



PREPARATION FOR INSAT-3D DATA RETRIEVAL

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Outline

- Background (specific to MoES)
- Current Projects
- Plans for INSAT-3D
- Future Direction





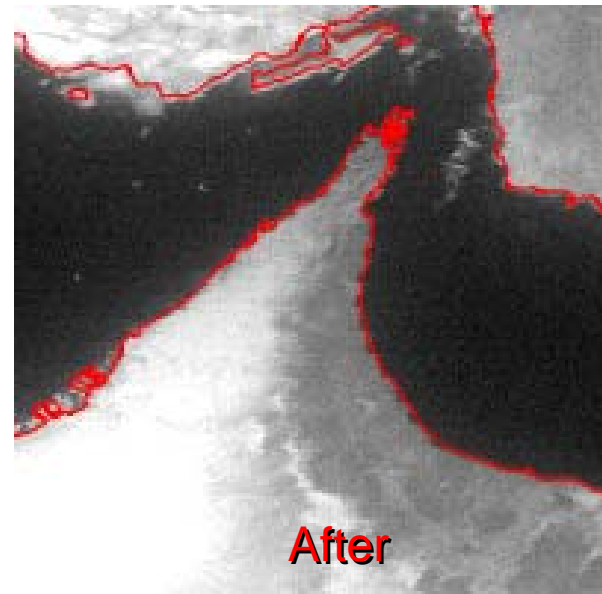
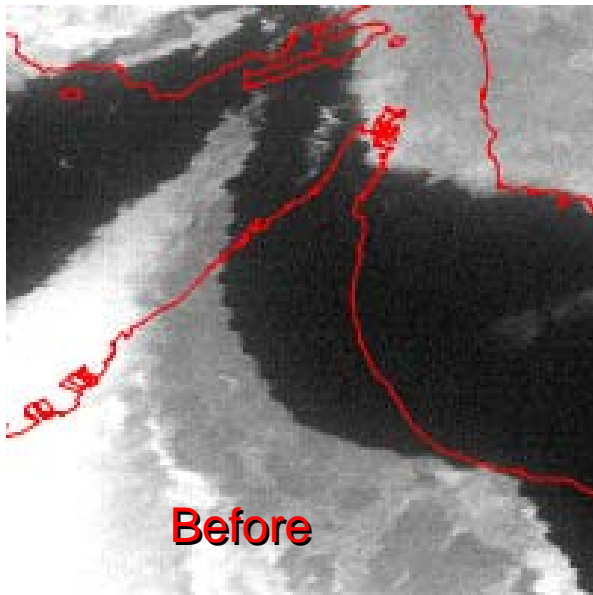
Background

- **1997**
 - Memorandum of Understanding (MOU) signed by United States (NOAA and NASA) and India (DST, DOS)
- **2002**
 - MOU extended for 5 more years
 - Science meeting in Calverton, Maryland, to draft joint projects
- **2002-2004**
 - IMD scientists visit NOAA/NESDIS
- **2004**
 - India – U.S. Earth Observation Symposium in Bangalore, India
- **2005**
 - First Joint Working Group (JWG) meeting in June 2005 in Bangalore, India
 - Enhanced scientific data exchange (satellite and *in situ*)
 - Science projects
- **2006**
 - NOAA/NESDIS funded University of Wisconsin to provide McIDAS training to IMD scientists
 - Informal meetings with ISRO and India's Ministry of Earth Sciences (MoES) in November 2006
 - Agreement on installation of NPOESS ground station at Shadnagar, India signed by ISRO and NOAA/NESDIS
 - MoES interest in direct collaboration related to satellite data and modeling activities
- **2008**
 - NOAA – MoES MOU signed
 - U.S. – India science workshop on GOES algorithms
 - IMD participation



Current Projects: Navigation of Kalpana-1 Imagery

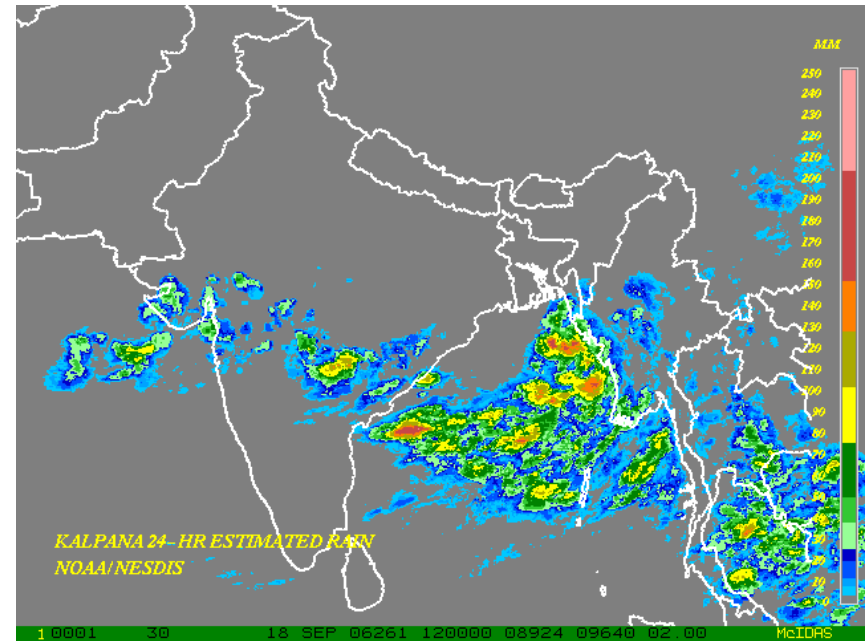
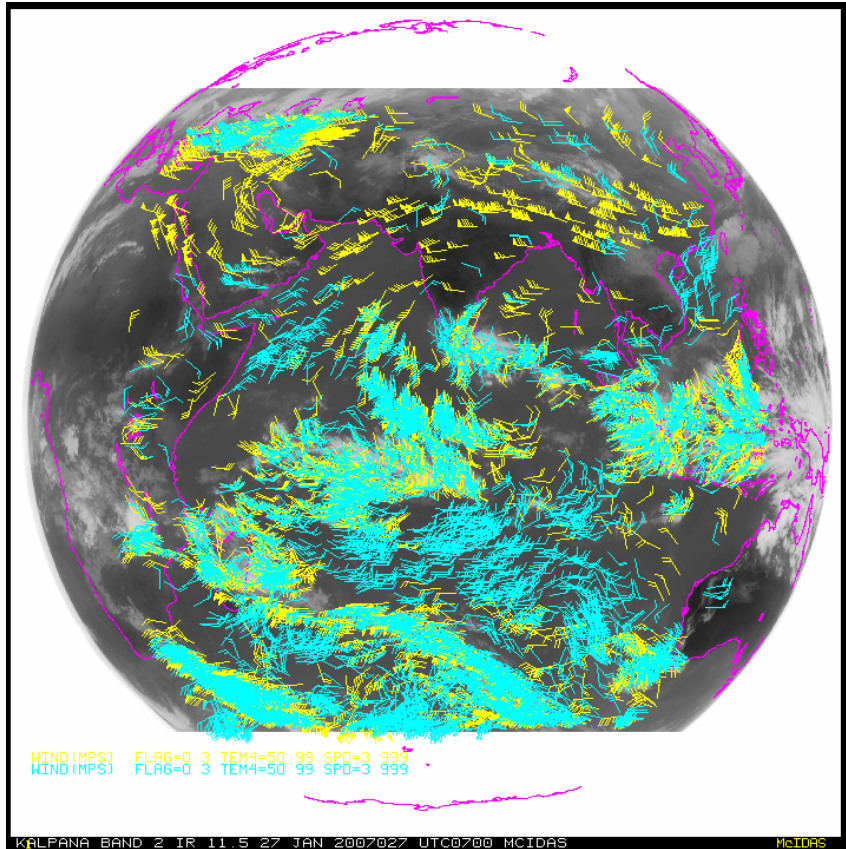
- Correction for errors in satellite position and attitude using global image offset
- Image features matched to known coastlines using correlation test





Current Projects: Applications of Kalpana-1 Imagery

Wind vectors from Kalpana-1



- Heavy rainfall and floods from land-falling cyclone
- 5-day hydro-estimator accumulations were as high as 900 mm



INSAT-3D Implementing Agreement

- **Under the recently signed NOAA-MoES MOU**
 - NOAA will provide GOES versions of scientific algorithms and programs for operational implementation at IMD in order to retrieve geophysical parameters (e.g., sea surface temperature, precipitation, clouds classification, hurricane tracking, winds, etc.)
 - MoES/IMD to provide INSAT-3D data after satellite launch in second quarter 2009
 - IMD to adapt NOAA GOES algorithms for INSAT-3D
 - Work with NOAA/NESDIS and ISRO as needed
 - Exchange of scientists



INSAT-3D Implementing Agreement

Some specific projects that will be subject to collaboration

- Evaluating/improving and transfer of algorithms and software programs for satellite-based precipitation estimates using INSAT-3D satellite data over India
- Development/transfer of a precise Sea Surface Temperature (SST) retrieval algorithm and software programs for Indian Geostationary satellites
- Development/transfer of algorithm and software programs for derivation of cloud motion vectors (infra red and visible) and water vapor winds using INSAT-3D Imager Data
- Development/transfer of algorithm and software programs to estimate vertical profiles of temperature, humidity & ozone using INSAT-3D Sounder data
- Development of Objective Dvorak Technique for estimation of intensity & position of tropical cyclones using Indian Geostationary satellite data and its implementation at IMD
- Development of assimilation techniques of INSAT-3D data in global and regional models and its implementation at IMD
- And Others



Outcome

- Government to government satellite data exchange
- Science projects
- Inter-agency and intra-agency coordination within US and India
- Meetings/workshops related to joint projects
- Future joint missions and field campaigns

Benefits

US

- Coverage over Indian Ocean region for severe weather forecasting
- Technology transfer and capacity building under GEOSS
- Validation of NESDIS algorithms/products using *in situ* data from India
- Risk mitigation

India

- Decision support systems for various natural environmental disasters
- Improvements to weather forecasting
- Capacity building
- Education and outreach



THANK YOU