

**Deadly Heat Wave Reaches East Coast**

Courtesy NWS

**Lionfish Invade U.S. Waters**



Courtesy Paula Whitfield, NOAA

**New Hurricane Hunter Aircraft**

Courtesy NWS



**Trapped Whale Rescued**

Courtesy NMFS



Courtesy NOAA

**Expedition Explores Underwater Wreck of Historic Naval Airship**

# NOAA's Building Blocks

Do you know what NOAA does?  
Play this game and find out!

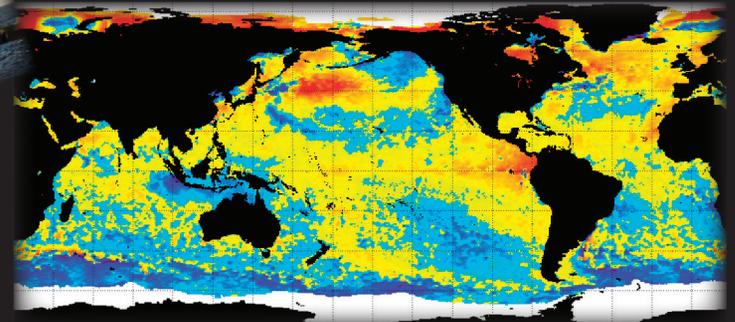
**Satellites Relay Distress Calls**



Courtesy NESDIS

**El Nino Makes a Comeback**

Courtesy NWS



**Astronauts Test Moon Exploration Concepts on Seafloor**



Courtesy NOAA

# NOAA's Building BLocks



## What You Will Do

Play a game using blocks from Jenga® or Uno Stacko®. You can play this game by yourself, or with as many as eight players

### What You Will Need

- ❑ Jenga® or Uno Stacko® game
- ❑ Two sets of “NOAA’s Building Blocks Game Cards” – Make two copies of the “NOAA’s Building Blocks Game Cards” page and cut the cards out. The cards will last longer if you photocopy them onto heavy paper called “card stock” or “cover stock.” It will be easier to tell the difference between “Problems” and “Solutions” if you use one color of paper for “Problems” and another color for “Solutions.”

### How to Play the Game

1. Follow the instructions that come with the game. If you are playing with one or more other people, divide into two teams. Each team gets 24 blocks, and stacks these into eight layers of three blocks per layer. Each layer should be at right angles to the layer below. Shuffle the Game Cards, and place a set of the Cards in front of each team.
2. One team at a time draws a card from the top of the Game Card pile. There are “Problem” cards and “Solution” cards. For every “Problem” there is a “Solution” somewhere in the pile of Game Cards.

If you draw a “Problem” card, read the card aloud and then:

- (a) Remove one block from any layer of the stack except the top layer, and stack it on top of the stack; OR
- (b) Solve the Problem by reading a “Solution” card that your team has drawn and saved previously.

When you have finished (a) or (b), place the card in a discard pile separate from the Game Card pile.

Players may use only ONE hand when removing and stacking blocks! Blocks that are stacked on top of the pile should be at right angles to the layer below. If more than one person is on each team, team members should take turns drawing cards and moving blocks. If you run out of Game Cards, shuffle the cards in the discard pile and use these as a new stack of Game Cards.

3. Continue playing until one team’s stack falls, or one team has removed all of their blocks from the stack. If your team is first to remove all of the blocks from your stack—you win! If your stack is the first to fall—you lose!

If you draw a “Solution” card, read the card aloud and then:

- (a) Keep the card until you need it to solve a “Problem;” OR
- (b) Remove one block from the top of your team’s stack, and place the card in a discard pile separate from the Game Card pile.

*Photocopy this page  
and cut out the cards  
along the lines.*

? **Problem 1**  
You are driving from St. Louis, MO to Boise, ID, and need to know what the weather is likely to be along the way.

? **Problem 2**  
You are travelling through the midwest and want to see whether severe weather is expected during the next three days.

? **Problem 3**  
You just heard on the radio that an earthquake has been reported off the coast of Peru with a magnitude of 6.6 on the Richter scale. Is this likely to cause a tsunami on the U.S. Pacific coast?

? **Problem 4**  
Every day, hundreds of private and commercial aircraft are in the air over the United States. How can pilots check on weather conditions that may affect the safety of their flights?

? **Problem 5**  
More than 90 percent of the goods imported into the United States arrive via the oceans. How can ship captains obtain information to help them avoid dangerous sea conditions?

? **Problem 6**  
Over 77 million Americans enjoy recreational boating. How can these boaters keep track of weather that may affect them?

? **Problem 7**  
You just felt the earth shake! How can you find out if this is a minor tremor or a serious emergency?

? **Problem 8**  
A railroad tank car is leaking chlorine gas. What system is in place to provide emergency information to the public?

? **Problem 9**  
Intense bursts of electromagnetic radiation from the sun called "solar flares" can disrupt cell phones and GPS systems. Is there any way to predict when solar flares may happen?

? **Problem 10**  
Lightning is the second most frequent cause of weather-related deaths in the United States (floods are number one). How can you find out about lightning safety?

? **Problem 11**  
You are planning a boat trip through the Florida Keys. Where can you find out about nautical charts and other boating information for this area?

? **Problem 12**  
You are planning a SCUBA diving trip to photograph coral reefs with some friends, and want to be sure everyone knows how to plan dives and what to do in case of emergencies. Who has this information?

? **Problem 13**  
You live near a marina, and are concerned about what should be done in case of an oil spill. Where can you get this information?

? **Problem 14**  
You live near a salt marsh that used to be used as a local dump for construction debris. Now you and your friends would like to clean it up and restore it as a wildlife habitat? Who knows how to do this?

? **Problem 15**  
A ship captain entering Chesapeake Bay needs up-to-the-minute information on currents, tides, and water levels to be sure he can navigate beneath several bridges. Where can he get this information?

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**? Problem 16**  
You are looking for a poster that shows all of Earth's mountains and valleys, including those in the ocean. Where could you look?

**? Problem 17**  
You are doing a report on coral reefs, and need some great pictures of reef animals. Where can you find them?

**? Problem 18**  
Our nation's coasts are being developed at a rapid rate. What can be done to protect special coastal areas that contain unusual marine life and important historical resources like shipwrecks?

**? Problem 19**  
The deep ocean contains new species that may provide solutions to problems such as energy and human disease. Yet, most oceans are still unexplored. What organization is dedicated to ocean exploration?

**? Problem 20**  
In the days following Hurricane Katrina, rescuers desperately needed before-and-after aerial images that covered coastal areas affected by the storm. Who has these kinds of images?

**? Problem 21**  
Man Overboard! A sailor has fallen overboard, but no one noticed when the accident happened. The Coast Guard has been called, but how can they find him in hundreds of square miles of ocean?

**? Problem 22**  
You have just found an injured whale that seems to be stuck in shallow water. Who can you call?

**? Problem 23**  
More people want to eat seafood, but overfishing is a serious problem and over 70% of our seafood is imported. How can we increase our domestic seafood supply and still protect our seafood resources?

**? Problem 24**  
Many marine turtles are threatened by accidental capture and drowning in fishing gear, boat collisions, and damage to coastal beaches where they nest. What can be done to protect sea turtles?

**? Problem 25**  
Living marine resources provide food, employment, and recreation, but are threatened by overuse, coastal development, pollution, and natural disasters. How can we protect living marine resources and still enjoy benefits they provide?

**? Problem 26**  
You have heard that temperature changes in the Pacific Ocean called El Nino can have serious effects on your local weather. Where can you find out whether these changes are happening right now, or are expected later this year?

**? Problem 27**  
You have heard that Earth's climate is changing. How can you find out whether temperatures in the U.S. have been above or below normal during the last few years?

**? Problem 28**  
How can you find out how global climate change is likely to affect marine ecosystems such as coral reefs?

**? Problem 29**  
Hurricane Hunters fly into the middle of storms to provide information for forecasts that save thousands of lives. Who has the planes and pilots to do this dangerous work?

**? Problem 30**  
Your science teacher is fascinated by marine biology and ocean research, and wants to get first-hand experience with scientific research at sea. How can she do that?



### Solution 1

NOAA's National Weather Service provides immediate access to all forecasts for the entire United States at

<http://www.nws.noaa.gov/>



### Solution 2

The National Weather Service Storm Prediction Center shows active storm systems over the 48 states, and provides detailed discussions of severe weather events at

<http://www.spc.noaa.gov/>



### Solution 3

NOAA's Pacific Tsunami Warning Center and West Coast / Alaska Tsunami Warning Center provide tsunami warnings and information at

<http://www.prh.noaa.gov/ptwc/>



### Solution 4

NOAA's National Weather Service's Aviation Digital Data Service provides forecasts, analyses, and observations of weather conditions that may affect safe aviation.

<http://adds.aviationweather.gov/>



### Solution 5

The National Weather Service's Marine and Coastal Weather Services Branch provides information on coastal waters, Great Lakes, and open oceans.

<http://nws.noaa.gov/om/marine/>



### Solution 6

The National Weather Service's Marine and Coastal Weather Services Branch provides information on conditions on coastal waters, Great Lakes, and open oceans.

<http://nws.noaa.gov/om/marine/>



### Solution 7

NOAA Weather Radio broadcasts weather forecasts, and emergency information about natural hazards, environmental hazards, and public safety (such as AMBER alerts).

<http://www.nws.noaa.gov/nwr/>



### Solution 8

NOAA Weather Radio broadcasts weather forecasts, as well as emergency information about natural hazards, environmental hazards, and public safety (such as AMBER alerts).

<http://www.nws.noaa.gov/nwr/>



### Solution 9

The National Weather Service Space Environment Center forecasts space weather caused by activity on the sun, such as solar flares.

<http://www.sec.noaa.gov>



### Solution 10

NOAA's Lightning Safety Web page has handouts, safety tips, medical facts, survivor stories, photos, and much more at

<http://www.lightningsafety.noaa.gov>



### Solution 11

NOAA's Office of Coast Survey provides nautical charts and other navigational products needed to safely operate marine vessels.

<http://chartmaker.ncd.noaa.gov/>



### Solution 12

The NOAA Dive Manual is an encyclopedia of diving which includes information about dive planning, operations, and emergencies.

<http://www.dive.noaa.gov>



### Solution 13

NOAA's Office of Response and Restoration provides information and solutions for environmental hazards from oil, chemicals, and marine debris.

<http://response.restoration.noaa.gov>



### Solution 14

NOAA's Office of Response and Restoration offers case studies, planning tools, and technical assistance to projects that restore and monitor coastal and estuary habitats.

<http://response.restoration.noaa.gov>



### Solution 15

NOAA's Tides and Currents Web site provides real-time and historical information on tides, water levels, currents, and weather in ports and major waterways throughout the U.S.

<http://tidesandcurrents.noaa.gov>

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### Solution 16

NOAA's National Geophysical Data Center provides maps, posters, data, and images of many different features on Earth's surface.

<http://www.ngdc.noaa.gov/>



### Solution 17

NOAA's Photo Library has thousands of images of marine species, shorelines, weather and space; from coral reefs to the South Pole, from great whales to microscopic bacteria.

<http://www.photolib.noaa.gov/>



### Solution 18

NOAA's National Marine Sanctuary Program includes 14 coastal areas where natural and cultural resources are protected while still allowing people to use and enjoy them.

<http://www.sanctuaries.nos.noaa.gov/>



### Solution 19

NOAA's Office of Ocean Exploration coordinates expeditions to explore Earth's "final frontier." Expeditions take place around the world, but are concentrated in U.S. waters.

<http://oceanexplorer.noaa.gov>



### Solution 20

NOAA's National Geodetic Survey has provided high-resolution aerial photography of the 95,000-mile U.S. shoreline since the 1930's.

<http://oceanservice.noaa.gov/topics/navops/mapping/>



### Solution 21

NOAA operates the Search & Rescue Satellite Aided Tracking System to locate people in distress almost anywhere in the world at anytime and in most conditions.

<http://sarsat.noaa.gov/>



### Solution 22

NOAA's National Marine Fisheries Service coordinates volunteer marine mammal stranding networks in all coastal states that include whale rescue teams.

<http://www.nmfs.noaa.gov/pr/health/>



### Solution 23

NOAA Fisheries' Aquaculture Program develops ways to farm marine animals to provide more seafood, boost commercial and recreational fishing and restore some endangered species.

<http://www.nmfs.noaa.gov/aquaculture>



### Solution 24

NOAA's National Marine Fisheries Service and the U.S. Fish and Wildlife Service have developed ways to protect and restore sea turtle populations.

<http://www.nmfs.noaa.gov/pr/recovery/>



### Solution 25

NOAA Fisheries' Office of Sustainable Fisheries works to maintain healthy fishery stocks, eliminate overfishing, rebuild overfished stocks, and increase benefits from living marine resources.

<http://www.nmfs.noaa.gov/sfa/sfweb/>



### Solution 26

NOAA's National Weather Service Climate Prediction Center forecasts short-term events such as El Nino, and provides information about possible risks of extreme weather events.

<http://www.cpc.ncep.noaa.gov/>



### Solution 27

NOAA's Climate Program Office provides current and historical information on whether temperatures in the U.S. are above or below normal.

<http://www.ncdc.noaa.gov/oa/climate/research/cag3/cag3.html>



### Solution 28

NOAA's Climate and Ecosystems Program is dedicated to understanding and predicting the effects of climate variability and change on marine ecosystems.

<http://www.climate.noaa.gov/>



### Solution 29

NOAA's Office of Marine and Aviation Operations has a fleet of aircraft that operate in extreme conditions, and have the only pilots in the world qualified to fly into hurricanes at low altitudes.

<http://www.omaoo.noaa.gov/>



### Solution 30

NOAA's Teacher at Sea Program provides opportunities for teachers to do scientific research aboard its ships and share that experience with students and colleagues.

<http://teacheratsea.noaa.gov/>

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