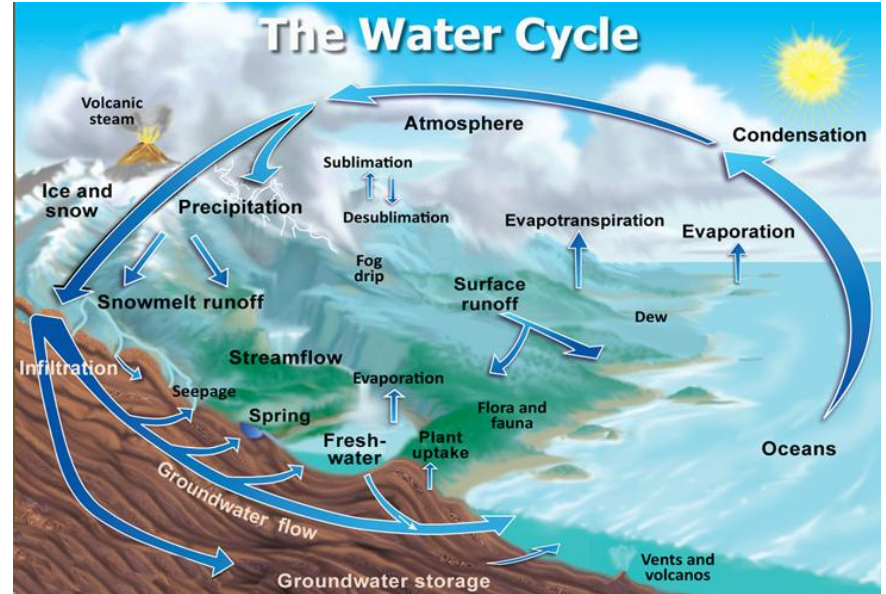


# Earth System/ Environmental Scientist



# What do Environmental Scientist do?

They study the interactions of Earth's atmosphere (air and climate), biosphere (people, animals, plants), hydrosphere (water cycle), lithosphere (surface, mountains, volcanoes), and cryosphere (ice, glaciers).



## They try to solve issues on:

- managing energy sources
- conserving water resources
- saving endangered species
- control toxic substances
- living sustainability
- population growth
- other ecological issues.



# How do Environmental Scientist use Math?

- They use a variety of math like algebra, statistics, calculus, and other math applications.
- Math is key to analyze and interpret data collected from research and satellite recordings.



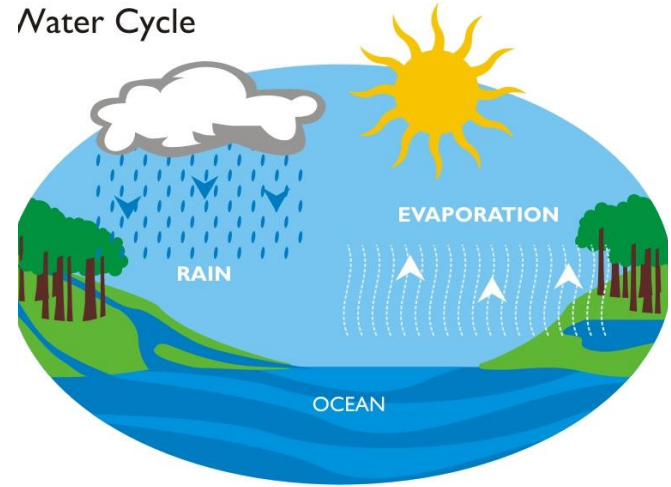
# Math Problem

An Environmental Scientist wants to know long a water molecule stays in Big Bear Lake reservoir, to analyze the time it takes to **fill** or **empty**.

For this we can use the formula for residence time:

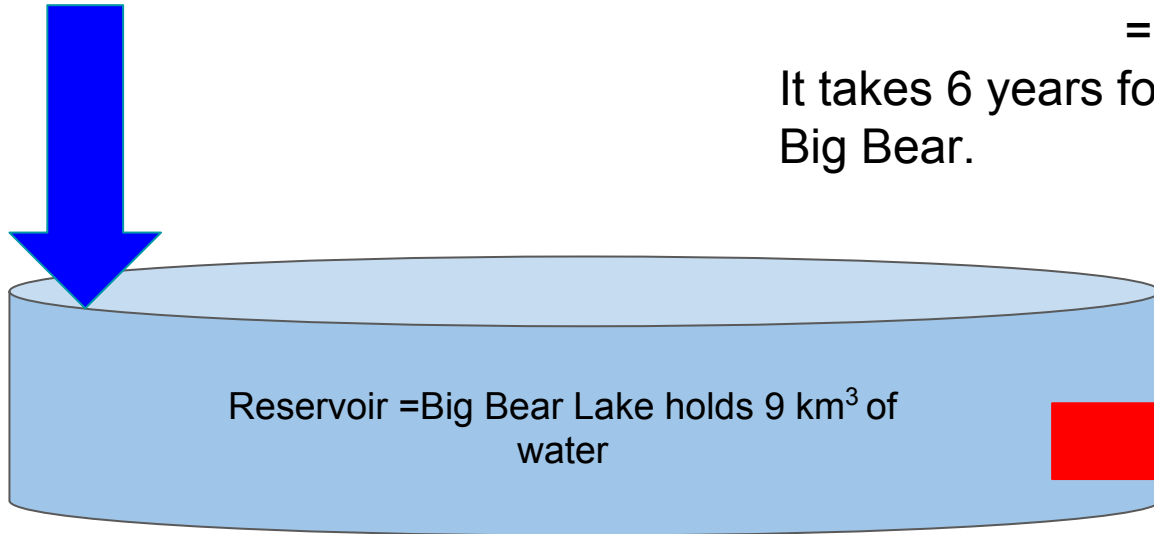
$$\textit{Residence time} = \frac{\text{amount inside the reservoir}}{\textit{total source OR sink}}$$

Water Cycle



# Math problem cont.

1.5 km<sup>3</sup>/year of  
Rain is our **source**



$$\textit{Residence time} = \frac{\text{amount inside the reservoir}}{\text{total source **OR** sink}}$$

$$\begin{aligned}\text{Residence time} &= \frac{9 \text{ km}^3}{1.5 \text{ km}^3/\text{year}} \\ &= 6 \text{ years}\end{aligned}$$

It takes 6 years for a water molecule to stay in Big Bear.

1.5 km<sup>3</sup>/year of  
Evaporation is our **sink**

# Education

- **High School** (4 years): A-G requirements to obtain diploma.
- **Undergraduate** (4 to 5 years): Bachelors degree in Environmental Science and/or Earth System Science. You can minor in sustainability, geology, statistics, math and other sciences.
- **Masters** (2-3+ years): Work on Research project on a topic that is focused on your field such as environmental conservation, resource management, etc.
- **Doctorate** (3-6+ years): To earn a PhD you create an independent research project that will be fully elaborated from your dissertation.



# Work Cited

- <http://www.environmentalscience.org/degree>
- <http://www.environmentalscience.org/careers>
- [http://replay.uci.edu/media/uci-only/fall2014/ESS\\_1\\_Fall\\_2014\\_Lecture\\_2\\_-\\_20141006\\_135342\\_2.mp4](http://replay.uci.edu/media/uci-only/fall2014/ESS_1_Fall_2014_Lecture_2_-_20141006_135342_2.mp4)
- [http://www.eduweb.com/portfolio/earthsystems/images/print\\_main\\_icon.jpg](http://www.eduweb.com/portfolio/earthsystems/images/print_main_icon.jpg)
- <https://elearningindustry.com/wp-content/uploads/2013/08/bfa9b7e5542153d134a3eed2bd0df6f6.jpg>
- <http://www.bigbearhomesandland.com/wp-content/uploads/2012/08/Big-Bear-Lake-California-Real-Estate-Bo-b-Angilella.jpg>
- [http://cdn.ngkids.co.uk/dynamic/features\\_legacy/content/4bf07897f015c6c43ef4ef8d1d930c97](http://cdn.ngkids.co.uk/dynamic/features_legacy/content/4bf07897f015c6c43ef4ef8d1d930c97)
- [http://4.bp.blogspot.com/-icB76gwDLJg/UDph\\_jjlbnl/AAAAAAAAABI/6jWm5wQKqPU/s1600/Environmental+Science+CSO+Wordle.PNG](http://4.bp.blogspot.com/-icB76gwDLJg/UDph_jjlbnl/AAAAAAAAABI/6jWm5wQKqPU/s1600/Environmental+Science+CSO+Wordle.PNG)
- <http://www.mcvts.net/cms/lib07/NJ01911694/Centricity/Domain/234/Environmental-science-articles.gif>
- [http://www.clker.com/cliparts/0/5/8/9/13978930351786662669environment%20\(1\).jpg](http://www.clker.com/cliparts/0/5/8/9/13978930351786662669environment%20(1).jpg)
- <http://image.shutterstock.com/z/stock-photo-hands-save-the-earth-drawing-conceptual-109572812.jpg>