

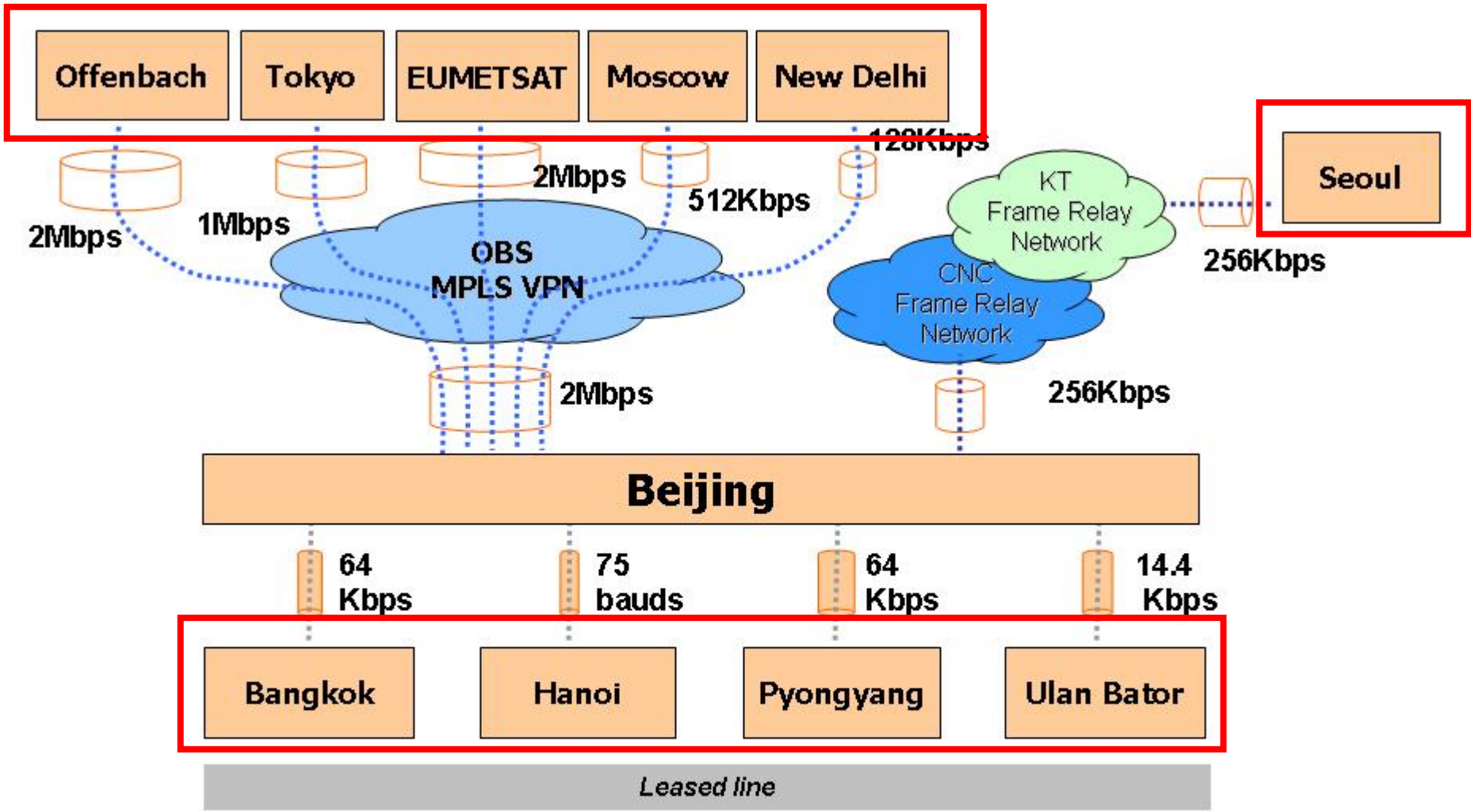
# Status of RTH Beijing

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# RTH Beijing

- GTS links
- Internet connections
- Satellite-based broadcast systems



GTS connections at RTH Beijing



# New update

- **Link to Pyongyang**
  - Upgraded from ASYNC to IP link in April, 2007
  - 75bauds -> 64kbps
- **Link to Bangkok**
  - Upgraded from X.25 to IP link in December, 2007
  - 64kbps
- **Links to Offenbach, Tokyo, Moscow, New Delhi**
  - Upgraded from FR to MPLS VPN in July, 2007
  - 256kbps -> 2Mbps

# New connection

- **RTH Beijing - EUMETSAT**
  - Established over OBS MPLS VPN in July, 2007

# 9 of 10 links running TCP/IP protocols

Link to	Transmission procedures	Exchanged data	File naming conventions
Offenbach	FTP (put)	GTS messages	WMO file naming conventions (for messages existing AHL)
Tokyo	TCP sockets	GTS messages	
	FTP (put)	CMA satellite data (Beijing->Tokyo) RARS data (Beijing<->Tokyo)	WMO general file naming conventions (pflag=A, Z)
	FTP (get)	NESDIS ATOVS data (Tokyo->Beijing)	NESDIS ATOVS data filename convention
Moscow	FTP (put)	GTS messages	WMO file naming conventions (for messages existing AHL)
		CMA Satellite data (Beijing->Moscow)	WMO general file naming conventions (pflag=A)
New Delhi	FTP (put)	GTS messages	WMO file naming conventions (for messages existing AHL)
EUMETSAT	FTP (put)	Satellite data	Filename conventions used for EUMETCast and FENGYUNCast
Bangkok	FTP (put)	GTS messages	WMO file naming conventions (for messages existing AHL)
Seoul	TCP sockets	GTS messages	
	FTP (put)	Observations (Beijing->Seoul)	CMA filename conventions
Pyongyang	FTP (put)	GTS messages	WMO file naming conventions (for messages existing AHL)
Ulan Bator	FTP (put)	GTS messages	WMO file naming conventions (for messages existing AHL)
		CMA Satellite data (Beijing->UB)	WMO general file naming conventions (pflag=A)



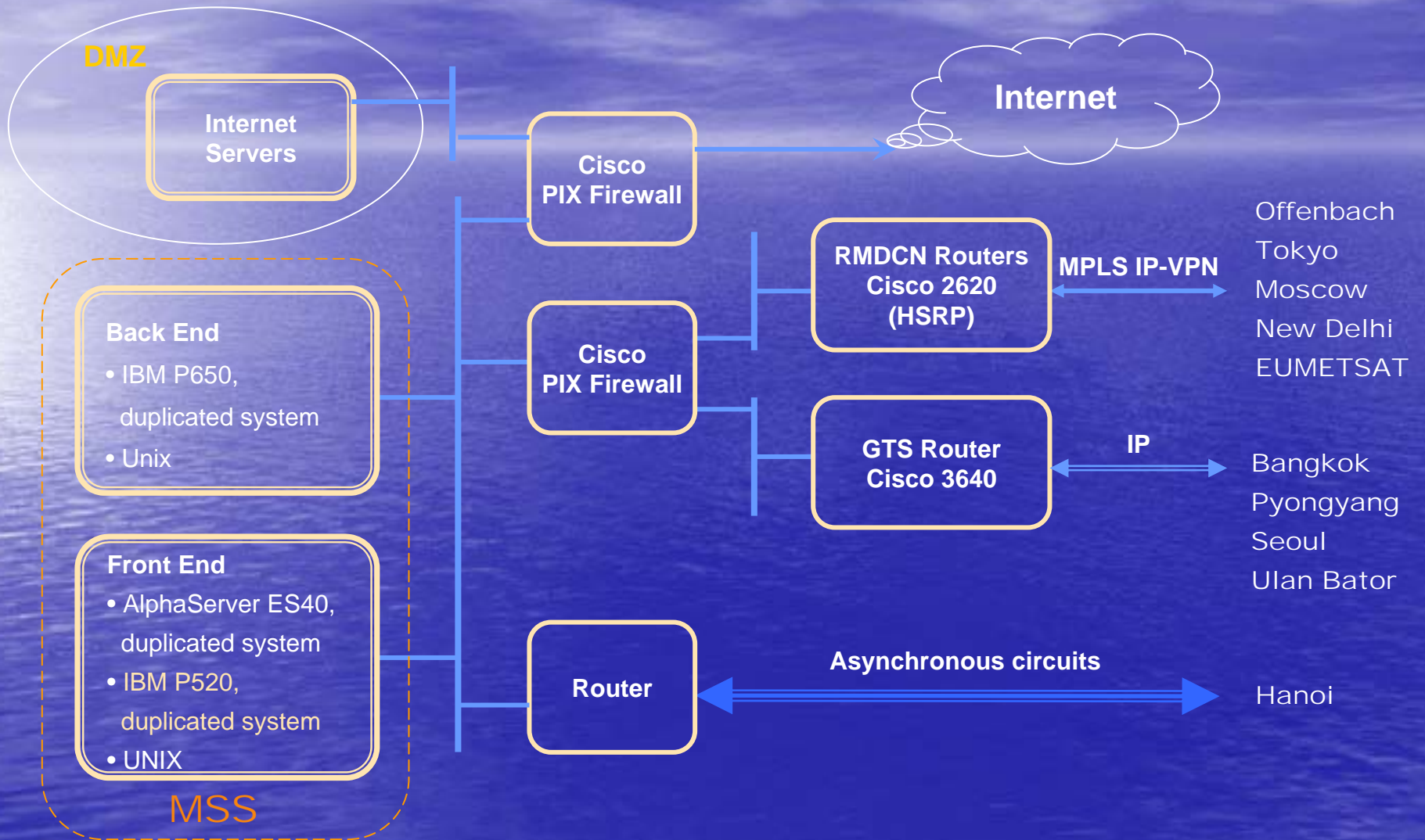
# Non-IP link

- Beijing-Hanoi
  - current status
    - 75 Bauds ASYNC circuit
    - In Viet Nam, the low speed International Private Leased Circuit (IPLC) service to be ceased
  - upgrade solution
    - Detailed solutions and costs are under investigating
      - MPLS VPN
      - Higher speed leased line (64kbps)

# Internet connections

- 1Gbps access rate, 130Mbps protocol rate
- two access lines for redundancy
- exchanging the operational data and TIGGE data

	Usage	Remarks
1	GTS backup	<ul style="list-style-type: none"><li>• <b>RTH Beijing – RTH Offenbach</b> (being used during the outage of GTS link, via ftp)</li><li>• <b>RTH Beijing – EUMETSAT</b> (having the same data exchanged routinely through Internet and GTS in parallel)</li></ul>
2	Data exchange	<ul style="list-style-type: none"><li>• <b>RTH Beijing - RTH Melbourne</b> (GTS messages, via ftp)</li><li>• <b>CMA - ECMWF</b> (TIGGE data, using LDM)</li><li>• <b>CMA - NCAR</b> (TIGGE data, using LDM)</li></ul>
3	Data collection	<ul style="list-style-type: none"><li>• Collecting NCEP GFS products from <b>RTH Washington</b> via ftp</li><li>• Collecting GTS messages from <b>NMC Almaty</b> via Email</li></ul>
4	Data dissemination	<ul style="list-style-type: none"><li>• Providing CMA NWP products to <b>Brasilia</b> through ftp</li></ul>

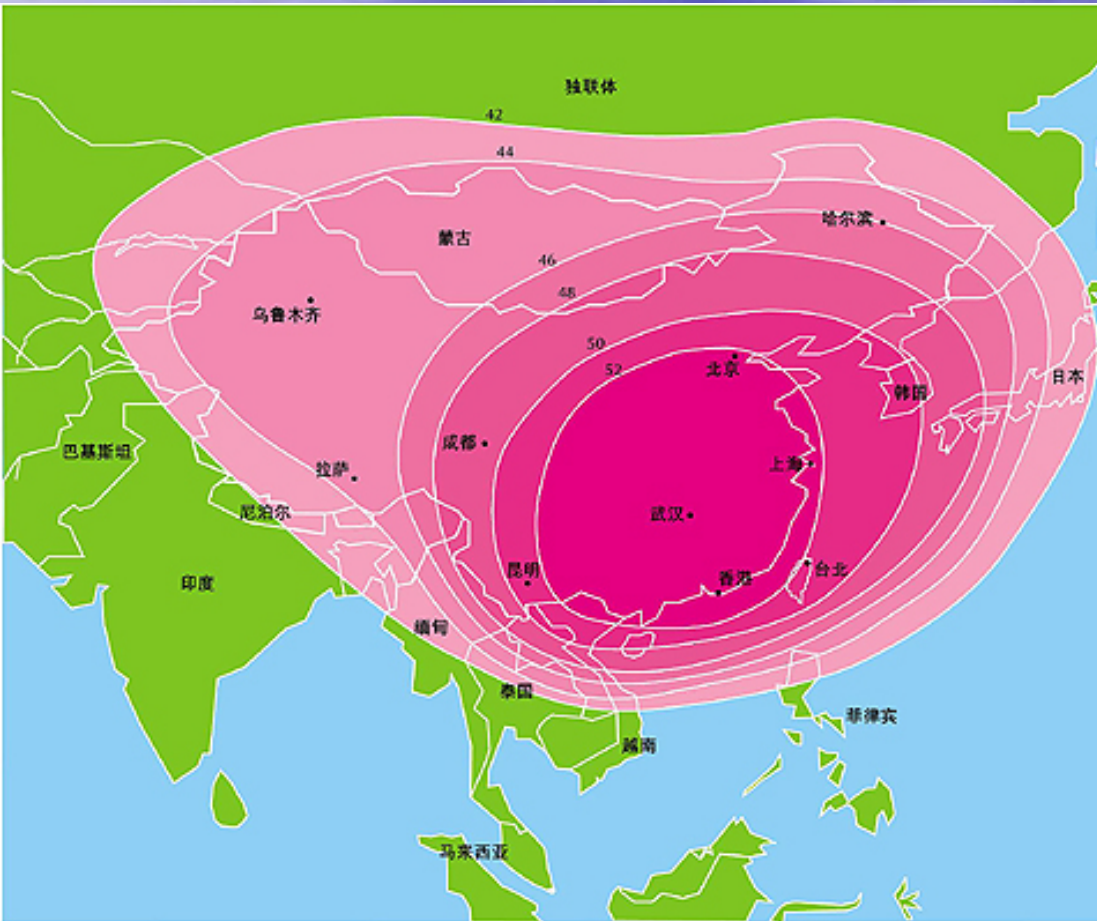




# CMA's Satellite-based broadcast systems

- PCVSAT
- FENGYUNCast

# PCVSAT broadcast - AsiaSat 2 , Ku-band



- Started operation since 1998
- bandwidth 2Mbps
- **256 logical channels**
  - different data disseminated through different channel
  - different receiving station receiving data from different channel
- **typical channel rate 64Kbps**
- **Priority based broadcast: Emergency messages sent out immediately**
- PCVSAT receiving station in 5 countries: Pyongyang, Ulan Bator, Hanoi, Yangon, Dhaka

# Data distributed over PCVSAT

- Observations

SYNOP, TEMP, PILOT, SHIP, BATHY, BUOY, CLIMAT, CLIMAT TEMP, AIREP, AMDAR, TRACKOB, TESAC, WAVEOB, SATEM, SARAD, SATOB .....

- Warnings

- Model products

- Radar data and products

- CMA's Satellite data and products

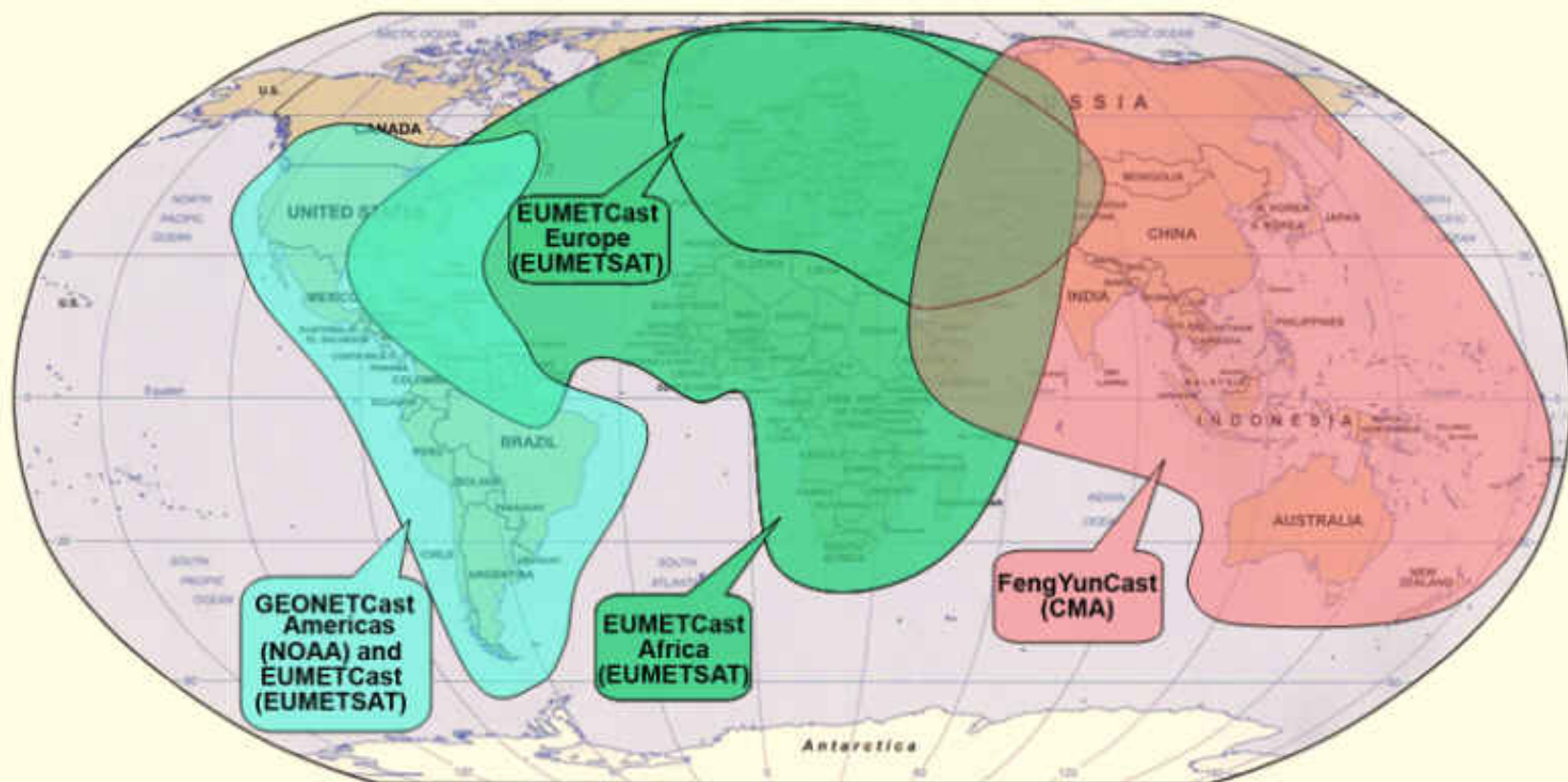
- etc.....



# FENGYUNCast - AsiaSat 4 , C-band

- DVB-S broadcast system
- CMA's contribution to GEONETCast

## Global GEONETCast Coverage



# FENGYUNCast receiving stations in 18 countries

- In 2006, 7 receiving stations
  - Bangladesh, Indonesia, Iran, Mongolia, Pakistan, Thailand, Peru
- In 2007, 11 receiving stations
  - DPRK, Kyrgyz, Lao P.D.R, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Tajikistan, Uzbekistan, and Viet Nam



# Data distributed over FENGYUNCast

- Satellite data and products
  - FY-2C, FY-2D
  - FY-1D
  - NOAA/AVHRR
  - MODIS(TERRA, AUQA)



# Consolidation of broadcast systems

- An integrated broadcast catalogue containing both conventional and satellite data and products, supporting WIS data dissemination
- Transmission in both Ku and C band
  - Ku: smaller antenna dish
  - C: bigger footprint (better coverage outside China), and not affected by heavy rain
- Enhanced user management and support