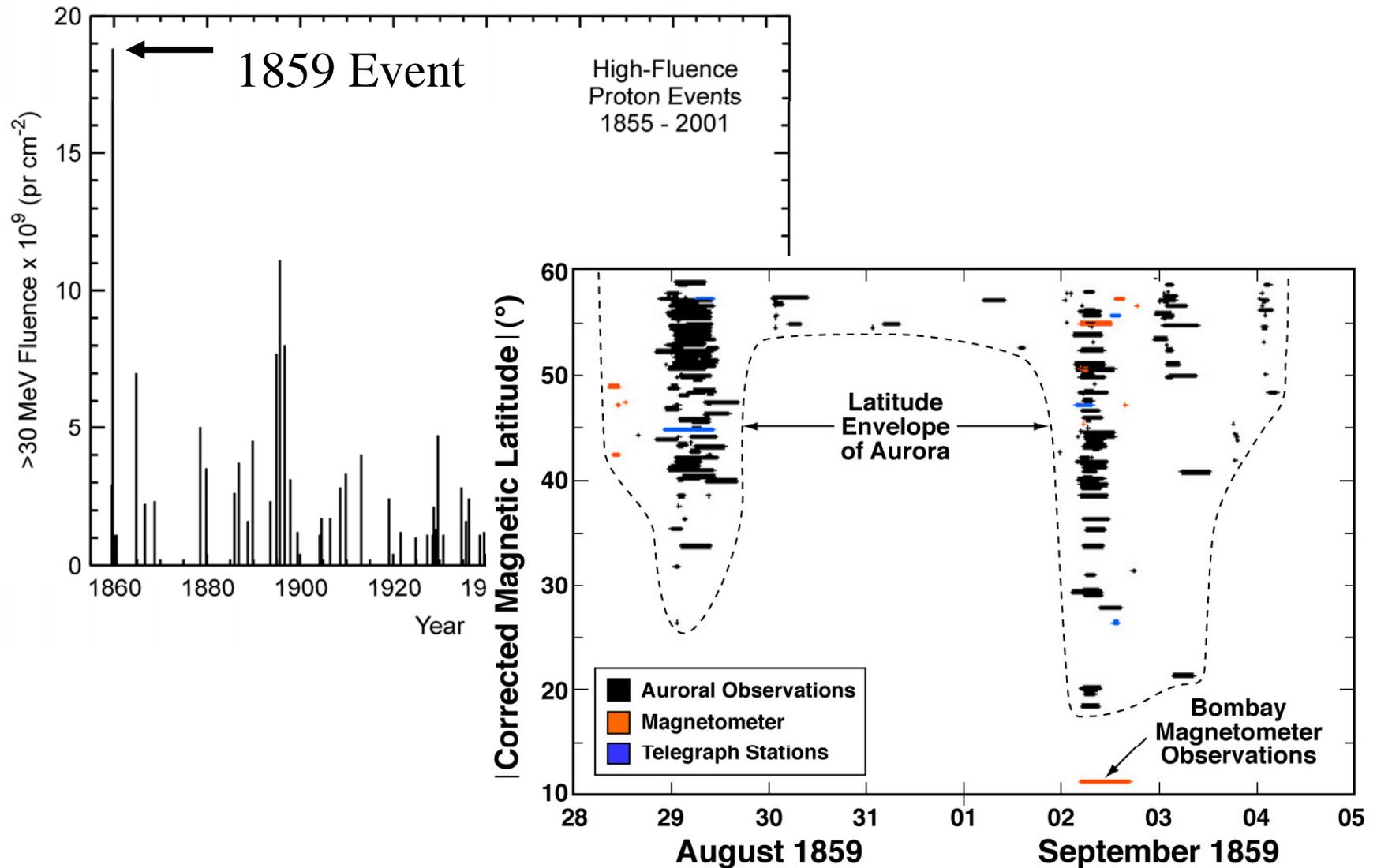


[ [http://www.nap.edu/catalog.php?record\\_id=12507](http://www.nap.edu/catalog.php?record_id=12507) ]

# Spacecraft Anomalies and Failures



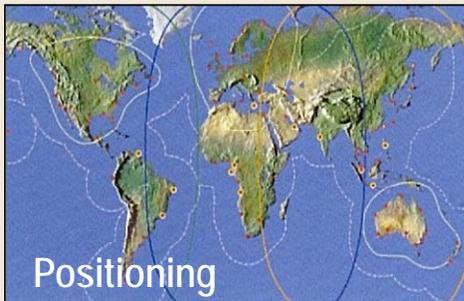
# An Extreme Event: Carrington 1859



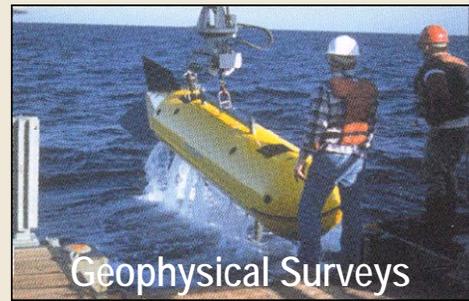
# GPS Use Pervades Modern Society



## Business Lines



Positioning



Geophysical Surveys



Marine  
Construction Support



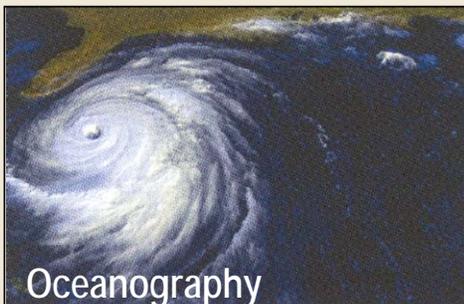
LIDAR Surveys



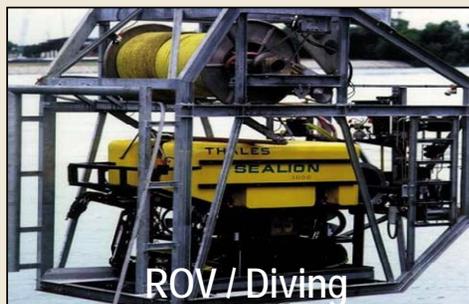
Seismic Data Collection



Submarine Cable  
Surveys



Oceanography

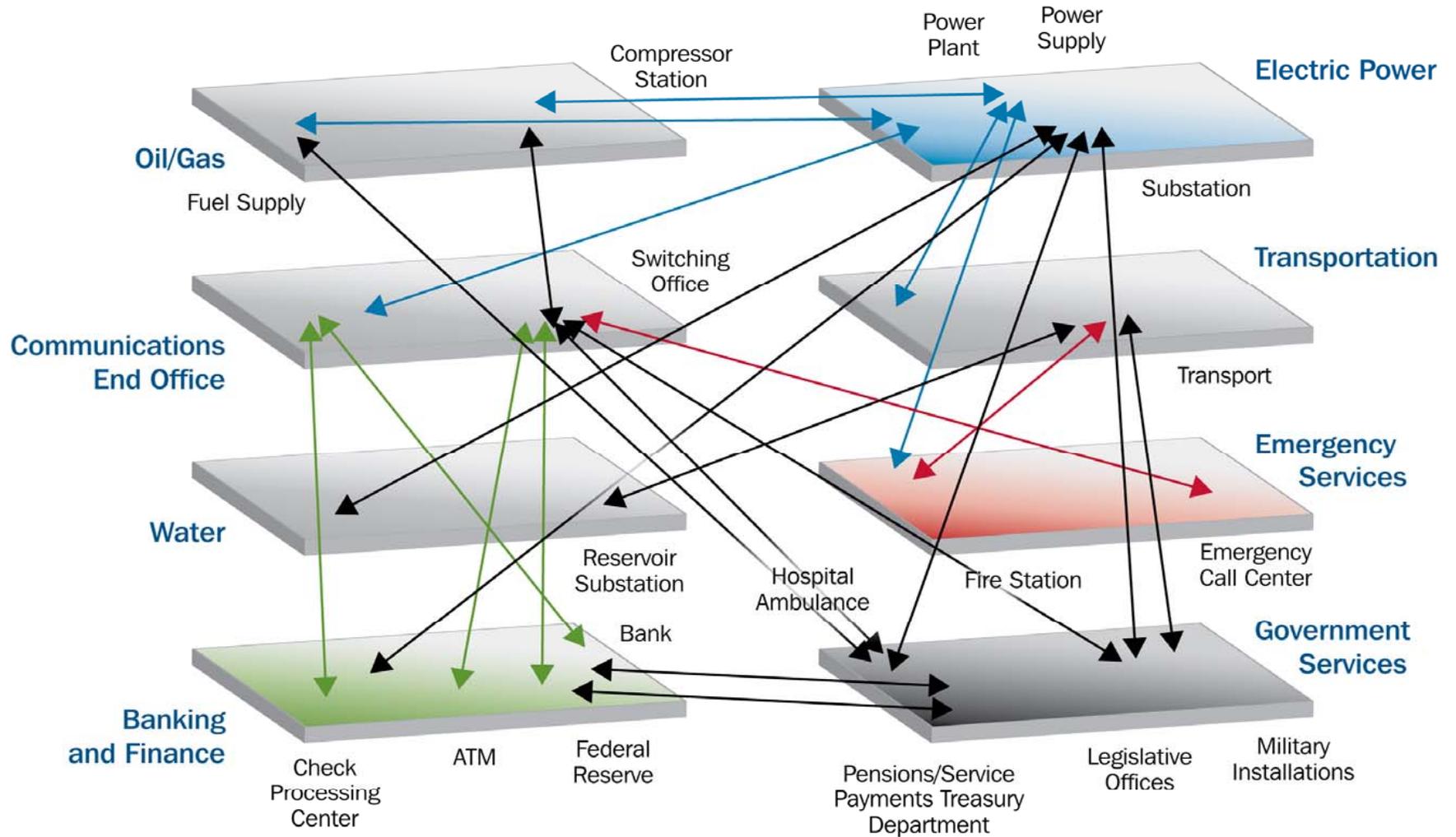


ROV / Diving



GIS/Data  
Management

# The Interdependencies of Society



# What Were Goals and Some Outcomes?

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- Identify decisions that can be improved using a reliable forecast
- Differences with and without forecast (the expected value of a forecast)
- When best design decisions are made
- Economic impact of events
  - Repair damaged S/C: \$50-70M
  - Replace commercial S/C: \$250-300M
  - Cost of major power blackout: \$4-10B
  - Extreme storm (a la 1859): \$1-2 Trillion