



Group on  
Earth Observations

# Operating a GEONETCast Receive Station

**Richard Fulton**

GEONETCast Americas Project Lead

National Oceanic and Atmospheric Administration

Satellite and Information Service

Silver Spring, Maryland, USA

GEONETCast Workshop

San Jose, Costa Rica     June 27, 2007





# Operational Fundamentals

- GEONETCast receive station will run autonomously once started
- Will be configurable to permit choice of data channels (PIDs) that are desired
- Can tune into one or more GEONETCast channels simultaneously depending on your data needs
- Provides logging and monitoring capabilities
- User is responsible for file archival and hard disk management
- Recommend heavy data analysis and processing be done on separate computer



## Use of EUMETCast for this Demonstration

- We are using EUMETSAT's GEONETCast service (called EUMETCast) to provide the satellite data dissemination infrastructure today
  - An interim solution for the Americas until U.S./NOAA's GEONETCast Americas service becomes available in November this year
  - About 2 Mbits/sec total data throughput (including ~200 kbits/sec donated for GEONETCast Americas pre-deployment demonstration)
- I'm using a standard EUMETCast/GEONETCast receive station configuration for this demonstration today



# EUMETCast Hardware Components Used Here

*Expect Similar Components for GEONETCast Americas*

- Personal computer
  - Standard Windows-based Dell laptop PC (Linux also supported)
- Digital Video Broadcast (DVB) receiver box
  - A number of these are available on the commercial market
  - ~\$100-300
- Downlink antenna
  - 2.4m antenna located on roof of our hotel to receive C-band
  - ~\$700-2000
- Cabling from antenna to PC/receiver
- Internet connection
  - Only used here for transmitting products to the uplink site as a data provider would do

## 2.4m Satellite Antenna on Hotel Roof Pointing to NSS-806 Commercial Satellite



# Satellite Coverage Footprint – NSS-806 C-band



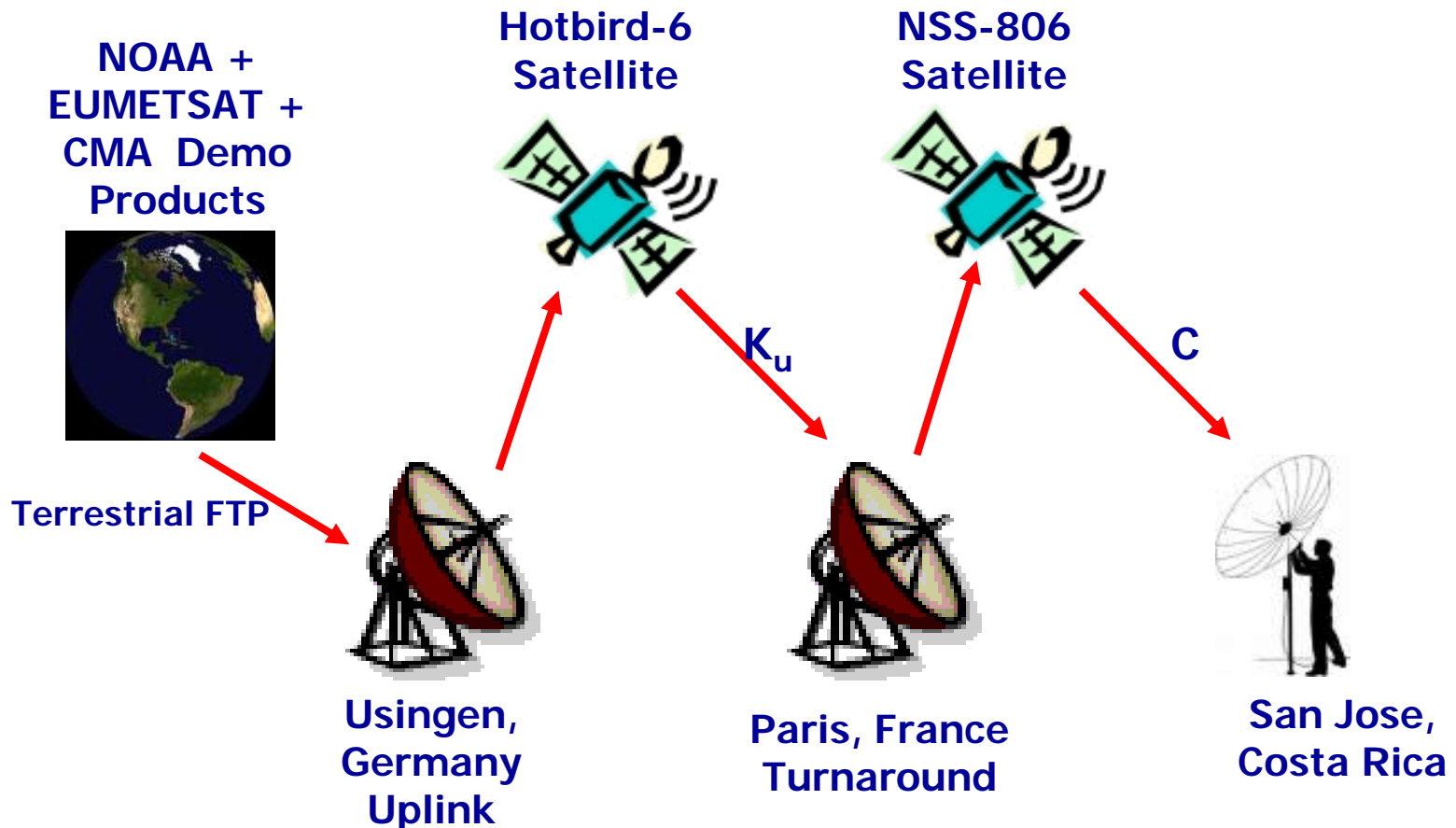
40.5  
degW



# EUMETCast Software Components

- TelliCast client software from Tellitec, Inc. (required)
  - Used by EUMETCast to decode the incoming DVB-S satellite signals and re-create the original data files
  - Nominal one-time cost of 60 euros with no recurring licensing fee
  - *Client software employed by GEONETCast Americas may be from different commercial vendor*
- Standard web browser for viewing image products
- MSG Data Manager for viewing Meteosat and GOES images
- HDF Viewer or other software for decoding/viewing files

# GEONETCast Data Flow to San Jose using EUMETCast's Satellite Infrastructure





# GEONETCast Americas (GNC-A) Data Flow To and From the Americas (after November)

Products from the Americas



GNC-A Satellite(s)

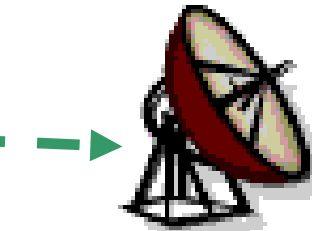
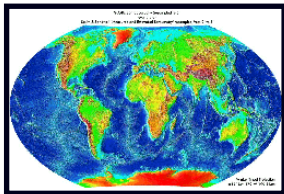


Other Satellites



Terrestrial SFTP

Products from the World



GNC-A Network Center



End Users in the Americas



Other Global Uplinks



Other Global End Users

Terrestrial SFTP

Interoperability Interfaces



## Current GEONETCast Demonstration Products on EUMETCast

GEONETCast Demonstration Service	Format	Coverage	Times/day	Size	EUMETCast Band	Origin
GOES-E Images VIS, IR and WV	XRIT Envelope GVAR (Wavelet compressed)	Full disc	8	12 MB	Ku-band Europe & C-band Americas	NOAA
GOES-W Images VIS, IR and WV	XRIT Envelope GVAR (Wavelet compressed)	Full disc	8	12 MB	Ku-band Europe & C-band Americas	NOAA
Cloud Mask (Met-8)	XRIT Envelope; GRIB2	Full disc	96	3.4 MB	Ku-band Europe & C-band Americas	EUMETSAT
Global Instability Index (Met-8)	XRIT Envelope; BUFR	Full disc	24	0.3 MB	Ku-band Europe & C-band Americas	EUMETSAT
Atmospheric Motion Vectors (Met-8)	XRIT Envelope; BUFR	Full disc	24	2 MB	Ku-band Europe & C-band Americas	EUMETSAT
Cloud Analysis (Met-8)	XRIT Envelope; BUFR	Full disc	24	1.3 MB	Ku-band Europe & C-band Americas	EUMETSAT
MSG SEVIRI Images 12 spectral channels, including HRV	XRIT Envelope "MSG Level 1.5 - Image Data Format" (Wavelet compressed)	Full disc	96		Ku-band Europe & C-band Americas	EUMETSAT
Total Precipitable Water Mapped (MSPPS): AMSU-A Total Precipitable Water Map	HDF EOS	Global	1/Satellite	10 MB	Ku-band Europe & C-band Americas	NOAA
SSM/IS EDR: Ocean Surface Wind Speed Rain Rate Cloud Waters Over Ocean Soil Moisture Ice Concentration Ice Age Ice/Snow Edge Water Vapor Over ocean Land Surface Type Snow Depth Surface Temperature Over Land Snow Water Content	BUFR	Global	14	2 MB	Ku-band Europe & C-band Americas	NOAA

## Current GEONETCast Demonstration Products on EUMETCast (cont.)

Snow Cover Mapped (MSPPS): AMSU-B Snow Cover Map MHS Snow Cover Map	HDF EOS	Global	1/Satellite	10MB	Ku-band Europe & C-band Americas	NOAA
Mapped NDVI Weekly: Global	Native binary	Global	1/Week/ Satellite	2.2 MB	Ku-band Europe & C-band Americas	NOAA
SST Anomalies Daily (POES)	GIF	Global	4	1.5 MB	Ku-band Europe & C-band Americas	NOAA

- Most of these products require decoding software to view or use (e.g., HDF, BUFR, etc.)
- EUMETSAT's Product Navigator has additional GEONETCast product metadata information, including products to be added in near future (<http://www.eumetsat.int/products>)



## Opportunities for GEONETCast Demonstrations at Earth Observation Summit IV, Cape Town, South Africa, November 28-30, 2007

- *The GEONETCast Implementation Group invites interested parties to work with us to develop **user application-focused demonstrations** for the Summit !*
  - *We will set up several GEONETCast receive stations to receive real-time data at the Summit site*
  - *We will need to pre-coordinate to get your data flowing on GEONETCast*
  - *Users would demonstrate your GEOSS applications and tools using GEONETCast-supplied data, either live or archived*