



The Private Sector in Meteorology- The Next Ten Years

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A Key to Service Delivery

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 - Industry Trends
 - Market Trends
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Background

- For this presentation the definition⁽¹⁾ of the Private Sector is as follows-
 - Companies in the private sector meteorology business (“industrial meteorology”)
 - Companies whose main business area is other than meteorology but who have meteorologists on staff involved in applied R&D, product and software development, etc.
Examples- aerospace, agricultural, insurance, energy companies, etc.
- In 1995, US Private Sector (in Meteorology) estimated at \$940M(USD) ±\$160M
- In 2007, US Private Sector (in Meteorology) estimated at \$2B

⁽¹⁾Spiegler, David B. “A History of Private Sector Meteorology”, American Meteorology Society, 1995

● The Last Ten Years

● Data Explosion

- NWS Modernization Program (ASOS, NEXRAD, AWIPS)
- NCEP Modeling Center upgrades
- NOAA GOES Program

● Technology

- HPC, micro-chips, clusters
- Communications
- Internet

● Competition

- Lower Barriers to entry
- Exponential growth of start-up weather companies
- Mergers & Acquisitions changing the competitive landscape

Market Trends

- Established core markets
- Forecast quality driving demand for products/services
- Beginning of market segmentation
 - Example- Energy market
- Emerging Consumer Market



Core Markets

AGRICULTURE

Farmers
Cooperatives
Food Processors

Crop Management: Growing to Harvesting
Crop Management: Growing to Harvesting
Market pricing

TRANSPORTATION

Aviation
Rail
Shipping
Trucking
Auto (*Emerging*)

Commercial, Corporate, General Pilots
Operations
Operations & Scheduling
Operations, Routing & Scheduling
Consumer Travel

MEDIA

Print
Radio
Broadcast
Internet

Local & National Daily papers
Local stations
Cable, Network & Local TV stations
News, search engines, business info, & corporate web sites

EMERGENCY MANAGEMENT

Local
State
Federal

Natural Disasters, Threat Phenomenon
Natural Disasters, Threat Phenomenon
Natural Disasters, Threat Phenomenon

ENERGY OPERATIONS

Electricity
Nat'l Gas
Oil
Nuclear

Generation, Transmission & Distribution
Exploration & Distribution
Exploration, Refining & Distribution
Regulatory, Disaster Mitigation

GOVERNMENT

Defense
Environ. Protection Agency
US Forest Services
Federal Aviation Admin.

Military operations & intelligence
Regulatory
Fire Fighting
Air Traffic

Quality Driving Demand



Lower Prices

Emerging Consumer Market

- One of the earliest applications on the web was free weather services for consumers.
- Weather became a draw for bringing the public to a company's web site. This became a powerful marketing tool and/or revenue producer by selling advertiser space.
- This list is just a few of the trends that have helped shape this lucrative market-
 - Highly mobile society
 - Need for instant access to information
 - A generation of weather savvy professionals
 - Public awareness of disaster impacts
 - Consumer accessibility to technology
 - Higher expectations
 - Demand for more local weather
 - Demand for better forecasts
 - Active lifestyles
 - Population growth along the weather sensitive coastlines

The Next Ten Years

● Industry Trends

- *Climate Change is a Driver*
- *Technology continues to be a driver but **technologies** working together create even more capabilities (e.g. iPhone)*
- *Science Changes*
 - *Transformative Research*
 - *Weather & Climate Forecasts with health, economic & business impacts*
- *Business Trends*
 - *Broadening horizons through mergers & acquisitions*
 - *Resonating on the “transformative research to transformative products and services” for climate and environmental sensitive markets.*

Transformative Research

According to Dr. Ardent Bement Jr.⁽²⁾, Director of the National Science Foundation-

"We use this term to describe a range of endeavors, which promise extraordinary outcomes; such as, revolutionizing entire disciplines, creating entire new fields or disrupting accepted theories and perspectives. Endeavors that have the potential to change the way we address challenges in science and engineering and also provide grist for the innovation mill. Supporting transformative research is of critical importance in the fast-paced, science and technology-intensive world of the 21st Century."

(2) "Transformative Research: The Artistry and Alchemy of the 21st Century", Texas Academy of Medicine, Engineering and Science Conference, Austin, Texas, January 2007

Levenson's Interfaces of Change

- Levenson⁽³⁾ suggests innovation will happen at the interfaces:
 - Atmospheric-Ocean → encourages ecosystem approach
 - US - Int'l Community → promotes science cooperation
 - Military - Civilian → brings about technology transition
 - Public - Private → bring about partnerships
 - Research - Operations → brings about transition issues
 - Incentives - Regulations → brings about philosophical debates
 - Markets- Governance → brings about blended approaches

(3) Irving Levenson, Hudson Institute, Commercial Weather Services Annual Meeting (2003)

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Emerging Markets

COMMODITIES- TRADING

Agriculture (*Core*)
Energy
Emissions Credits

Coffee, Citrus, Corn, Soy Beans, Wheat, Cotton
Electricity, Nat'l Gas, Oil
CO₂,NO_x, SO_x, Hg, etc

WEATHER RISK

Weather Futures
Hurricane Futures

Temperature/precip based risk management
Wind/rain damage index management

FINANCIAL SERVICES

Fund Managers
Insurer/Re-insurers

Risk Management for portfolio of holdings

CONSTRUCTION

Architectural Design

Winds, Climatology for building design

RECREATION

Ski Resorts
Marinas

Operators
Boat operators

RETAIL

Seasonal Suppliers

Clothing. Snow removal equipment, etc...

- Integration of capabilities to offer “full service”
 - Not just the weather but the impacts of the weather and natural disasters on health, living and working environment, business performance, etc.
- Growth in consulting services as complexity of environmental impacts on businesses operations grows.
- Continuing to increase market segmentation as capabilities grow and needs become clear.





Thank you.

For more information-

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Discussion