# Collaboration in the Utilization of Archived Tide Gauge Data to Address Tsunamis, Storm Surge, Seasonal/Inter-annual Variability, and Global Sea- Level Rise

Jabin S. Vahora

NOAA/NESDIS

# India

- We understand that the Survey of India (SOI) has a rich archive of tide gauge records, including some of the longest tide gauge records in existence.
  - –Records as long as 130 years
  - –Since 1877, maintaining tidal data, generated from dedicated tide gauge network along the Indian coast and islands.
  - –Covering extensive coastal areas

- Currently, the Survey of India is making Monthly and Annual Mean Sea Level data available to the Permanent Service for Mean Sea Level (PSMSL), .

- However, currently the Survey of India's archived tide gauge data and real-time tide gauge data is not being made available

# Global Cooperation

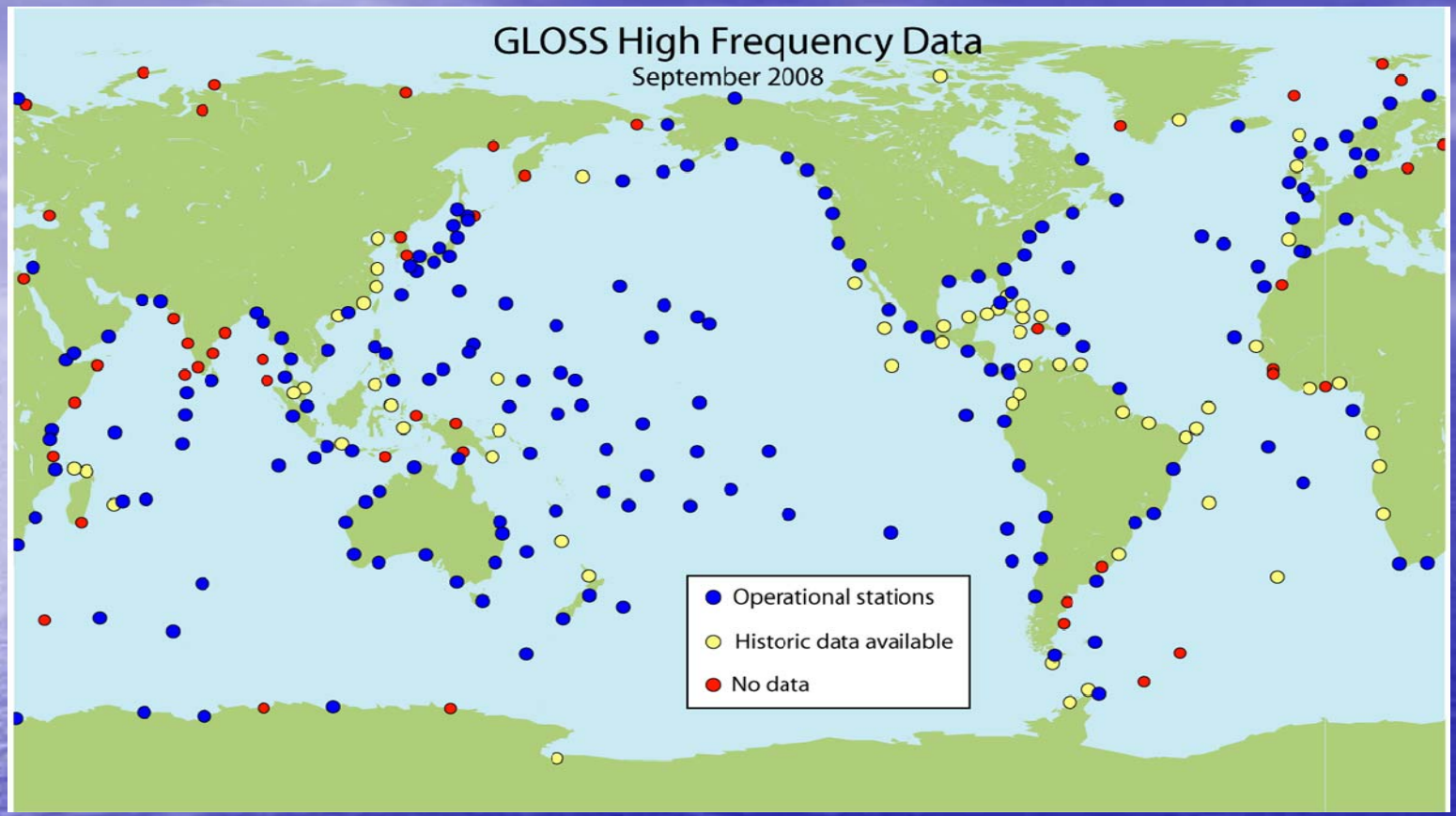
- The Global Sea Level Observing System (GLOSS) is a programme coordinated by the Intergovernmental Oceanographic Commission (IOC) for the establishment of global and regional sea level networks.
- The main component of GLOSS is the 'Global Core Network' of 287 stations around the world for long- term climate change and oceanographic sea level monitoring.
- GLOSS was originally proposed in order to improve the quantity and quality of Mean Sea Level data supplied to the Permanent Service for Mean Sea Level (PSMSL), and GLOSS continues to perform that function. Numerous countries through GLOSS have made sea level data (hourly values) available.

- India is a member of GLOSS. As a member, India has access to other countries' tide gauge data.
  - INCOIS uses real time tide gauge data from international GLOSS stations at its Tsunami Early Warning Center
  - It would be nice if India would reciprocate in making its tide gauge data available, (not just monthly and annual averages) just as other GLOSS members do.

- Access to the Survey of India's full archived data (including hourly or better) would enable:
  - Quality controlling of the monthly and annual averages
  - Assessment of storm surges
  - Incidence of tsunamis
  - Examination of monsoon and seasonal changes in sea level

- Sharing of real-time tide gauge or near real-time tide gauge data
  - Data sharing would benefit global forecasters, such as Pacific Tsunami Warning Center (PTWC), West Coast/Alaska Tsunami Warning Center (WC/ATWC) and the GLOSS-affiliated University of Hawaii Sea Level Center (UHSLC).

  - Access and use of relevant sea level data and information would help enhance analysis and interpretation at the PTWC and WC/ATWC, which would better enable them to work with INCOIS to help provide accurate warning guidance and forecasts throughout the Indian Ocean Region




- This map shows stations that provide high frequency data (at least 1 sample per hour) to the GLOSS data centers.
- Red non-Indian stations in the Indian Ocean have never existed, so there is no data available.
- 8 Red Indian stations do exist, and - with Indian Government approval - historical data could be made available.
- Blue stations are operating now and have historical data available.
- Yellow stations are not operating now, but have at least some historical data available.

# NEAR-TERM OPPORTUNITIES FOR COLLABORATION

**NOAA PIs and NIO/SOI/MoES PIs work together to discuss and draft an Implementing Arrangement**

- **Agreement to provide access to SOI's archived tide gauge data**
- **NOAA'S ASSISTANCE IN DIGITIZATION OF ANALOG DATA**
  - We understand that most of the historical tidal data that the SOI holds is in the form of analog records or paper. We would be happy to help digitize this analog data.
  - This would be a follow-on collaboration to a training workshop led by NOAA scientist Pat Caldwell on *Tidal Analysis, Prediction and Quality Control,* at the Survey of India in June 2005.
- **Access to NIOT's tsunami tide gauge data archive and real-time/near real time tsunami tide gauge data**
- **PARTICIPATION IN UPCOMING GLOSS meeting, in Paris, France, in 2009**
  - NOAA would like to encourage India's participation in the Eleventh Session of the GLOSS Group of Experts Meeting (GLOSS GE XI)
- **Training and Educational Opportunities for Indian PhD and Masters Students at the University of Hawaii**.
- **Future discussions on the potential access to real-time or near-real time SOI tide gauge data.**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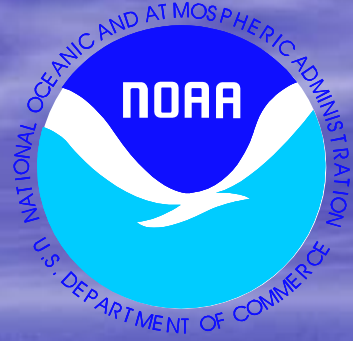
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# *THANK YOU*