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An Analysis of U.S. Navy Humanitarian Assistance and Disaster Relief Operations

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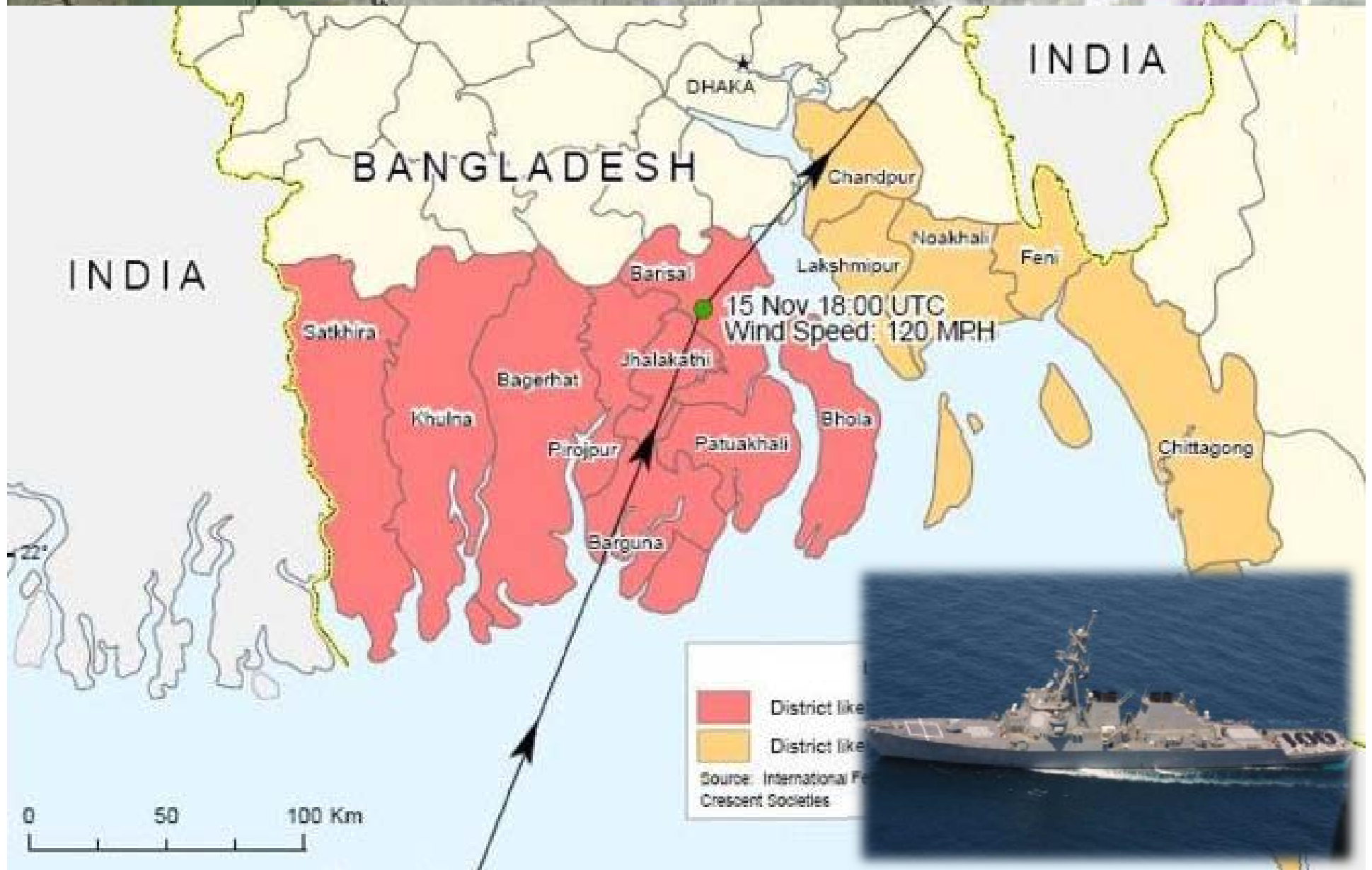
Acquisition Research Program: Creating Synergy for Informed Change

An Analysis of U.S. Navy Humanitarian Assistance and Disaster Relief Operations

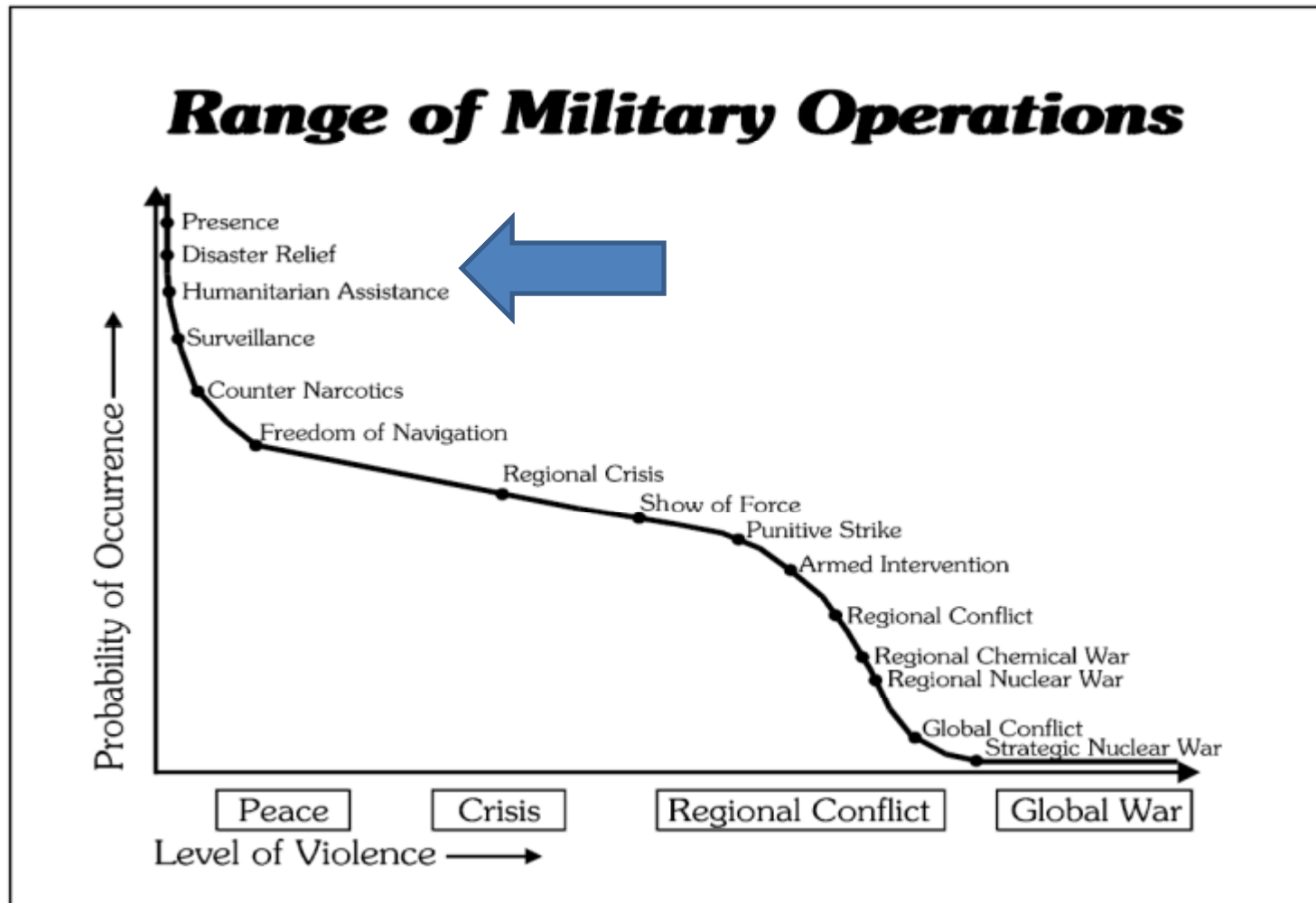
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Cyclone Sidr. Nov 15, 2007



Probability of Mission



Source: Nix, D., (2011, January) *The Spectrum of Operations* (Unpublished PowerPoint Presentation). Joint Military Operations course, Naval War College.



Questions of Interest

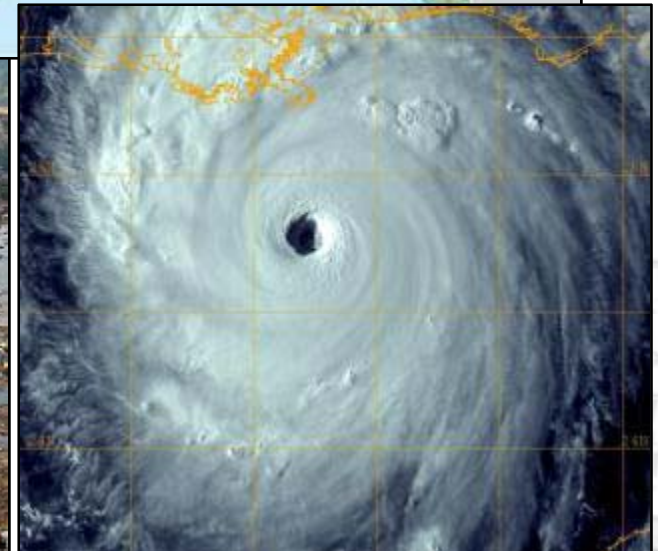
- How does the US Navy conduct HADR operations?
 - Response timelines?
 - Ship selections?
 - Missions?
- How *should* the US Navy conduct HADR operations?
 - Future research...



A Scenario Approach

Our research focused on:

- 1) Three disasters
- 2) USN and MSC ships provided for relief efforts
- 3) Missions Capabilities provided to relief efforts

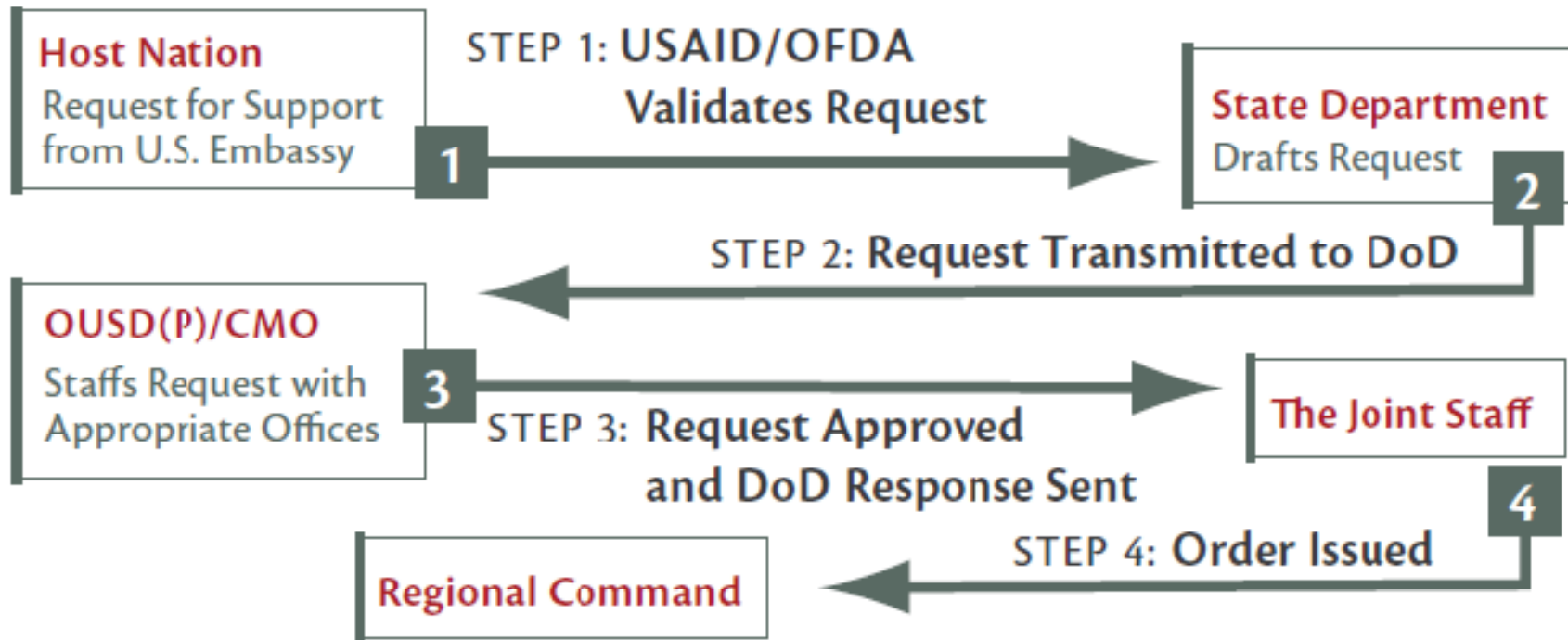


Common Disaster Traits

- Deaths and injuries
- Population dispersion, homelessness, missing persons
- Facility destruction, loss of common goods
- Demand for freshwater, food, and medical supplies
- Demand for medical personnel, facilities, and volunteers
- Destruction of transportation infrastructure
- Large amounts of debris and destroyed buildings
- Uncertainty in coast line with regard to navigation



Mission Requests



- **Critical:** Missions with major impact on relief efforts
- **Non-Critical:** Missions generally of less importance



Critical Missions

Action Missions

- Aircraft Support
- Landing Craft Support
- Search and Rescue
- Personnel Transfer Support
- Fresh Water Production
- Personnel Support
- Berthing Capability
- Medical Support

Cargo Missions

- Dry Goods
- Refrigerated Goods
- Fresh Water
- Roll On – Roll Off
- Fuel
- Self Sufficient Handling Capability



Parameters

- Difficult to determine quantitative scale of capabilities
- Solution: Categorize ships into one of three levels of capability
 - Cutoff points chosen based on 1/3 splits or significant changes in mission capability



The vessel has little no capability to conduct the specified mission



The vessel has some capability to conduct the specified mission



The vessel is very capable in conducting the specified mission



- Traditional Mission
 - Combat Operations
- What do they contribute to HADR operations?



Missions to Platforms			Mission / Ship Characteristic																
			Aircraft support	Landing Craft support	Search and Rescue	Cargo Capacity				Personnel transfer	Freshwater Production	Personnel support	Berthing capability	Medical support	Transit speed	Hydrographic survey	Salvage Ops	Towing	
U.S. Navy	Amphibious Ships	CVN (Nimitz)	Green	Red	Green	Yellow	Yellow	Yellow	Red	Yellow	Yellow	Green	Yellow	Green	Green	Yellow	Red	Red	Red
		CVN (Enterprise)	Green	Red	Green	Yellow	Yellow	Yellow	Red	Yellow	Yellow	Green	Yellow	Green	Green	Yellow	Red	Red	Red
		LHD	Green	Green	Green	Yellow	Yellow	Yellow	Red	Yellow	Green	Yellow	Green	Green	Yellow	Red	Red	Red	Red
		LHA	Green	Green	Green	Yellow	Yellow	Yellow	Red	Yellow	Green	Yellow	Green	Green	Yellow	Red	Red	Red	Red
		LCC	Yellow	Red	Yellow	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Red	Red	Red	Red
		LPD (San Antonio)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Red	Red	Red	Red
		LPD (Austin)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Red	Red	Red	Red
		LSD (Harpers Ferry)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Red	Red	Red	Red
	LSD (Whidby Island)	Green	Green	Green	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow	Yellow	Yellow	Red	Red	Red	Red	
	CRUDES	CG	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow
		DDG (FLT I & II)	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Yellow
		DDG (FLT IIA)	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow
		Frigates	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow
	Other	LCS (Freedom)	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow
		LCS (Independence)	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow
PC		Yellow	Red	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow	
MCM		Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Green	Red	Red	Red	Green	



MSC

- Traditional Mission
 - Combat Support
 - Multi-mission (research, etc)



- Ships more capable of meeting many HADR mission requirements
 - Combat support and HADR operations are actually very similar



Military Sealift Command (MSC)																				Missions to Platforms	Mission / Ship Characteristic																	
Ready Reserve Force					PM - 5		PM - 3					PM - 2				PM - 1																						
Aviation Logistics Support	Break-Bulk Ships	OPDT	Lighterage-a-board ships	Crane Ships	RO/RO ships	Fast Sealift Ship	Dry Cargo	Common Use Tanker	T-5	LMSR	HSV	Break-Bulk	OPDS	T-AVB	T-AK (USA)	T-AK (USAF)	T-AOT	MPF Container	MPS	LMSR	T-ARC	T-AGM	T-AGS (Nav)	T-AGS (Survey)	T-AGOS	AS	LCC	T-AH	T-ATF	T-ARS	T-AKE	T-AE	T-AO	T-AOE				
																																				Aircraft support		
																																				Landing Craft support		
																																				Search and Rescue		
																																					Dry goods	
																																					Refrigerated goods	
																																					Fresh water	
																																					Roll On Roll Off	
																																					Fuel	
																																						Self Sufficient
																																						Personnel transfer
																																						Freshwater Production
																																						Personnel support
																																						Berthing capability
																																						Medical support
																																						Transit speed
																																						Hydrographic survey
																																						Salvage Ops
																																						Towing

Aircraft & Landing Craft

-Numbers supported not analyzed in our research

-Capabilities DID influence analysis of ships

Capability / Aircraft		Lift	Personnel Transport	Range	Vertical Replenishment	SAR	Speed	Mission / Ship Characteristic															
								Aircraft support	Landing Craft support	Search and Rescue	Cargo Capacity				Personnel transfer	Freshwater Production	Personnel support	Berthing capability	Medical support	Transit speed	Hydrographic survey	Salvage Ops	Towing
Seaborne Aircraft	SH-60B	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	SH-60F	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	MH-60R	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	MH-60S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	HH-60H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	CH-46E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	CH-53E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	CH-53E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	MH-53E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	AH-1W / AH-1Z	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	HH-1N / UH-1N / UH-1Y	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	MV-22 / CV-22	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Landing Craft	LCAC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	LCU	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	LCM (8)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	LCM (6)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

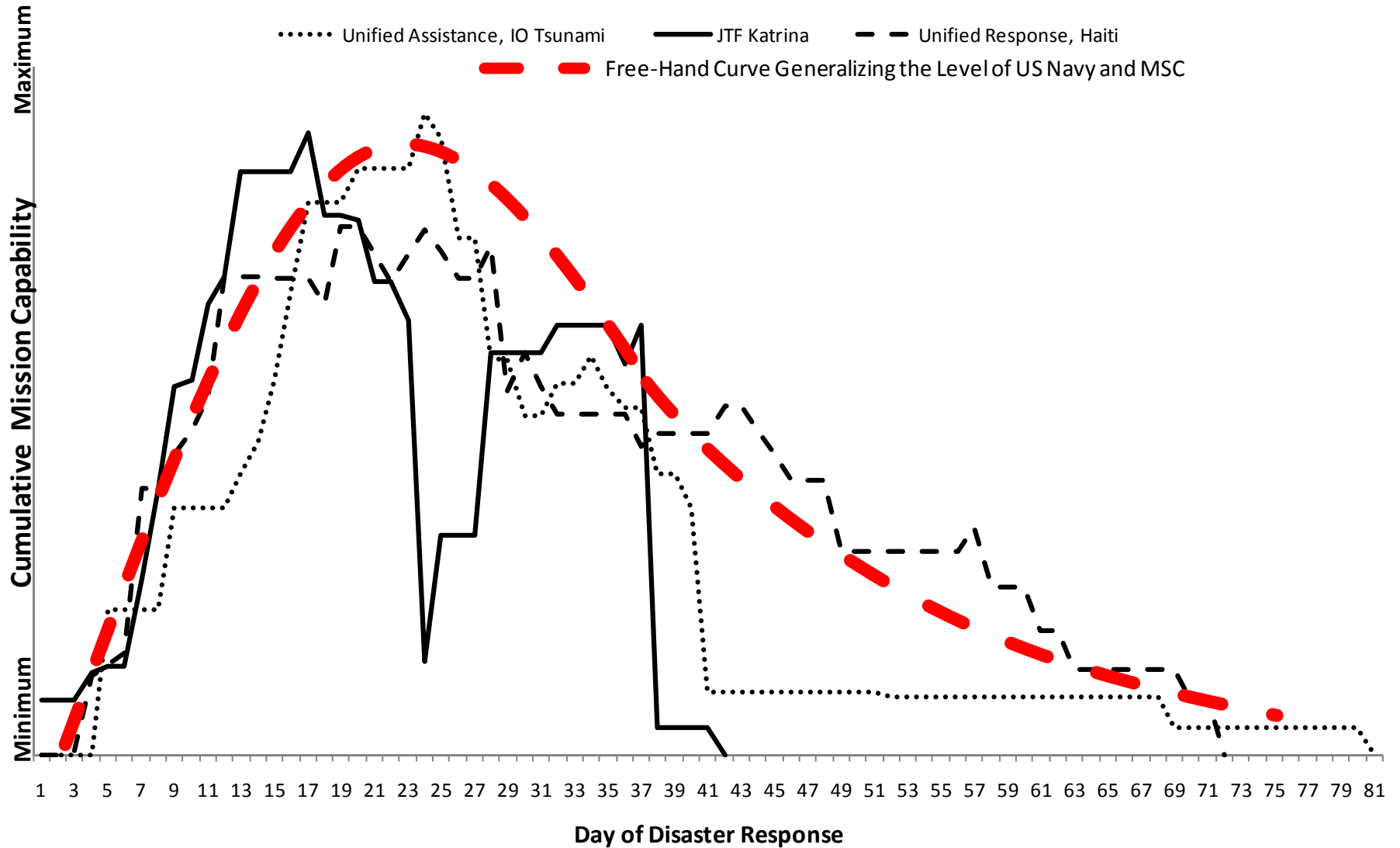


Response Summary

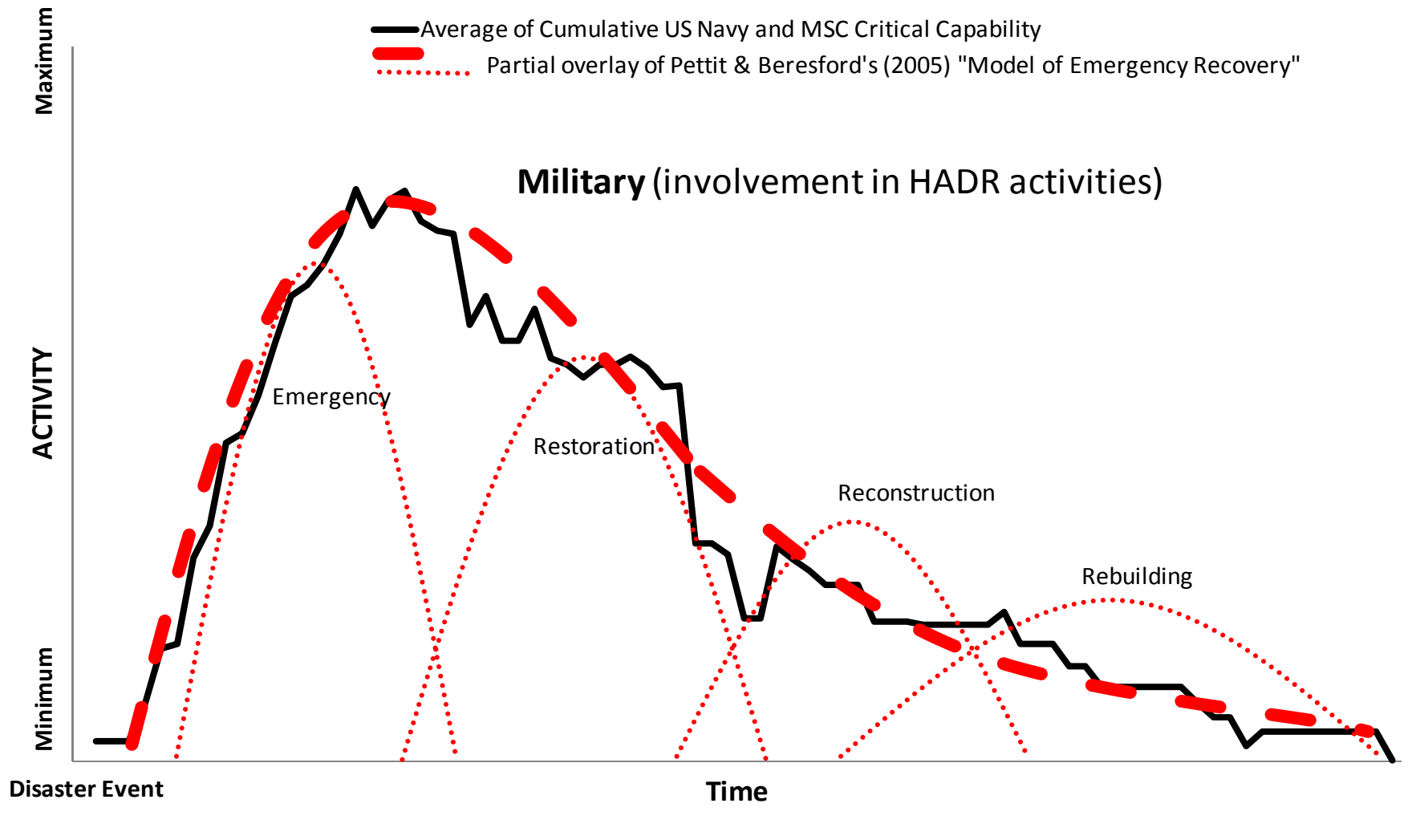
Response Summary Table			
Category	Unified Assistance	JTF Katrina	Unified Response
CG/DDG/FFG	6	0	4
LPD/LSD	3	3	5
LHA/LHD	2	2	3
CV/CVN	1	2	1
T-AH	1	1	1
MSC/Misc (w/o T-AH)	14	17	17
SSN	2	0	0
MCM/MHC	0	9	0
TOTAL SHIPS	29	34	31



Navy and MSC Cumulative Critical Capability



Average of Cumulative US Navy and MSC Critical Capability provided for Unified Assistance, JTF Katrina and Unified Response



Conclusions

- Consistent Response Patterns
- Ship Capabilities
- A ship designed for HADR
- Special considerations
- Task Force and Force Structure



HADR Task Force



Future Research

- Quantitative method of comparing ships capabilities
- Analysis of what missions different ships actually support
- Optimization model to determine ideal composition of a task force

