# Using GPS to Put Our Solar System in Perspective

Presenter: Lori Schoening GPS/GIS for Alaska Teachers June 18, 2004

### Overview

- Project Goals/Objectives
- Education Standards
- Data
- Procedure
- Products
- Future Applications
- Acknowledgements



### **Goals and Objectives**

#### Goal: Create a GPS lesson that fits into the Aurora Alive curriculum and can be taught anywhere in Alaska with minimal teacher training.



#### Standard Addressed

#### Alaska Science Content Standard A:

A student should understand scientific facts, concepts, principles and theories. A student who meets this content standard should:

3. understand models describing the composition, age, and size of our universe, galaxy, and solar system and understand that the universe is constantly moving and changing.

#### Procedure

#### **Step 1: Data Collection**

	Diameter (in km)	Distance from Sun (in km)
Sun	1,392,000	0
Mercury	4,878	58,000,000
Venus	12,104	108,000,000
Earth	12,756	150,000,000
Mars	6,794	217,000,000
Jupiter	142,796	778,000,000
Saturn	120,000	1,427,000,000
Uranus	50,800	2,870,000,000
Neptune	50,450	4,497,000,000
Pluto	3,400	5,913,000,000

Data Sources: 2000 Idaho Public Television Teacher Training Institute for Math, Science and Technology

NASA Goddard Space Flight Center and www.the-solar-system.net

#### Procedure

**Step 2: Data Calculation** 

- Calculate the scale factor for a model sun with a diameter of 10 cm.
- Calculate the scale diameter of each planet.
- Calculate the scale distance from the sun of each planet.

#### Step 3: Draw Planet and Sun Models

		Scale Diameter
	Sun	10 cm
	Mercury	0.035 cm
	Venus	0.087 cm
	Earth	0.092 cm
	Mars	0.049 cm
	Jupiter	1.026 cm
	Saturn	0.862 cm
ightarrow	Uranus	0.365 cm
•	Neptune	0.362 cm
	Pluto	0.024 cm

Step 4: Place your Sun and Planets to Create a Scale Model

- Place the first 5 planets using the meter stick and string method.
- Place the last 4 planets Using GPS.

#### Guide to Projecting a Waypoint

- Step-by-step
- Child friendly
- Geko 201 specific
- Hands-on
- Minimal Teacher Prep

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Step 5: Reflecting and Conceptualizing the Vast Size of our Solar System
Class discussion
Drawing the model

## **Future Applications**

- Mapping school/playground perimeter using GPS.
- Comparing traditional and modern ways of navigating.
- Games on the Garmin Geko.
- Applications to Volcanoes Alive.

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