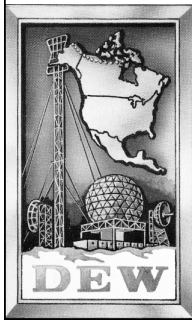


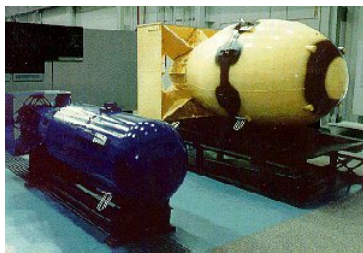
## Background Data: Nuclear Weapons, Missiles, and the Red Dragon Rising Game



Randy H. Katz  
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Spring 2013



## The Atomic Bomb



- “The A-bomb ended the war, but radar won it.”
- Aug. 1945: Single bomb destroys an entire city
  - Little Boy
    - Uranium bomb dropped on Hiroshima
    - 8900 lbs, 16 Ktons TNT
  - Fat Man
    - Plutonium bomb dropped on Nagasaki
    - 10300 lbs, 21 Ktons TNT

## Offensive and Defensive Responses



- Longer Range, Faster, Higher Flying Bombers to deliver the bombs
  - March 1946: Strategic Air Command formed
  - B-52 first flies in 1954
- Bigger Hydrogen (Fusion vs. Fission) Bomb
  - Aug. 1949: First Soviet Atomic Bomb
  - Nov. 1952: First US H-bomb test (10 Mtons)
  - Nov. 1955: Soviet Union explodes their first H-Bomb
- O-T-H Radars and Defensive Lines
  - 1957-9: DEW (Distant Early Warning) Line
- Anti-Aircraft Missiles to intercept bombers
  - 1944: Design of Nike Ajax system

## Ballistic Missiles: Germany's V-2 Rocket



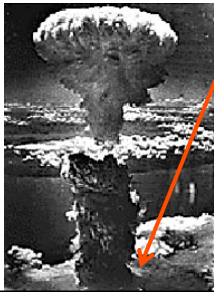
- Over 1000 fired at London towards end of WW 2
- Could destroy a city block—but very inaccurate
- 2700 killed, 6500 injured
- Psychological effect: Essentially no warning and no defense, other than to destroy the launching sites
- What if you marry a nuclear warhead to a rocket?

# Ballistic Missiles: How to Intercept?

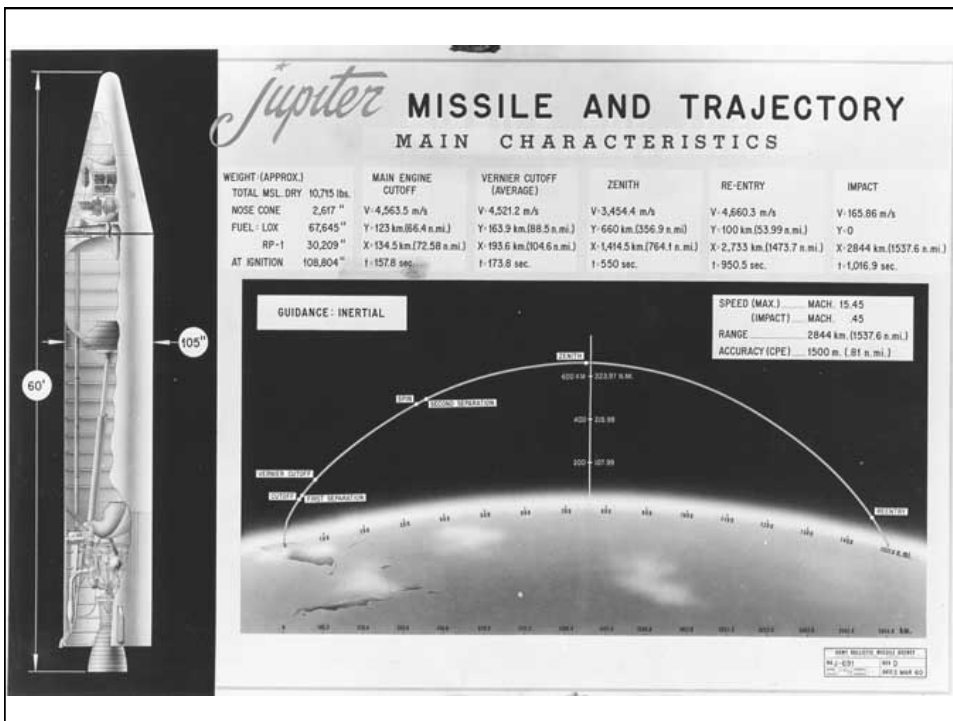
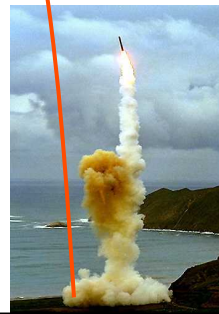
- Most vulnerable during boost phase
- Hard to intercept during terminal phase: “bullet hitting a bullet”!
- Also consider effects of nuclear air burst caused by interception—must be 20 mi up or more

Midcourse  
Phase  
800 mi up  
20 minutes

Terminal Phase  
5 minutes



Boost Phase  
200 mi up  
15000 mph  
300 s



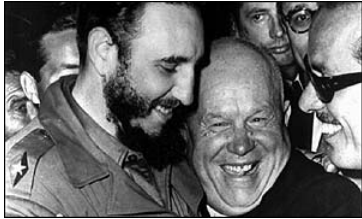
## Weird Logic of Nuclear Deterrence

- Massive Retaliation: Invade a little country, and we will destroy you—only works as a deterrent if the other guy has no nuclear weapons
- Mutually Assured Destruction (MAD): “Whoever shoots first, dies second”
  - Sufficient counterforce that no matter what the aggressor does—even if he destroys a considerable number of the defender’s missiles on the ground—missiles will likely survive to still threaten his cities with utter destruction
  - U.S.: No first use policy
- Strategic Triad/Flexible Response
  - Ground-based Missiles (ICBMs): arrive in 20-30 minutes
  - Strategic Bombers: time on target 12 hours
  - Nuclear Submarines (SLBMs): can lay in wait for days or even months—assuming subs remain invisible and know that their home country has been destroyed

## Cuban Missile Crisis

- Cold War: Great power politics in Asia, Middle East, Africa, Latin America
  - Communist insurgencies and Soviet-leaning governments in N. Korea, N. Vietnam, Cuba
  - E.g., U.S. response: CIA-supported Bay of Pigs invasion of Cuba (1961)
- Soviet fears of U.S. “Massive Retaliation” — How to reach parity with the Americans when USSR is so technologically far behind?
  - Soviet missiles of the time could only reach European cities from their launching sites
  - U.S. deploys medium range missiles in Turkey in a highly provocative move (April 1962)—Soviets now fear a first strike!
- Soviet response: deploy own missiles into Cuba (September 1962)

## Soviet-Cuban Friendship



Castro declares his country "Communist" after the Bay of Pigs



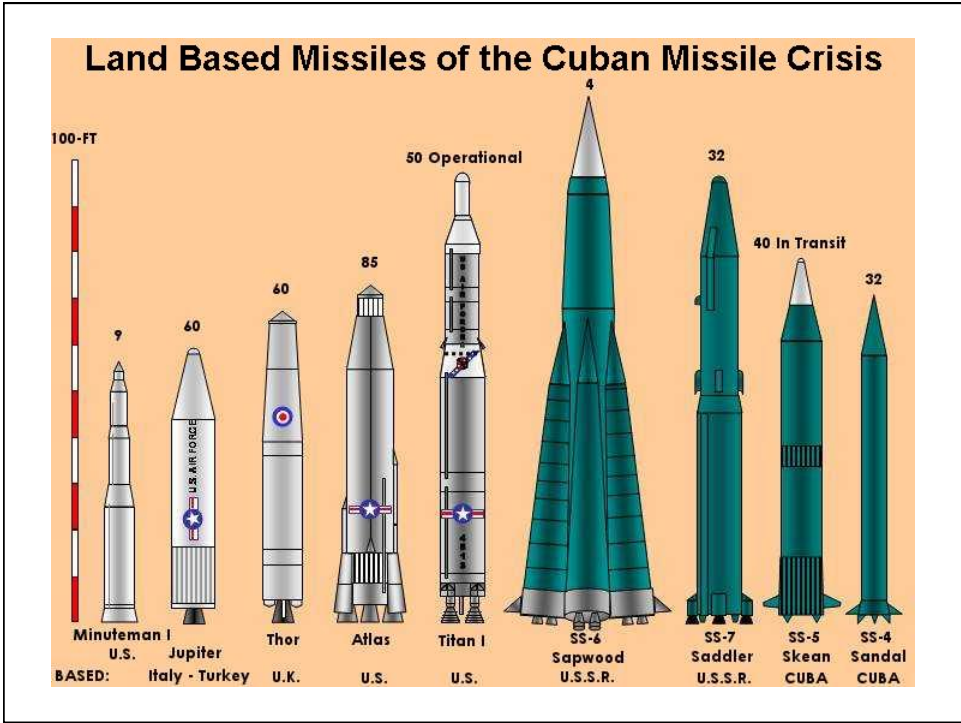
Seeks protection from U.S. aggression through support of Soviet Union



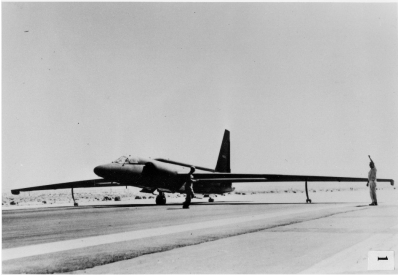
## Cuban Missile Crisis

- Medium range missiles could reach Dallas or DC in 5 minutes
- Longer range missiles could reach virtually any major U.S. city
- Soviets: restores the MAD equation
- U.S.: what if their missiles could "decapitate" our ability to strike back? Mitigates MAD





# Cuban Missile Crisis



U-2 Reconnaissance Plane

Reconnaissance Photo





 **“Red Dragon Rising”** 

- Rise of China as a World Power
  - 1947-9: Red Army expels Nationalist Chinese government to Taiwan
  - 1950-3: Korean War
    - The Cold War becomes HOT
    - North Korea invades South Korea
    - UN (USA) intervenes on behalf of South Korea
    - China intervenes on behalf of North Korea
    - Cease fire along the DMZ 38<sup>th</sup> Parallel
  - Recent threats: Russia, Vietnam, India

## The 24 Character Strategy

“冷静观察, 站稳脚跟, 沉着应付, 韬光养晦, 善于守拙, 绝不当头。”

“Observe calmly; secure our position; cope with affairs calmly; hide our capacities and bide our time; be good at maintaining a low profile; and never claim leadership.” - Deng Xiaoping





## Military Power of the People's Republic of China Report to Congress, 2008

- “The pace and scope of China’s military transformation have increased in recent years, fueled by acquisition of advanced foreign weapons, continued high rates of investment in its domestic defense and science and technology industries, and far reaching organizational and doctrinal reforms of the armed forces. China’s expanding and improving military capabilities are changing East Asian military balances; improvements in China’s strategic capabilities have implications beyond the Asia-Pacific region.”

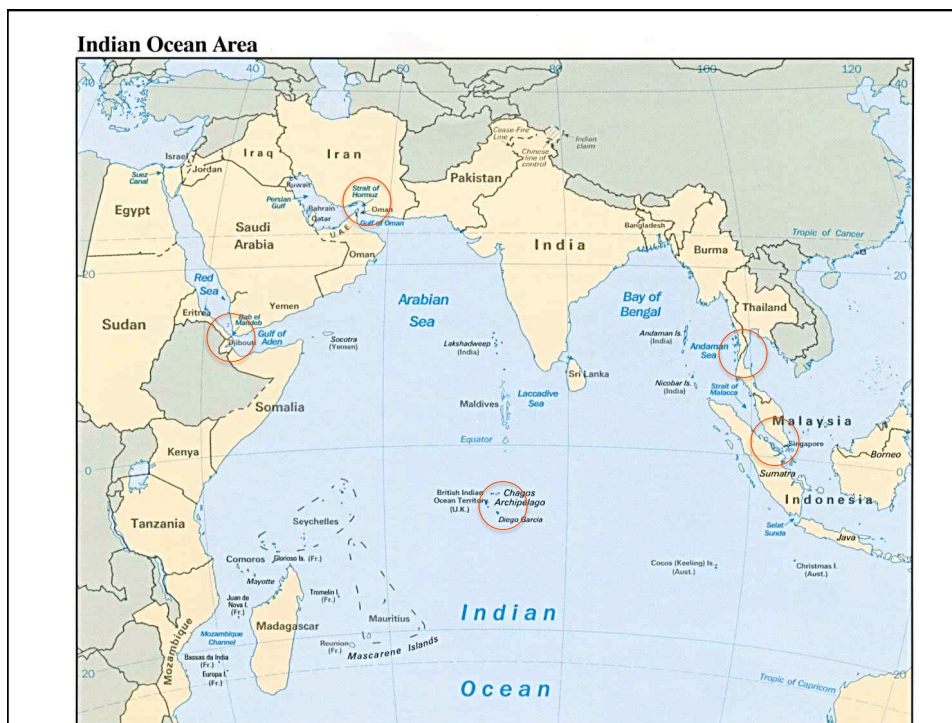




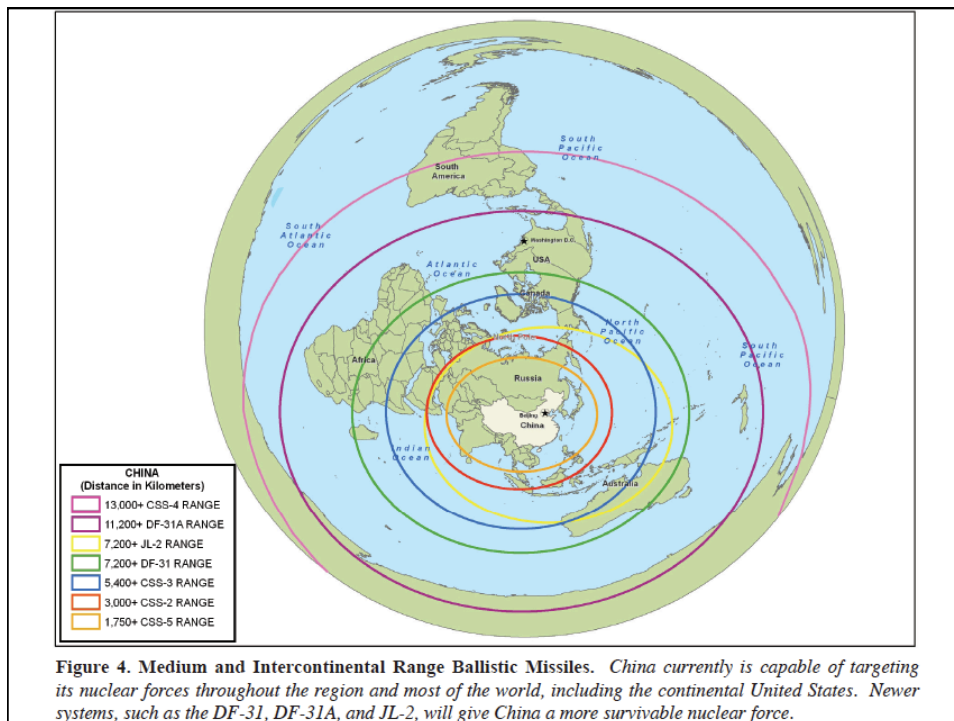
Figure 2. China's Critical Sea Lanes. Like many other industrialized East Asian countries, China is heavily dependent upon

## Military Power of the People's Republic of China Report to Congress, 2008

- “China’s nuclear force modernization, as evidence by the fielding of the new DF-31 and DF-31A intercontinental-range missiles, is enhancing China’s strategic strike capabilities. China’s emergent anti-access/area denial capabilities - as exemplified by its continued development of advanced cruise missiles, medium-range ballistic missiles, anti-ship ballistic missiles designed to strike ships at sea, including aircraft carriers, and the January 2007 successful test of a direct-ascent, anti-satellite weapon- are expanding from the land, air, and sea dimensions of the traditional battlefield into the space and cyber-space domains.”

## DF-21 (CSS-5) MRBM

- 60-80
- 500kT nuclear warhead
- over a distance of 1,800km
- 3-400m CEP



## Crisis in the Straits

- 1999: President Lee of the ROC:

“The Republic of China has been a sovereign state since it was founded in 1912. Moreover, in 1991, amendments to the Constitution designated cross-strait relations as a special state-to-state relationship. Consequently, there is no need to declare independence. The resolution of cross-strait issues hinges on the issue of different systems. We cannot look at issues related to the two sides simply from the perspective of unification or independence. The Chinese mainland's promise of a "one country, two systems" formula for Hong Kong and Macau is irrelevant to Taiwan ... the ROC is a sovereign, independent state.”

## PRC and Taiwan

- “In recent years, the situation of the Taiwan Strait has become increasingly complicated and severe ... our army ... has stepped up its efforts to prepare for military struggles to safeguard the security and unity of the state.” - General Cao Gangchuan, Minister of Defense

# Taiwan Straits



Taiwan Strait Military Balance, Ground Forces			
	China		Taiwan
	Total	Taiwan Strait Area	Total
Personnel (Active)	1.25 million	440,000	130,000
Group Armies	18	8	3
Infantry Divisions	19	8	0
Infantry Brigades	24	11	8
Mechanized Infantry Divisions	4	1	0
Mechanized Infantry Brigades	5	1	3
Armor Divisions	9	4	0
Armor Brigades	8	3	5
Artillery Divisions	2	2	0
Artillery Brigades	17	6	5
Airborne Divisions	3	3	0
Amphibious Divisions	2	2	0
Amphibious Brigades	3	3	3
Tanks	6,700	2,800	1,100
Artillery Pieces	7,400	2,900	1,600

**Note:** The PLA active ground forces are organized into Group Armies. Infantry, armor, and artillery units are organized into a combination of divisions and brigades deployed throughout the PLA's seven MRs. A significant portion of these assets are deployed in the Taiwan Strait area, specifically the Nanjing, Guangzhou, and Jinan MRs. Taiwan has seven Defense Commands, three of which have Field Armies. Each Army contains an Artillery Command roughly equivalent to a brigade plus.

Taiwan Strait Military Balance, Air Forces			
China			Taiwan
Aircraft	Total	Within range of Taiwan	Total
<b>Fighters</b>	1,630	330	390
<b>Bombers/Attack</b>	620	160	0
<b>Transport</b>	450	40	40

**Note:** The PLAAF and the PLA Navy have approximately 2,250 operational combat aircraft. These consist of air defense and multi-role fighters, ground attack aircraft, fighter-bombers, and bombers. An additional 1,450 older fighters, bombers and trainers are employed for training and R&D. The two air arms also possess approximately 450 transports and over 100 surveillance and reconnaissance aircraft with intelligence, surface search, and airborne early warning capabilities. The majority of PLAAF and PLA Navy aircraft are based in the eastern half of the country. Currently, 490 aircraft could conduct combat operations against Taiwan without refueling. However, this number could be significantly increased through any combination of aircraft forward deployment, decreased ordnance loads, or altered mission profiles.

Figure 12. Taiwan Strait Military Balance, Air Forces

Taiwan Strait Military Balance, Naval Forces			
China			Taiwan
	Total	East and South Sea Fleets	Total
<b>Destroyers</b>	29	17	4
<b>Frigates</b>	45	36	22
<b>Tank Landing Ships</b>	26	24	12
<b>Medium Landing Ships</b>	28	23	4
<b>Diesel Attack Submarines</b>	54	32	4
<b>Nuclear Attack Submarines</b>	5	1	0
<b>Coastal Patrol (Missile)</b>	45	35	51

**Note:** The PLA Navy has the largest force of principal combatants, submarines, and amphibious warfare ships in Asia. After years of neglect, the force of missile-armed patrol craft is also growing. In the event of a major Taiwan conflict, the East and South Sea Fleets would be expected to participate in direct action against the Taiwan Navy. The North Sea Fleet would be responsible primarily for protecting Beijing and the northern coast, but could provide mission critical assets to support other fleets.

Figure 14. Taiwan Strait Military Balance, Naval Forces

China's Missile Force			
China's Missile Inventory	Ballistic and Cruise		Estimated Range
	Missiles	Launchers	
CSS-2	15-20	5-10	3,000+ km
CSS-3	15-20	10-15	5,400+ km
CSS-4	20	20	13,000+ km
DF-31	<10	<10	7,200+ km
DF-31A	<10	<10	11,200+ km
CSS-5	60-80	60	1,750+ km
CSS-6	315-355	90-110	600 km
CSS-7	675-715	120-140	300 km
DH-10	50-250	20-30	2,000+ km
JL-2	Developmental	10-14	7,200+ km

**Note:** China's Second Artillery maintains at least 5 operational SRBM brigades; an additional two brigades are subordinate to PLA ground forces – one garrisoned in the Nanjing MR and the other in the Guangzhou MR. All of SRBM units are deployed to locations near Taiwan.

## U.S. Navy Assets in Comparison

- There are currently 11 aircraft carriers, 22 cruisers, 60 destroyers, two littoral combat ships, 31 frigates, 11 amphibious assault ships, two amphibious command ships, 13 amphibious transport docks, 12 dock landing ships, 61 attack submarines, 14 ballistic missile submarines, 4 guided missile submarines, 14 mine countermeasures ships, eight patrol boats, and one technical research ship (military intelligence ship, the USS Pueblo, which is currently held by North Korea).
- Support ships include two hospital ships, four salvage ships, two submarine tenders, four ammunition ships, five combat stores ships, four fast combat support ships, nine dry cargo ships, 15 replenishment oilers, four Fleet Ocean Tugs, four ocean surveillance ships, four container ships, 16 cargo ships (used for pre-positioning of Marine and Army materiel), and seven vehicle cargo ships (also used for prepositioning).

[http://en.wikipedia.org/wiki/List\\_of\\_current\\_ships\\_of\\_the\\_United\\_States\\_Navy#Current\\_ships](http://en.wikipedia.org/wiki/List_of_current_ships_of_the_United_States_Navy#Current_ships)

## On Arms Sales to Taiwan, China Sends Mixed Signals

By KEITH BRADSHER  
Published: February 11, 2010

HONG KONG — China sent contradictory signals on Thursday about its policies toward the United States two weeks after the Obama administration enraged the Chinese by approving the sale of \$6.4 billion worth of arms to [Taiwan](#).

Immediately after the approval was announced, the Chinese Foreign Ministry [threatened](#) to halt some military exchanges with the United States and said it would take unspecified steps to punish American companies that produced the weapons.

But on Thursday, China signaled some willingness to cooperate militarily, with an American official's saying that China would allow an American aircraft carrier to visit Hong Kong soon. But at the same time, Air China, the country's flagship airline, said it would buy 20 jets from the European consortium [Airbus](#), rather than from Boeing, one of the manufacturers of arms for Taiwan.

Matthew Dolbow, the spokesman for the United States Consulate General in Hong Kong, said Thursday that China had given clearance for the carrier [Nimitz](#) to visit here "in the near future." There was no immediate comment from the Chinese government. Prominent residents of Hong Kong have received invitations to a reception next Wednesday evening aboard the Nimitz.

China has a history of blocking port calls by American naval vessels when it is unhappy with Washington. Beijing officials even [blocked two American minesweepers](#) from seeking shelter in Hong Kong's harbor during a storm in November 2007. American naval officers were upset at the time, calling it a violation of an international naval tradition of offering safe havens during harsh weather.

Air China did not mention the Taiwan deal when it announced that it was buying the 20 A320 jets from Airbus. But the airline had expressed support last week for the

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ACADEMY AWARD  
NOMINATIONS

US-Taiwan-PRC  
Tensions  
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## “Red Dragon Rising” Game

