



GOES-R Auxiliary Services (LRIT, EMWIN, DCS, SAR)

Satellite Direct Users Conference for the Americas

Miami, Florida
December 12, 2002

Gerald Dittberner (NOAA/NESDIS)

GOES On-Orbit Status

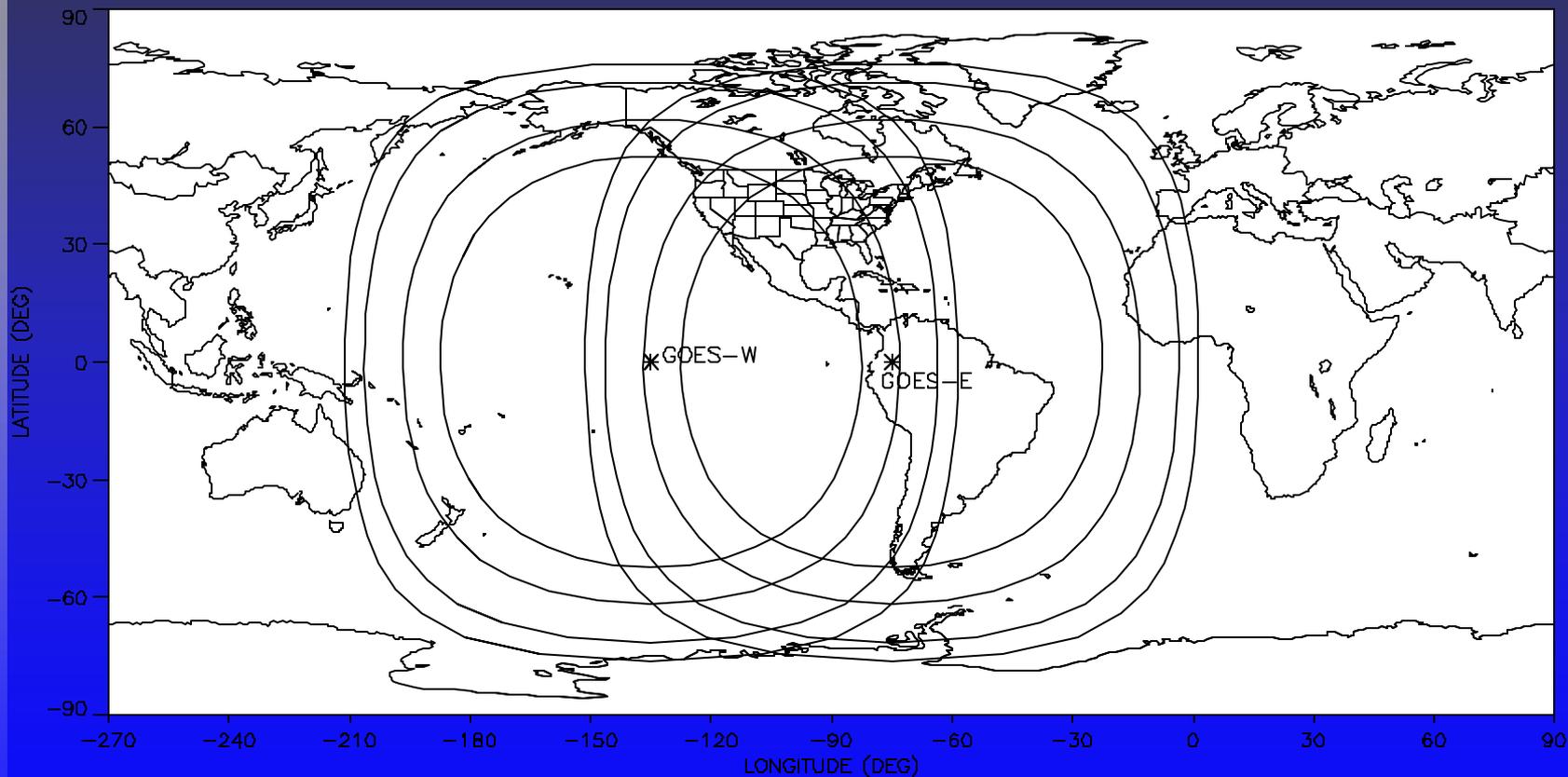
- GOES-8 continues to function as the GOES-East operational satellite
 - Functioning on several redundant systems
 - All fuel reserves for N-S Inclination Manuevers depleted in December 2002
 - Has exceeded operational life by 3 + years
 - Being removed from operational service in April 2003
- GOES-9 removed from operational service in July 1998
 - Being made available to the Japanese to provide emergency coverage to back-up GMS
 - Relocation to 205W begins December 19, 2002
- GOES-10 has functioned as the GOES-West operational satellite for the last 4 years
 - Difficult to quantify remaining mission life due to Solar Array anomaly
- GOES -11 and GOES -12 are in on-orbit storage mode, ready to replace either GOES-East or West
 - Transition plan developed to move GOES-12 to GOES-East with an April 2003 Operational date

GOES Launch Planning

Spacecraft	Availability Date	Planning Launch Date
GOES-N	Jan 2004	Apr 2004
GOES-O	Apr 2005	Apr 2007
GOES-P	Apr 2007	Oct 2008
GOES-R	Apr 2012	Apr 2012
GOES-S	Apr 2013	Apr 2015



GOES East (75°W), Goes West (135°W) System Coverage



Lines are elevation angles of 5, 10, 20, and 30 degrees

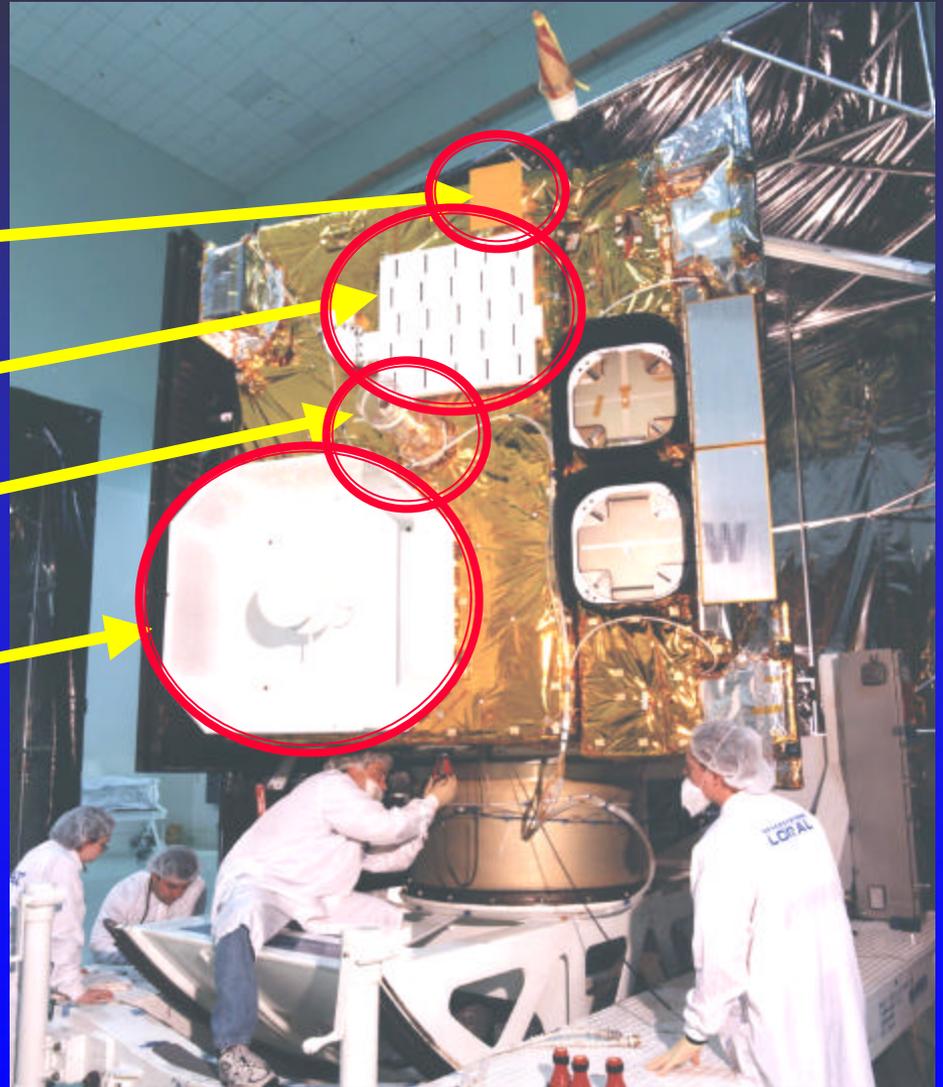
GOES-12 Spacecraft

S-Band
SAR (Rcv)

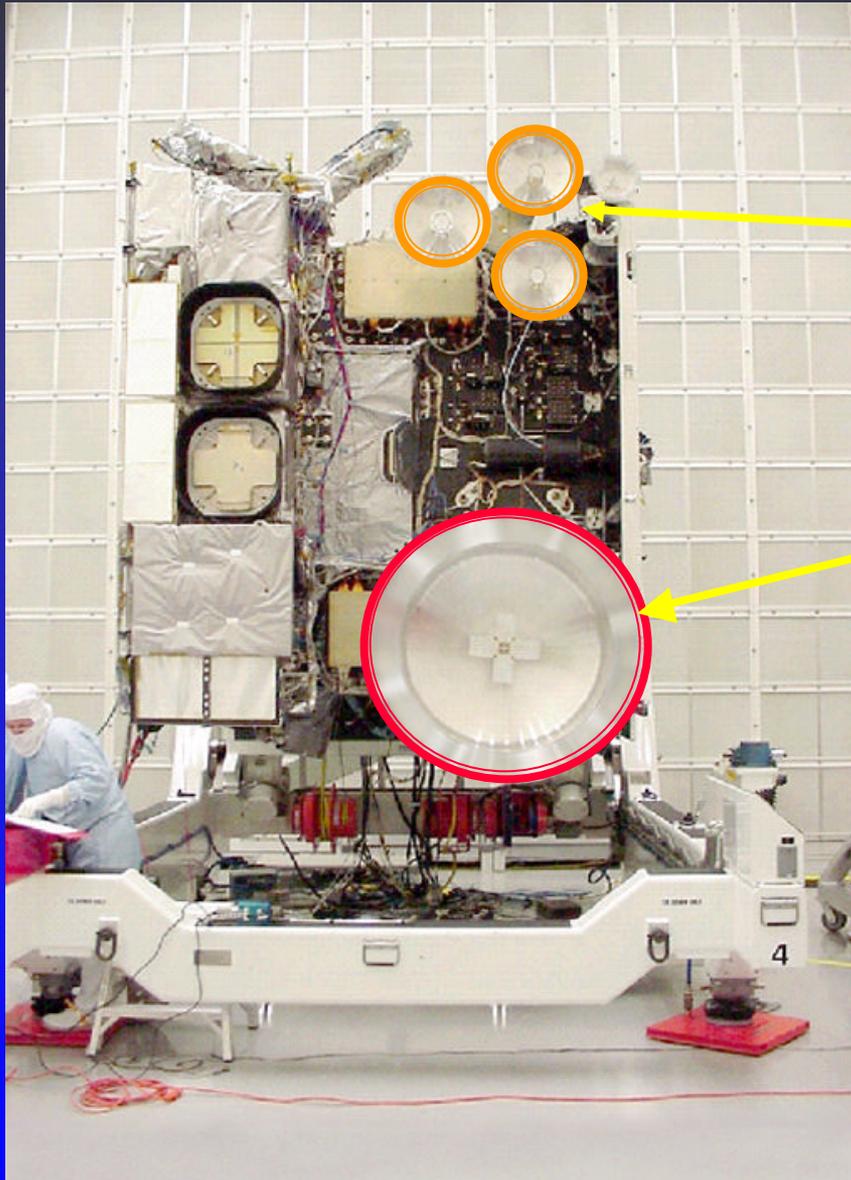
S-Band
(DCS, SAR)

SAR

UHF
(DCS, SAR)



GOES N Spacecraft



S-Band Transmit & Receive
(DCPR, SAR)

UHF (DCS, SAR)

Picture taken 3/26/02

Low Rate Information transmission (LRIT)

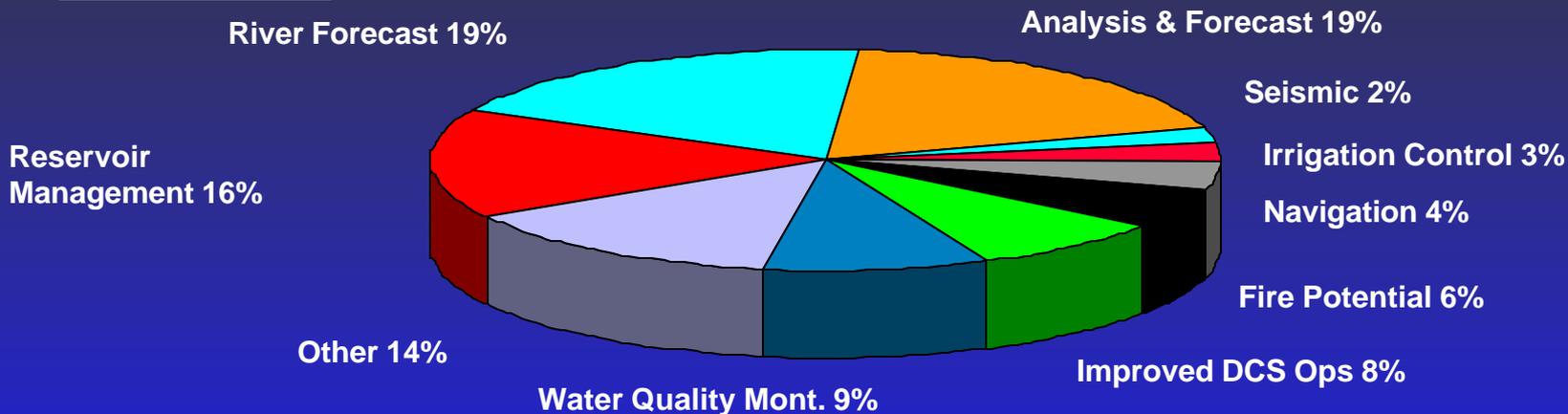
- For the next decade (2002 - 2012):
 - LRIT (digital) will begin in 2003 replacing the analog WEFAX signal
 - Data rate will be 128Kbps
- Beginning in 2012 (the GOES-R era):
 - LRIT is planned to be continued with at least the level of service to be provided up to 2012
 - Data rate will be 256Kbps

Emergency Managers Weather Information Network (EMWIN)

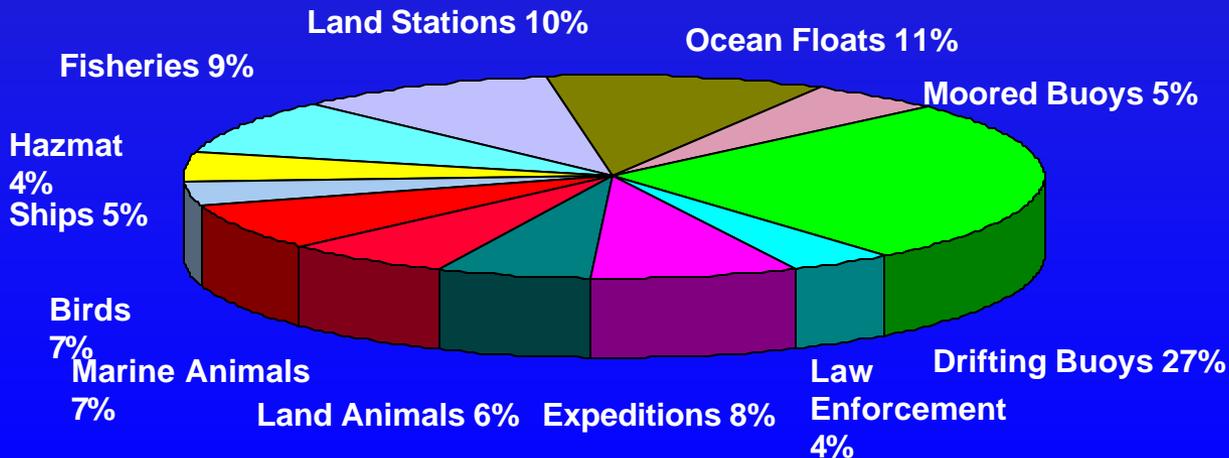
- Currently:
 - EMWIN is broadcast at 9.6Kbps
- For 2002 - 2012:
 - EMWIN will change to an increased data rate of 20Kbps by 2004
 - The frequency will change from 1690.725 to 1692.7000
 - Modulation and coding will change
- Beginning in 2012:
 - EMWIN is expected to continue, but be driven by requests for more information (higher data rates), yet to be determined

Direct Communication System (DCS)

GOES DCS



Polar DCS (Argos)



Data Communications System (DCS)

- Currently:
 - DCS has 22,500 100bps platforms, transmitting an average 2.4Kbps of data through the 200 national DCS channels
- For 2002 - 2012:
 - DCS continues to grow capability with 300bps and 1200bps modulators/demodulators gradually replacing the 100bps units
 - Ultimate system capacity is 232,200 platforms, transmitting an average 93Kbps of data through the 200 national DCS channels
- Beginning in 2012:
 - DCS is expected to inject CDMA and TDMA, sharing the DCS bandwidth with the 300bps/1200bps platforms
 - An optimized system capacity under this configuration is expected to be 290,000 users with an average 180Kbps of data throughput
 - Alternative architectures using other satellite systems are also being examined for user utility and effectiveness
 - GOES-R series might be several small satellites instead of two large satellites
 - Possibilities for DCS may include: GOES, GPS, other GEO and LEO satellites, or some form of commercial service

Search and Rescue (SAR)

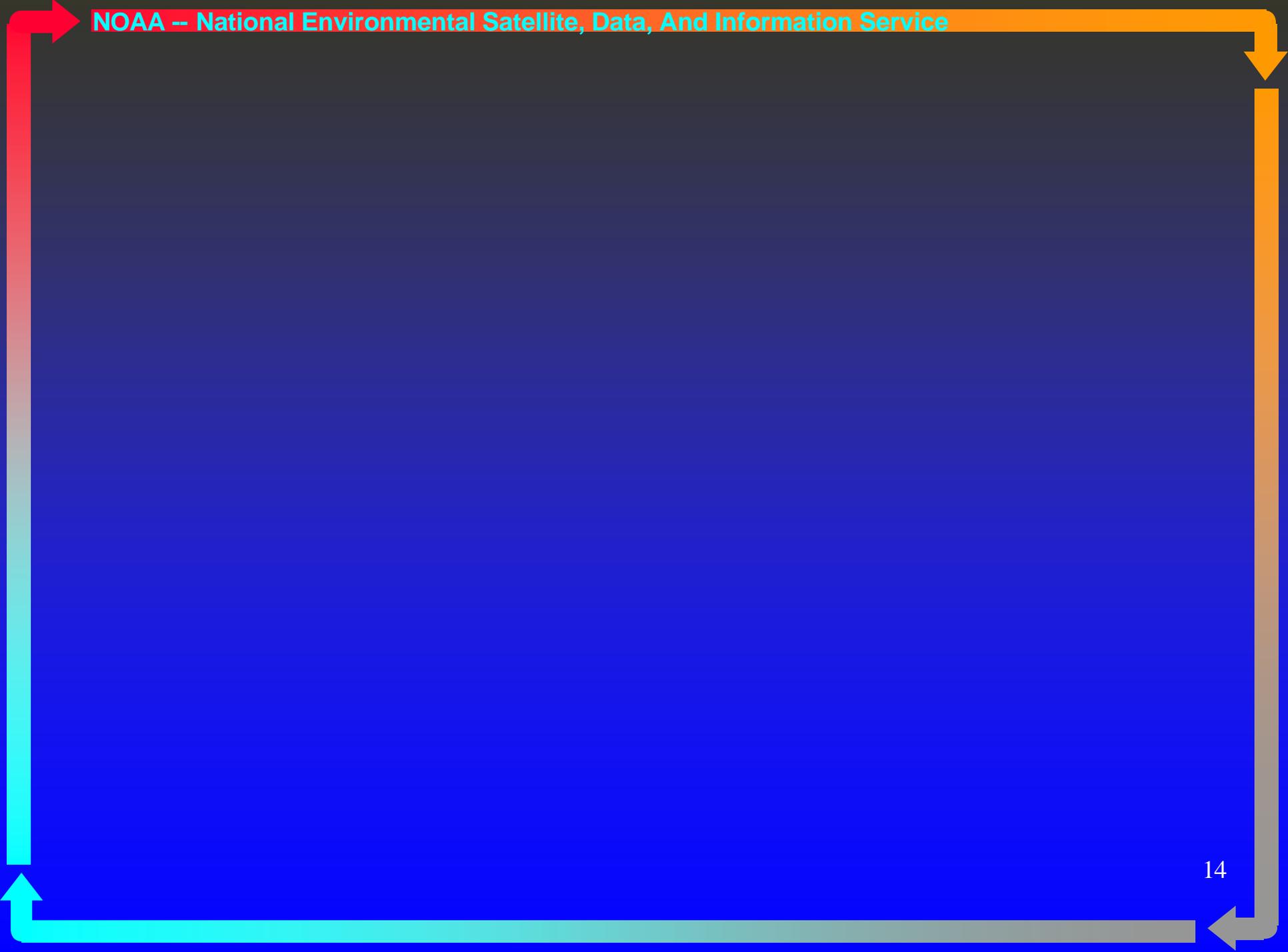
- Currently:
 - GOES systems compliments polar and Argos systems
 - 406.025 systems (1544.5 downlink)
- For 2002 - 2012:
 - GOES continues with no changes
- Beginning in 2012:
 - SAR is included in the GOES-R baseline system
 - GPS location reporting is being considered as a message option, as is the possibility of an acknowledgement of the distress call to the originating beacon
 - A main driver is user transmitter power. LEO systems require much less power than GEO systems
 - Alternate architectures fro GOES-R are being examined
 - May be several small satellites instead of two large satellites
 - SAR platforms Include GOES, other polar systems, GPS, commercial service

Summary

- The GOES-R Baseline is being developed assuming auxiliary services will be continued, with performance at least at the current level
- Analysis continues to evaluate whether some services might provide greater utility or be more effective on systems other than GOES-R

Web Sites

- EMWIN:
 - <http://iwin.nws.noaa.gov/emwin/indexlist.html>
- LRIT
 - <http://noaasis.noaa.gov/WEFAX/>
- DCS
 - <http://noaasis.noaa.gov/DCS/index.html>
- SAR
 - <http://www.sarsat.noaa.gov/>



Backup Charts

Development of South American Region

