**Global River- Daily Discharge 2010 Follow-up Questions-**

**Teachers’ Guide**

The reflection questions below are designed to supplement the Science on a Sphere dataset, ‘Global River-Daily Discharge 2010.’ The questions encourage students to think critically about the hydrological cycle while analyzing maps and scientific data.

**Supplementary Materials:**

Science on a Sphere:

<http://sos.noaa.gov/What_is_SOS/index.html>

Additional Earth Science animations:

<http://csdms.colorado.edu/wiki/Movies_portal>

U.S. Department of the Interior/U.S. Geological Survey

<http://waterwatch.usgs.gov/index.php?id=ww>

**Follow-up Questions-Teachers’ Guide**

1. What is river discharge and how is it measured?

River discharge is the volume of water flowing down a river. Scientists use the river profile and current meters to measure it, and the units used are usually cubic meters per second or cubic feet per second.

Q=v\*w\*d

Q= discharge in m3/sec

v = velocity in m/s

w= width of the river in m

d = depth of a river in m

2. What are some factors that impact river discharge?

Some factors that impact river discharge are weather and climate. Rivers have greater discharge when there is more precipitation. In colder climates, increased temperatures during warmer seasons can lead to snowmelt, which also increases river discharge.

Human activities also have a major impact on river discharge. For instance, many farmers irrigate their crops with river water. We also use reservoirs to collect river discharge to store for cities and towns to use, and the storage changes the timing of the flood peaks. Sometimes water is released from reservoirs in the dry season, and thus the river discharge of the dry season is changed (higher than in a natural situation).

3. The United States Geological Survey continually monitors river discharge throughout the United States. Visit the following website to answer the questions below: <http://waterwatch.usgs.gov/>

1. Select 3 rivers from the ‘Current Streamflow’ map and record their discharge.

Answers will vary.

Example: The Nuyakuk River’s current discharge is 3,620 cubic feet per second.

1. Name a geographic area where stream flow is currently below average. List some factors that might be contributing to this.

The West coast of the United States is currently experiencing below average stream flow in many areas, especially in California. There has been a drought there, which has had a big impact on river discharge.

1. Name a geographic area where stream flow is currently above average. List some factors that might be contributing to this.

The state of Kentucky is currently experiencing above average stream flow in several rivers. There has been a lot of precipitation there recently.

1. Use the following flood map to find a river that is currently flooding and record its discharge: <http://waterwatch.usgs.gov/?id=ww_flood>

Answers will vary.

Example: St. John’s River is currently flooding. Its discharge is 10,400 cubic feet per second.