

Preparing for the Next Generation of Direct Broadcast

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Problem

With the anticipated launch of NPP, JPSS-1 and GOES-R in the next five years, the flow of weather data to users will rise ten times (Berchoff, 2009). This volume of data will put a strain on the government infrastructure tasked for data distribution, which could limit real-time data distribution to government users only, forcing others to retrieve their data days to weeks later. In order to receive real-time data, direct reception is a necessity.

Solution

SeaSpace Corporation, the creator of TeraScan® has created a complete end-to-end solution in anticipation of the forthcoming needs of satellite data users. This solution is made up of three parts: 1) ground reception stations for both polar orbiting and geostationary satellites, 2) software to process the data into products, and 3) data storage hardware, data cataloging software and server.

End-To-End Solution



2.4m X/L/S-Band TeraScan® Ground Station

For reception and processing of the following:

Aqua
Terra
NPP
JPSS
DWSS
Oceansat-2
FY-3
NOAA
FY-1
SeaStar
DMSP

TeraScan®
Geostationary Ground
Station

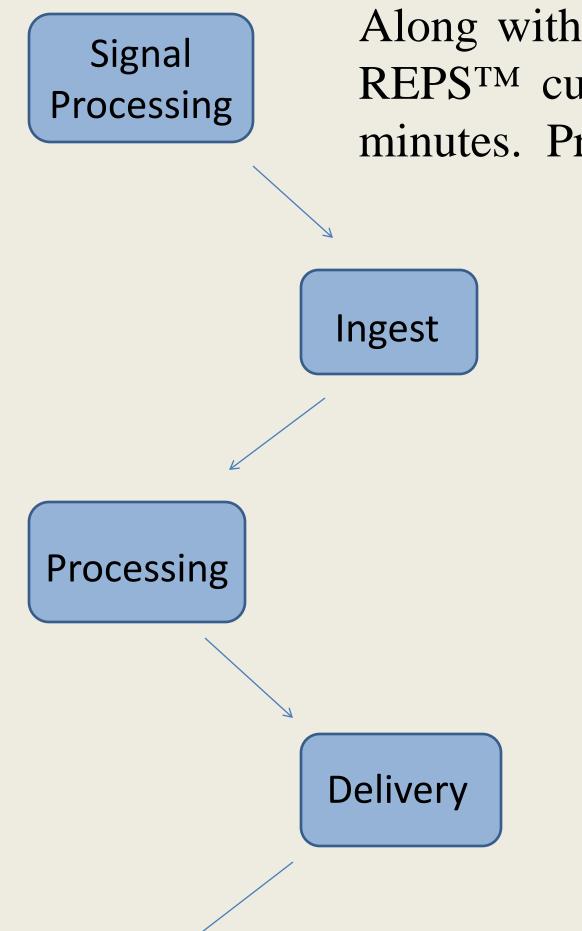
For reception and processing of the following:

GOES
MTSAT
MSG*
MTG*
FY-2
GOES-R
COMS

*via GEONETCast



Rapid Environmental Processing System (REPS™)



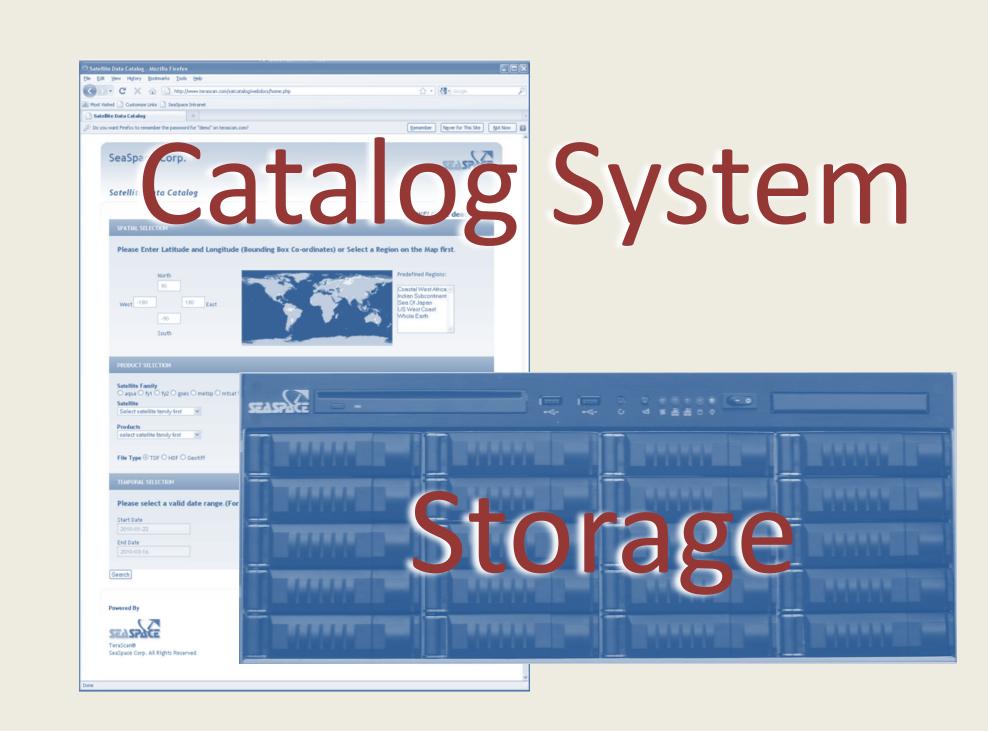
Mission

Applications

Along with TeraScan's superior data processing and georeferencing abilities, REPSTM currently processes all MODIS data to output all products in five minutes. Products include:

Aerosol Products
Total Precipitable Water
Cloud Products
Atmospheric Profiles
Cloud Mask
Land Surface Temperature and Emissivity
NDVI and EVI
Thermal Anomalies, Hot Spots, etc
Normalized Water-Leaving Radiance
Chlorophyll_a
Sea Surface Temperature
and more...

REPSTM processing will be available for NPP VIIRS upon launch.



TeraCat[™] Online Cataloging Software and Server

TeraCatTM provides a tool to archive, search, and retrieve data through a web-based interface. It is an all-inclusive system that includes a server, database, and software. Works seamlessly with all TeraScan® systems, allows users to preview quicklook images, and to share data with customers across the web.

TeraVault[™] Data Storage Hardware

TeraVaultTM provides up to 84 TB of storage space and is expandable to satisfy even larger requirements. It allows a large amount of data to be stored in a small space, taking up just 5U of rack space. Additionally it is configured to RAID 6 for data protection.

Conclusion

A full direct-reception solution is the only way to guarantee real-time access to the next generation of environmental satellite data. The currently over-tasked system of data distribution via the internet is ill-equipped to service local and foreign customers on a real-time basis now, and this will only get worse as more data comes online.

References

D. Berchoff, Leveraging GOES Capabilities to Maximize Response to User Needs, 2009 GOES Users Conference, November 3, 2009, Madison, WI.

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