

Customers, Outreach, and Education
NOAA Space Environment Center

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ESTEC
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Barbara Poppe
Education and Outreach Coordinator
(303) 497-3992
Barbara.Poppe@noaa.gov

Overview


- Health of SEC
- Customer–Past, Present and Future
Who have been
Dissemination
Commercial Opportunities
- Outreach
- Education
- Serving all the communities

Health of SEC

- Currently **funded** to support our level of effort
(Better than the last 2 years)
- Move to the National Weather Service (still NOAA)
- Many differences between us and NWS
 - ✓ Make it harder to move quickly?
 - ✓ Make it easier to get funding?
 - ✓ Opportunity for new products?
- Need to train many at NWS (Outreach and Education)

Customers for 50 years

- Forecasts, warnings, watches, are increasingly relevant to users
- New Technologies add new industries as customers
- Customers need continual education on for their technologies
- Industries, government, media, general public, education, and universities/ researchers
- Partners and customers reside around the globe



Growth of Space Weather Services

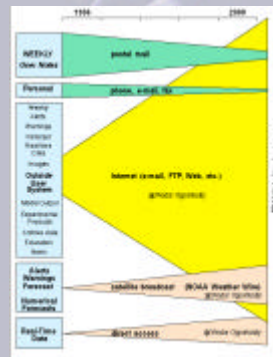
- GPS / Galileo
 - ✓ Emergency services (E911)
 - ✓ Vehicle positioning
 - ✓ Precision GPS
 - ✓ New product: USTEC (for GPS applications)
- Airlines
 - ✓ Especially important in the Polar regions
 - ✓ Commercial (SATCOM, Radiation)
 - ✓ General Aviation (HF, weather)
 - ✓ Fly-by-wire (Radiation on systems)

Growth of Space Weather Services

- Space Exploration
 - ✓ Cosmic and solar radiation on the Moon and Mars
 - ✓ Forecasting the weather throughout the solar system
 - ✓ Space Travel Tourism
- Wireless Communications
 - ✓ A huge increase in users will make even "minor" problems significant (direct solar interference, etc)
- Tourism
 - ✓ Aurora watching
 - ✓ SpaceShipOne

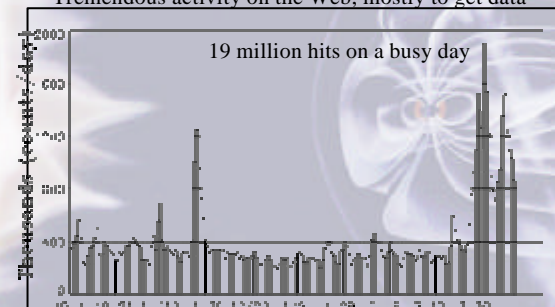
Dissemination Trends

- (Drawing from 1996)
- Trends are clearer now
- Internet/Web more reliable, relied upon
- Data sharing internationally
- NWS and WMO impact
- SEC's New Subscription Service to push products



Customer Web Use

- Space weather products are pushed to subscribers
- Data are available on the Web in near-real-time
- Tremendous activity on the Web, mostly to get data



Outreach is for Everybody

- Media (TV, articles)
- Adult groups
- Tours
- Museums
- Classroom visits
- News reporting
- Congress and funders
- Vendors

Valuable Meetings

Space Weather Week: growing attendance
Airline Workshop: filling the need
Vendor opportunities at both Meetings
Now: European Space Weather Week ☺



Vendors of Space Weather Services

- SEC committed to fostering a commercial SW industry
Support for individual vendors within the collective needs of the group
 - listings on our Website
 - referrals to users
- CRADA, SBIR Partnerships
- Supplying data needs peculiar to vendors
- Commercial Space Weather Interest Group is now launched, though commerce is lagging.

Education

Posters

Teacher Classes

Comics



Education

- Website is flexible, cheap to “distribute” but...
- Materials are more useable for classes
- Help fit space weather into science class
- Media that’s easy to do
 - ✓ Brochures
 - ✓ Flyers
 - ✓ Short papers
 - ✓ Reports
 - ✓ Video: VHS, CD, DVD
 - ✓ Posters

Adult Education

(Professional Training)

- Very similar needs as students and media
 - ✓ Background on the science
 - ✓ Specifics on their areas of expertise (about which they know more than we do)
- Needed across all careers and ladders
 - ✓ Airlines, power companies, military, etc.
 - ✓ CEOs to operators, dispatchers and pilots, etc.
- Need various formats
 - ✓ Half day fly-in training
 - ✓ Web-based do on your own
 - ✓ Own professional trainers with materials provided
- National Weather Service is our first try with this kind of training



Requirements of Education and Outreach

- Clarifying the language
 - ✓ NOT ALL UPPER CASE
 - ✓ Not in code
 - ✓ What does “severe” or “strong” mean?
- Designed the NOAA Space Weather Scales
 - ✓ Three types of weather
 - ✓ Effects, physical cause, frequency
 - ✓ Very helpful for Media
 - ✓ Useful for the next generation

Interconnected Education and Outreach

- Outreach: The WHO
- Education: The HOW

	NOAA Scales	HEMISPHERES	Observatory	Space Weather Week	Museum Partnership	Tours	Visits to Schools	Comic Book	Teplet Papers	Posters	SEC Video	SXI video	Strategic Plan	Lab Review	SWG Review	GOES Workshops	NOAA Strategic Plan	Biennial Report
Scientists																		
Partners (AF, NASA)																		
Vendors																		
Users																		
Funders																		
K-12 education																		
Media																		
Minorities		S,F					S		S	S								
General Public																		
DSRC Outreach																		
NOAA Congress																		
OSAR's Outreach																		
NASA S-E Comm																		
Inter Bldr Group																		
SEC Internal																		

S=Spanish, F=French

Space Weather Week 2005

- April 5-8, 2005 in Broomfield (near Boulder)
- ISES meeting Sunday April 3 all day
- Tutorial on Space Weather Monday afternoon April 4
- Meeting sessions:
 - ✓ Space Exploration and Space Weather Support
 - ✓ Radiation Environment Near Earth
 - ✓ Navigation, Communications, and GIC
 - ✓ Agency Activities
 - ✓ Space Weather –Atmosphere Connection
 - ✓ Research to Operations—Models and Data
 - ✓ Airline Issues Meeting sessions:
- Posters Tuesday, Wednesday, Thursday
- Vendor Meeting Thursday evening

Summary

- Customers need data, products *and comprehension*
- Education and Outreach brings you
 - ✓ Environmental Literary
 - ✓ New scientists
 - ✓ National health and safety
 - ✓ Funding

Customers, Outreach, and Education are vital to any
Space Weather Program