

Go With the Flow

Docent Presentation #1: The Hansa Carrier's Lost Shoes

Introduction for Presenter

On May 27, 1990 the freighter Hansa Carrier, en route from Korea to the U.S., encountered a severe North Pacific storm. During the storm, a large wave washed twenty-one shipping containers overboard. Five of these 20-meter containers held a shipment of approximately 80,000 Nike shoes ranging from children's shoes to large hiking boots. It has been estimated that four of the five containers opened into the stormy waters, releasing over 60,000 shoes into the Pacific Ocean. The shoes washed ashore one at a time but were wearable after a scrub-down to remove barnacles, algae, and tar. Beachcombers held swap meets to find matched pairs.

This presentation uses the true story of the spill of a container of Nike shoes into the Pacific Ocean to introduce the concept of wind-driven ocean currents and to model using real scientific data (in this case, models of wind-driven ocean currents) to make a prediction. You will set up the story of the shoe spill and encourage initial predictions. Next, you will introduce the concept of wind-driven ocean currents with a demonstration. Using the wind-driven ocean currents dataset on the SOS, visitors will refine their predictions. Finally, the actual locations where shoes were found will be revealed.

Learning Objectives

- Visitors will understand that some ocean currents are caused by wind
- Visitors will use wind-driven ocean currents datasets on the SOS to make predictions about where the Nike shoes will end up.

Estimated Time

20 minutes

Playlist

Hansa Carrier Shoe Spill: Title Screen

Hansa Carrier Shoe Spill: Introduction PIP

Hansa Carrier Shoe Spill: Blank map with ship

Hansa Carrier Shoe Spill: Summer Trade Winds

Hansa Carrier Shoe Spill: Trade Winds over NASA Sea Currents

Hansa Carrier Shoe Spill: NASA Sea Currents

Hansa Carrier Shoe Spill: Animated Wind Driven Currents

Hansa Carrier Shoe Spill: Wind Driven Currents with Cities

Hansa Carrier Shoe Spill: Results

Go With the Flow: Credits

Acknowledgement:

Adpated from material original originally appearing in Halverson, C., Beals, K. and Strang, C. (2001) Ocean Currents: Marine Science Activities for Grades 5-8. The Lawrence Hall of Science, University of California, Berkeley.

Hands-on Demonstration:

Materials Needed:

- Table near the SOS with a table lamp or some sort of directed light source to highlight the surface of the table.
- Clear plastic or glass pan or bin
- Water to fill pan 3-4 full
- 1-2 rock “islands” to fit in the pan, or upside down cups
- A handful of plastic doll shoes (must float)

Setting Up:

- Fill up the pan of water and place the rock islands
- Leave a cup with the doll shoes in reach
- Leave table light off until read to begin demo

Overview of Directions: (Step by Step worked into the presentation script)

In this activity, you will be demonstrating the effect that wind has on ocean water – the formation of wind driven currents. You will have visitors use straws to blow on the surface of the water. As visitors blow into the straws, they will see currents begin to form in the pan. You will draw attention in particular to what happens when the currents run into obstacles like the rock islands. Next, you will put plastic doll shoes into the pan. As visitors continue to blow through the straws, you will encourage them to note what happens to the shoes.

Presentation Script

Stage directions in italics

1. Title and Introduction

Load: Hansa Carrier Shoe Spill: Title Screen

Presenter: Welcome to _____. My name is _____. Today, we'll be working together to solve the mystery of the 1990 Nike Shoe Spill using scientific data and our Science on a Sphere. Science on a Sphere was developed by the National Oceanic and Atmospheric Administration. The image you see is projected from four projectors

Presenter points towards the projection towers.

Presenter: The sphere its self is a six-foot diameter carbon fiber sphere.

Pause here for any questions about the SOS.

Presenter: And now, let's get started with the mystery of the Nike Shoe Spill.

2. Introduction Video

Load: Hansa Carrier Shoe Spill: Introduction PIP

Clip narration (Audio File, you don't need to read):

Go with the flow, the story of the Hansa Carrier's lost shoes. In 1990, over 4 billion tons of cargo was moved by container ships worldwide. This figure is now closer to 7 billion. The ships that carry this cargo are huge, some longer than the height of the Empire State Building. Most cargo is packed in standard-sized shipping containers that measure 20 ft long by 8 ft wide. There are 5-6 million of these in transit over the sea in any given moment. Not all of these containers make it to their destination. This is the story of four that were lost.

In the spring of 1990, a South Korean carrier called the Hansa left port bound for the US. On May 27, in the North Central Pacific, the Hansa Carrier was over taken by a huge storm. A large wave knocked four containers overboard. These containers broke open in the seas and released 60 thousand Nike tennis shoes held within.

The clip ends with the question "What do you think happened to the shoes?" written on the SOS.

3. Making Initial Predictions

Presenter: What do you think? What is your initial guess about where the shoes will end up? Why?

Load: Hansa Carrier Shoe Spill: Blank map with ship

Presenter picks a few volunteers from the audience to share what they think and why. If possible, use any mention of wind as a factor to transition to the next point.

Presenter: One of the factors that impacts what will happen to the shoes is the wind blowing over the surface of the ocean. Join me over here at the demonstration table to find out more about what effects wind has on water.

4. Hands-on Demonstration

Turn on the light on the demonstration table.

Presenter: What impact does wind blowing over the surface have on water? Who wants to volunteer to find out?

Coach volunteers to blowing across the surface of the water as opposed to down into it if necessary.

Presenter: What do you notice about how the water is moving?

Give visitors a chance to share ideas

Presenter: Now I'm going to add the shoes

Add pepper to the surface of the water.

Presenter: What do you notice about how the shoes are moving? What happens when a shoe reaches one of the rocks?

Give visitors a chance to share ideas. Ask follow up questions as appropriate for clarification.

Presenter: Let's move back to the sphere now and see what's happening in the ocean.

Turn off demo table light, move back to SOS.

5. Summer Trade Winds

Load Hansa Carrier Shoe Spill: Summer Trade Winds

Presenter: This data set shows the direction of the trade winds, the primary winds responsible for creating currents, during the spring and summer. Take a look at the

position of the ship during the spill, and think about your original predictions for where the shoes would end up.

6. NASA Sea Currents

Load: Hansa Carrier Shoe Spill: Trade Winds over NASA Sea Currents

Presenter: Now, let's take a look at how those winds impact the ocean. The wind doesn't bulldoze the surface of the water quite the way that the straw in our demo suggested. There are actually several factors including wind, gravity, the rotation of the earth, and temperature that all come together to form currents. You can see that there is not an exact match between the trade wind pattern and the ocean's surface currents modeled here.

Load: Hansa Carrier Shoe Spill: NASA Sea Currents

Presenter: The yellow and green sections are places where the water is moving faster than the surround water, or the ocean currents. What do you notice in this data set?

Pause to give visitors a chance to examine the dataset. The NASA Sea Currents model shows a number of interesting features to ocean currents. The two most frequently noticed features are:

- *The circular eddies that appear where water is moving around land – particularly in the pointed ends of Africa and South America.*
- *The gulf stream – a strong current of water moving from the Gulf of Mexico up the eastern seaboard of the United States.*

7. Refining Predictions

Presenter: Okay, so now let's take a look at a more simplified map of the major currents and revise our predictions about where the shoes might have washed ashore.

Load: Hansa Carrier Shoe Spill: Animated Wind Driven Currents.

Presenter: This dataset shows the main ocean currents in the Pacific. Where do you think the shoes will end up now? Take a minute and discuss your ideas with the people around you.

Load: Hansa Carrier Shoe Spill: Wind Driven Currents with Cities

Presenter: Ready to share your ideas? Where do you think the shoes ended up?

Give visitors a chance to share their ideas. Encourage visitors to expand their answers from just the city name to include why they think that the shoes will end up in the

location that they have chosen. You can hand a laser pointer to the visitors to have them show you what they think will happen if you chose or encourage them to use the labeled current names to explain what currents they think are carrying the shoes.

8. The Reveal

Presenter: Okay, ready to see what happened?

Load Hansa Carrier Shoe Spill: Results.

Congratulate/commiserate with visitors about the results of their prediction vs what actually happened. Ask if the visitors have any comments or questions.

9. Credits

Load Go with the Flow: Credits.

Presenter: Thanks for working with me to solve the mystery of the shoe spill! The sphere will now be returned to its regular programming. I'll be over here by the presenter's table to answer any further questions that you may have.