

Naval Postgraduate School

Hastily Formed Networks (HFN)



Unclassified Information Brief 4 Oct 2011

Prepared by Brian Steckler, Director NPS HFN Research Group



Today's Agenda

- HFNs Defined
- NPS HFN Related Activities Past 5+ Years
- Example HFN for HA/DR Missions (Hurricane Katrina, Haiti Earthquake)



Practical Physical HFN

THE HFN PUZZLE...

Surrounded by the Civil-Military Boundary...



.....and Improvisation !!



Past/Present NPS HFN HA/DR Activities

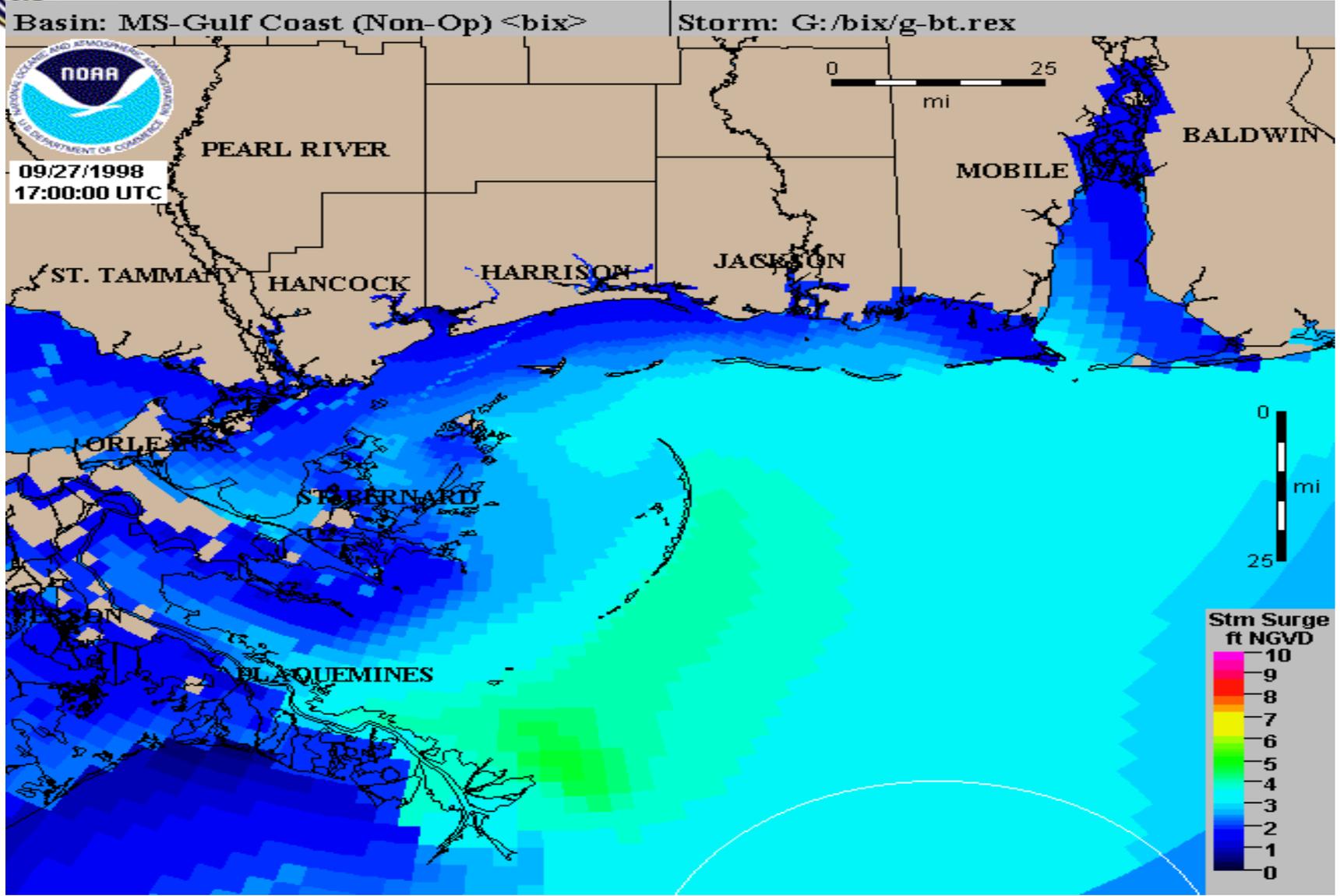
- SE Asian Tsunami (Jan-May 05)
- US Hospital Ships (USNS Mercy and USNS Comfort) - Humanitarian Missions in SE Asia and S America (Summers 06 and 07)
- Hurricane Katrina (Sep-Oct 2005) – EXAMPLE HFN
- Haiti Earthquake (January-May 2010) – EXAMPLE HFN



HURRICANE KATRINA



Katrina Storm Surge.....



SLOSH = Sea, Lake and Overland Surges from Hurricanes



Hurricane Katrina.....

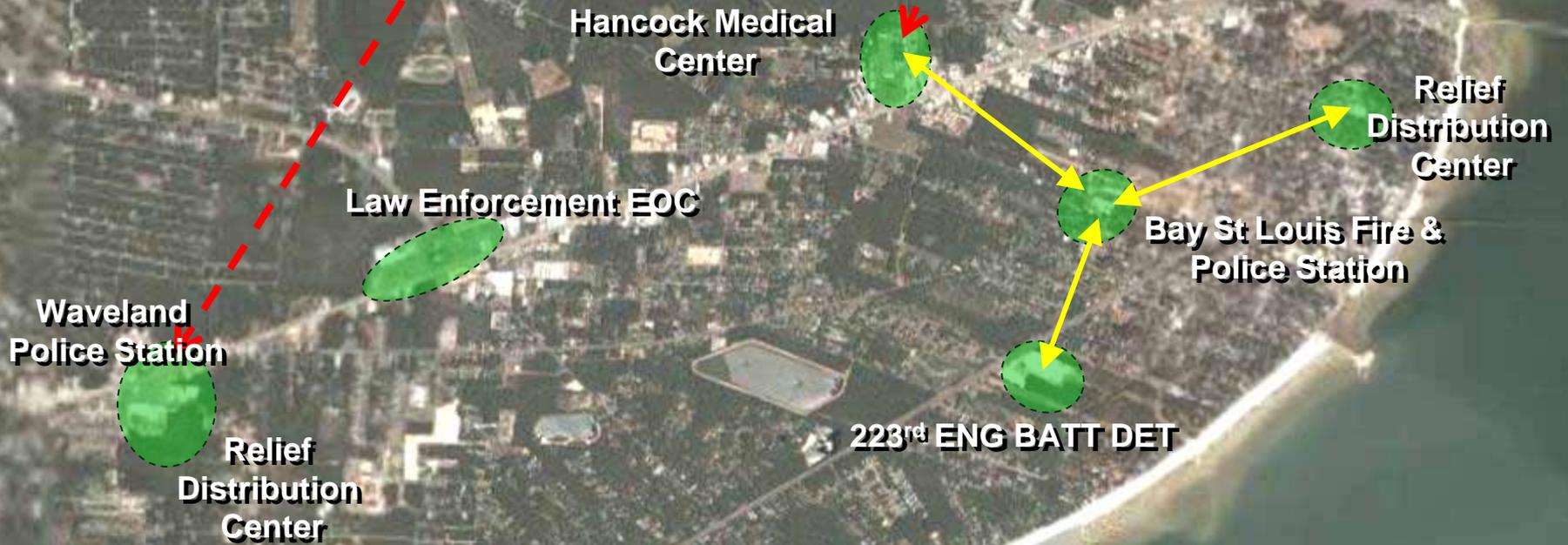
- The Problems:
 - No power
 - No fiber/copper infrastructure
 - No push-to-talk comms to speak of
 - Cellular svc mostly jammed / overwhelmed
 - SatPhone svc mostly jammed / overwhelmed
 - Not enough satellite eqpt suites available
 - No Internet access (web, email, VOIP)
 - No technical people resources available



HFNs - A Viable Comms Solution.....

- The HFN Puzzle Pieces
 - SATCOM Internet Reachback
 - 802.11 (WiFi) and 802.16 (WiMax)
 - Broadband Internet, Web, Email
 - Voice Over IP (basic dial-tone)
 - Skype (free internet phone)
- Airborne Wireless Delivery Option ???

Network Infrastructure



NPS DET 1 NETWORK

Tachyon Satellite ← →

802.16 Wireless ↔

802.11 Wireless ○



Katrina NPS

Key Lessons Learned

- **Effect of No Common Situational Awareness**
- **VoIP Was HUGE Benefit**
- **PTT Radio Interoperability a Growing Concern**
- **Pre-Positioning Assets and Contracts**
 - **Can't Negotiate in the Chaos !**
- **Providing Internet Access to the Public**



USNS MERCY AND USNS COMFORT

HUMANITARIAN ASSISTANCE MISSIONS





HAITI EARTHQUAKE



- EMBARKED ON COMFORT
- CAMPING AT AMEMB/JTF HAITI HQ
- OUT IN ECONOMY WORKING WITH NGO'S





